

Public Blockchains in India's Financial System: A Case For and Against

September 2026



Foreword

India has spent a decade showing the world what digital public infrastructure can achieve. UPI, Aadhaar, and the systems built alongside them have brought hundreds of millions of people into the formal economy, and they have done so on rails the country built for itself. It is only natural, then, to ask what a public blockchain could add to a financial system that already works this well.

This report asks that question and answers it with candour. It does not claim that public blockchains are a remedy for every problem, nor that they should displace the infrastructure India has built. Its argument is narrower and, to my mind, far more useful: that open networks earn their place in the functions where openness itself creates value, above all in tokenisation and in connecting Indian markets to global liquidity, and that they are the wrong instrument where a trusted public operator already serves people well. Equally, it takes the strongest objections to this view head-on, instead of going around them.

At CoinDCX, we have long held that this technology deserves a sober, evidence-led conversation rather than the familiar extremes of hype and dismissal. Sound policy is made at neither extreme. My hope is that this report helps sharpen the debate, so that it turns on where, and on what terms, public blockchains belong in India's financial system, rather than on whether they belong at all.

The report is the work of Lakshay Narang, of our public policy team. Its rigour, its willingness to concede what the evidence concedes, and its independence of judgement are his, and they are what give it its worth. I commend the report to policymakers, to industry, and to anyone thinking seriously about the future of money in India.

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1. Executive summary

We live in a moment of rapid change in how money moves. In under a decade, India has built digital financial infrastructure that the rest of the world now studies, and it has done so through centralised, publicly coordinated means that work well. Against that success, the public blockchain has drawn steady attention. The question this report examines is a simple one: if India already has world-class financial infrastructure, what does a public blockchain add?

The answer is that a public blockchain offers three things that centralised systems, by their nature, cannot. It provides a neutral venue that no single party controls. It allows assets and applications built by different parties to combine freely, which is the property that creates liquid, open markets. And it is open to anyone, everywhere, without a separate agreement for each new participant or each new border. Where these properties are the point, the case for public blockchains is strong. Where they are not, it is weak.

That test sorts the three functions cleanly. For domestic retail payments, the case is weak, because UPI already provides a fast, near-free, trusted rail and no open-network property is needed. For tokenisation, the case is strongest, because the value of a tokenised asset lies almost entirely in its being tradable, reusable, and reachable, which is precisely what an open network (public blockchain) provides. For cross-border payments and settlement, the case is real but contested, because openness delivers speed and reach that the sovereign alternatives struggle to match, yet it also raises genuine questions of monetary control.

The case must also meet serious objections, and this report states them plainly. Open networks fragment as they grow, splitting liquidity across many chains. Maintaining trust without a central operator is costly, and the systems that reduce that cost tend to reconcentrate control. And for the settlement of large sums, central-bank money preserves a quality, the singleness of money, that a private token cannot guarantee. These limits do not defeat the case. They bound it, and in doing so they show where public blockchains belong: as a complement to India's existing infrastructure in the places where open, composable, global market structure is the goal, rather than a replacement for it everywhere.

2. Introduction

India's financial infrastructure is now one of the most sophisticated and widely scaled in the world. The Unified Payments Interface (UPI), launched by the National Payments Corporation of India in 2016, processes more than 24 billion transactions worth close to Rs 30 trillion in a single month.¹² Alongside it sit Aadhaar, the account-aggregator framework, and a set of dematerialised asset registries. Each was designed and run by central institutions rather than by an open network, and each performs its task well. India has shown, in effect, that a country can build financial infrastructure of the first rank without a permissionless network anywhere in its design.

This makes the sustained interest in public blockchains, among policymakers, industry, and the public alike, worth pausing over. The appeal of a public blockchain is that it moves money and records ownership without a central operator in charge, settles transactions in seconds across borders, and lets assets and applications built by different parties combine with one another freely.³ The question that follows is the one this paper takes up. Where a country has already built infrastructure that works, what does an open network offer that a centralised system does not?

The answer depends first on what a public blockchain is. A blockchain is a shared record of transactions maintained across many computers rather than by a single operator. What separates one blockchain from another is not the software but the governance: who may participate, who may validate transactions, and who may see the data.⁴ A public, or permissionless, blockchain lets anyone perform these roles without prior approval. A permissioned blockchain limits them to known, approved participants, much as conventional financial infrastructure does today. A third, hybrid arrangement now common in regulated finance issues assets on a public network while gating access to them behind a compliance layer.

Public and permissioned blockchains are best understood not as two boxes but as two ends of a spectrum, with the hybrid model in between. Figure 2 sets out that spectrum.

¹ ANI. (2026, June 2). *UPI hits new high in May 2026 with 23.2 billion transactions worth Rs 29.9 trillion, NPCI data shows*. ANI News.

<https://www.aninews.in/news/business/upi-hits-new-high-in-may-2026-with-232-billion-transactions-worth-rs-299-trillion-npci-data-shows20260602155337/>

² Jacob, S. (2026, September 1). *UPI sets new record at 24.51 bn transactions in Aug, value at ₹29.82 trn*. www.business-standard.com.

https://www.business-standard.com/finance/news/upi-transactions-august-2026-record-volume-npci-126090100506_1.html

³ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

⁴ Yaga, D., Mell, P., & Roby, N. (2018). *Blockchain technology overview* (NIST Interagency Report No. 8202). National Institute of Standards and Technology. <https://nvlpubs.nist.gov/nistpubs/ir/2018/nist.ir.8202.pdf>

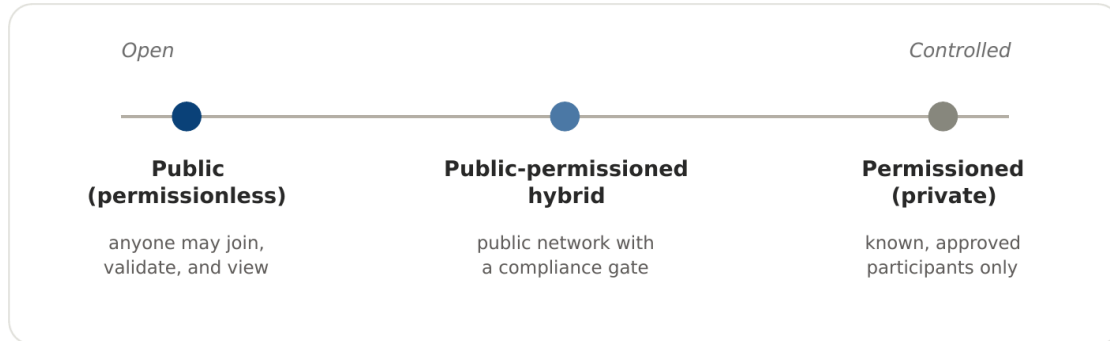


Figure 2. Blockchains sit on a spectrum from open to controlled. The distinctive benefits this paper examines follow from openness, at the left of the spectrum.

This paper makes a case. It does not ask whether public blockchains work as a technical matter, because that is settled. It asks what a public blockchain distinctively offers a financial system, and where that offer is strongest. The argument is built from first principles and grounded in the current state of the market, rather than a review of any single project.

Two points frame what follows. First, the paper examines three financial functions: payments, or the movement of money; tokenisation, or the representation of assets as transferable digital tokens; and settlement, or the final transfer of value. The case for public blockchains is not equally strong across all three. Second, the paper does not treat the choice as one between public and private ownership of a ledger. The distinction that matters is whether a network is open to permissionless participation, because it is that openness, and not the ledger form itself, from which the benefits follow.

Figure 1 sets out the three functions the paper examines and how each is carried out today and on public or hybrid chains.

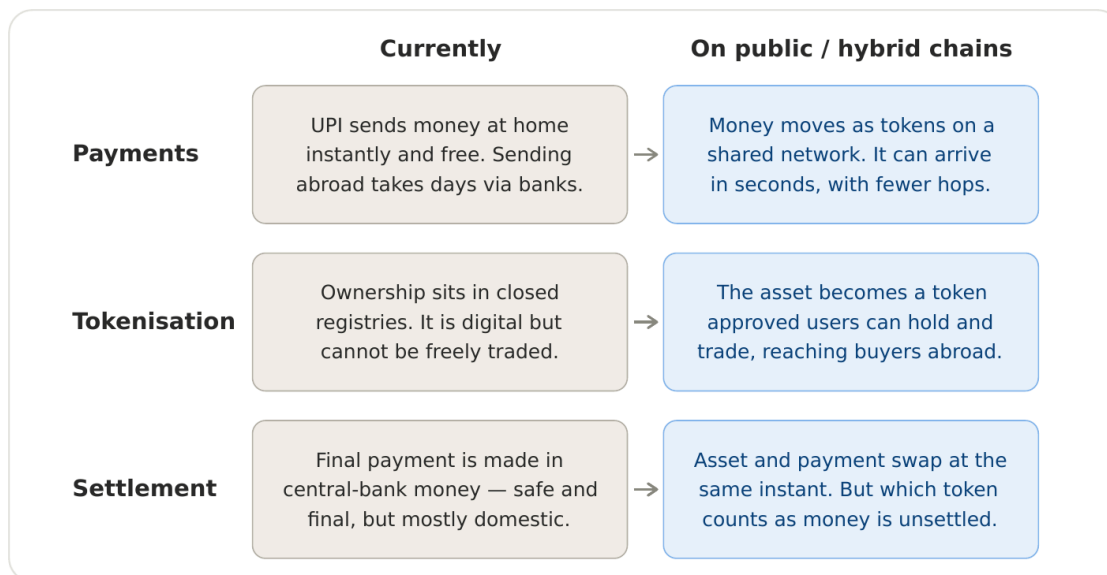


Figure 1. The three financial functions, and how each is carried out today and on public or hybrid chains.

The paper is organised into five further sections. Section 3 describes the current state of tokenisation and public-chain activity in global markets. Section 4 situates the question within India's financial system and its regulatory posture. Section 5 sets out the distinctive value public blockchains offer. Section 6 addresses the main objections the case must meet. Section 7 concludes by identifying where the case is strongest and where it remains contested.

3. The global state of play

Before turning to India, it is useful to establish what is actually being built with public blockchains in global markets, because the case for them rests on demonstrated use rather than on promise. Two patterns stand out. Regulated finance is adopting public and hybrid chains for tokenisation and cross-border settlement at institutional scale, and, in parallel, several central banks are building sovereign, permissioned alternatives. The contest between these two paths is the backdrop to everything that follows.

3.1 Tokenisation has moved onto public chains

The tokenisation of real-world assets has moved out of experiment and into live deployment, and it has done so overwhelmingly on public chains rather than the private ledgers that an earlier wave of enterprise blockchain favoured. Excluding

stablecoins, the value of tokenised real-world assets grew from roughly USD 10 billion at the start of 2025 to USD 36 billion by the end of the first quarter of 2026.⁵⁶⁷

Tokenised United States Treasuries alone crossed USD 10 billion in February 2026 and stood near USD 13 billion by early April.⁸⁹ The separate market for stablecoins, which are dollar-denominated payment tokens, had reached roughly USD 300 billion by the end of the first quarter and about USD 320 billion by May.¹⁰¹¹

These figures are drawn from industry trackers and issuer disclosures and are best read as indicative of scale rather than as audited totals. Figure 3 shows the growth of the tokenised real-world asset market over this period.

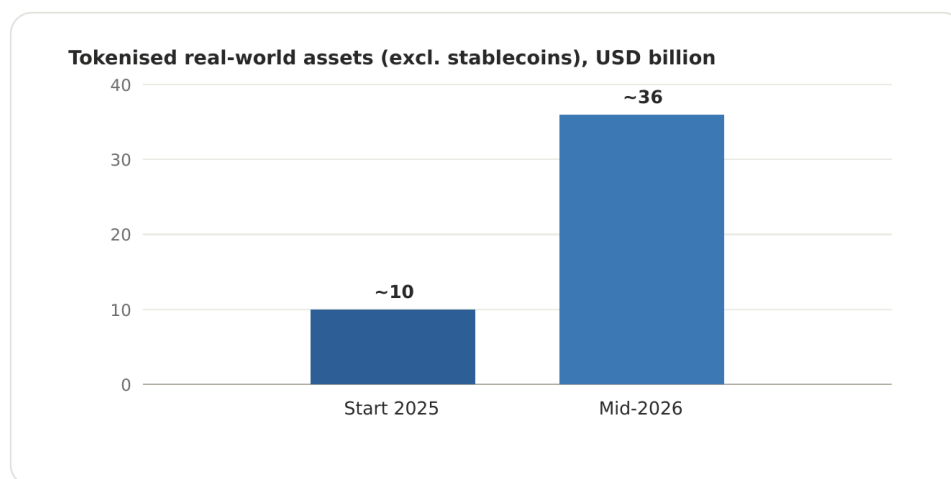


Figure 3. The tokenised real-world asset market, excluding stablecoins, more than quintupled between early 2025 and May 2026. Figures are indicative of scale.¹²¹³¹⁴

What matters for the case is less the headline size than where this activity sits. The largest and most credible products are issued by mainstream financial institutions, and

⁵ CoinGecko. (2026). RWA report 2026. <https://www.coingecko.com/research/publications/rwa-report-2026>

⁶ CoinDesk Data. (2026, June 9). Stablecoins and tokenized assets report, May 2026. CoinDesk.

<https://www.coindesk.com/research/stablecoins-and-tokenized-asset-report-may-2026>

⁷ RWA.xyz. (n.d.). Global Market Overview - Analytics on Tokenisation. Retrieved September 10, 2026, from

<https://app.rwa.xyz/>

⁸ CoinGecko. (2026). RWA report 2026. <https://www.coingecko.com/research/publications/rwa-report-2026>

⁹ InvestaX. (2026, April 15). Q1 2026 real-world asset tokenization market report.

<https://investax.io/blog/q1-2026-real-world-asset-tokenization-market-report>

¹⁰ CoinGecko. (2026). RWA report 2026. <https://www.coingecko.com/research/publications/rwa-report-2026>

¹¹ CoinDesk Data. (2026, June 9). Stablecoins and tokenized assets report, May 2026. CoinDesk.

<https://www.coindesk.com/research/stablecoins-and-tokenized-asset-report-may-2026>

¹² CoinGecko. (2026). RWA report 2026. <https://www.coingecko.com/research/publications/rwa-report-2026>

¹³ CoinDesk Data. (2026, June 9). Stablecoins and tokenized assets report, May 2026. CoinDesk.

<https://www.coindesk.com/research/stablecoins-and-tokenized-asset-report-may-2026>

¹⁴ RWA.xyz. (n.d.). Global Market Overview - Analytics on Tokenisation. Retrieved September 10, 2026, from

<https://app.rwa.xyz/>

they run on public chains. BlackRock's tokenised money-market fund, BUIDL, operates across Ethereum and several other public networks, is accepted as collateral on trading venues, and began trading on a decentralised exchange in early 2026¹⁵.

Franklin Templeton's tokenised government money fund, represented by the BENJI token, was the first United States-registered mutual fund to use a public blockchain as its official record of ownership, and by 2026 spanned nine chains.¹⁶

These are not permissionless free-for-alls. They are best described as public-permissioned hybrids: the asset is issued on an open chain, but transfers are restricted to wallets that have passed identity checks, with the rules enforced in the smart contract itself.¹⁷ The open network supplies liquidity and the ability to combine assets; the compliance layer supplies the control that regulators require.

3.2 Regulators are enabling this model

Financial regulators in the major markets have moved to accommodate this model rather than resist it. In the United States, the GENIUS Act, signed into law in July 2025, established the first federal framework for payment stablecoins, requiring full reserves in high-quality liquid assets, monthly disclosures, and compliance with anti-money-laundering rules, while declining to classify payment stablecoins as securities and prohibiting issuers from paying any yield or interest to holders.^{18,19} By giving regulated standing to the dollar stablecoins that serve as the cash leg of tokenised transactions on public chains, it legitimises a core component of the hybrid model.

The Act is law but not yet operative; its provisions take effect on the earlier of 120 days after final rules or 18 January 2027, so most participants expect it to bind in the first half of 2027.²⁰ In January 2026, the staff of the United States Securities and Exchange Commission confirmed that tokenised securities remain securities, and that recording ownership on-chain does not change how the securities laws apply.²¹ Singapore has

¹⁵ Eco. (2026, August 17). What is BUIDL? BlackRock's tokenized Treasury fund. Support. <https://eco.com/support/en/articles/15483226-what-is-buidl-blackrock-s-tokenized-treasury-fund>

¹⁶ MetaMask. (2026). *Real-world asset tokens: What crypto wallet users need to know in 2026*. <https://metamask.io/news/real-world-asset-tokens-what-crypto-wallet-users-need-to-know-in-2026>

¹⁷ Everstake. (2026). *Blockchain-based funds: Tokenized money market index*. <https://everstake.one/resources/blog/blockchain-based-funds-tokenized-money-market-index>

¹⁸ GENIUS Act of 2025, S. 1582, 119th Cong. (2025). <https://www.congress.gov/bill/119th-congress/senate-bill/1582/text>

¹⁹ Congressional Research Service. (2025). *Stablecoin legislation: An overview of S. 1582, GENIUS Act of 2025* (Report No. IN12553). <https://www.congress.gov/crs-product/IN12553>

²⁰ The Block. (2026). *What is the GENIUS Act? A guide to U.S. stablecoin law*. <https://www.theblock.co/post/406286/what-is-the-genius-act>

²¹ U.S. Securities and Exchange Commission, Divisions of Corporation Finance, Investment Management, and Trading and Markets. (2026, January 28). *Statement on tokenized securities*.

gone further, running tokenisation pilots through Project Guardian in which regulated institutions act as trust anchors and transact through permissioned pools deployed on public blockchains.²² The European Union's Markets in Crypto-Assets regulation brings stablecoins within the regulatory perimeter rather than excluding them.²³ In each case the effect is the same, and it is the one the hybrid model depends on: a regulated activity is permitted to take place on an open network under supervision, rather than being pushed onto a closed one.

3.3 The sovereign alternative is being built in parallel

At the same time, several central banks are building the opposite model: a sovereign, permissioned ledger on which tokenised central-bank money, tokenised deposits, and tokenised assets can settle together. The most advanced example is the Bank of Korea's Project Hangang, which ran live retail transactions over three months in 2025 involving roughly 80,000 users and 12,000 merchants, using tokenised deposits settled in tokenised central-bank money.²⁴

Similar work is under way through the Bank for International Settlements' Project Agorá and the European Central Bank's initiatives on wholesale settlement. These projects are the institutional response to public-chain tokenisation, and they matter to the case in two ways. They confirm that the underlying idea, tokenised assets settling atomically against tokenised money, is sound and demonstrable.

But they also pursue it on permissioned rails that keep the central bank in control, which is precisely the design choice the rest of this paper examines. Cross-border settlement is following the same divided path: in May 2026, a group comprising Ondo Finance, JP Morgan's Kinexys unit, Mastercard, and Ripple settled the asset leg of a cross-border redemption of tokenised Treasuries on a public blockchain in under five seconds, against the one-to-three days that correspondent banking would take.^{25,26}

<https://www.sec.gov/newsroom/speeches-statements/corp-fin-statement-tokenized-securities-012826-statement-tokenized-securities>

²² Monetary Authority of Singapore. (n.d.). *Project Guardian*. Retrieved June 2026, from

<https://www.mas.gov.sg/schemes-and-initiatives/project-guardian>

²³ CoinDesk Data. (2026, June 9). *Stablecoins and tokenized assets report, May 2026*. CoinDesk.

<https://www.coindesk.com/research/stablecoins-and-tokenized-asset-report-may-2026>

²⁴ Ryu, J., Shin, H. S., Sung, J., & Yun, S. G. (2026). *A unified ledger in practice: Lessons from Project Hangang* [Paper prepared for the ECB Forum on Central Banking 2026]. Bank of Korea.

²⁵ Ondo Finance. (2026, May 6). *Ondo, Kinexys by J.P. Morgan, Mastercard, and Ripple complete first cross-border, cross-bank redemption of tokenized U.S. Treasuries* [Press release]. PR Newswire.

<https://www.prnewswire.com/news-releases/ondo-kinexys-by-jp-morgan-mastercard-and-ripple-complete-first-cross-border-cross-bank-redemption-of-tokenized-us-treasuries-302764324.html>

²⁶ CoinDesk. (2026, May 7). *Ripple, JPMorgan settle first cross-border tokenized Treasury redemption on XRP Ledger*.

<https://www.coindesk.com/markets/2026/05/07/ripple-jpmorgan-settle-first-cross-border-tokenized-treasury-redemption-on-xrp-ledger>

4. India's financial system and regulatory posture

India is an unusually instructive setting for this question, because it combines world-class public payment infrastructure, a large cross-border need, an emerging tokenisation market, and a state that has bet firmly on sovereign, permissioned technology. Each of these shapes where public blockchains could add value.

4.1 Payments: UPI at home, friction abroad

Domestically, the payments problem is, to a first approximation, solved. UPI processes tens of billions of transactions each month, instantly, around the clock, and at near-zero cost to users.²⁷ It is the benchmark against which any new domestic payment technology must be judged, and it sets a high bar.

The unsolved part of the payments picture is cross-border. India is the world's largest recipient of remittances, with inflows of about USD 135.4 billion in FY25.²⁸ The binding constraint on these flows is not, as is often assumed, headline cost; India's corridors already price below the global average of roughly 6.5%.²⁹ It is structural.

Cross-border transfers route through chains of correspondent banks with limited operating hours and uneven technology, so a transfer that costs little may still take one to three days to arrive. The rapid growth of a cross-border payments fintech sector, and the Reserve Bank's creation of a Payment Aggregator – Cross Border licence, are both signs that this friction is real and commercially significant.³⁰ India has also built a dedicated venue for such activity in GIFT City, where the International Financial Services Centres Authority grants a payment-service licence modelled on those of Singapore, the United Kingdom, and Hong Kong.³²

²⁷ ANI. (2026, June 2). *UPI hits new high in May 2026 with 23.2 billion transactions worth Rs 29.9 trillion, NPCI data shows*. ANI News.

<https://www.aninews.in/news/business/upi-hits-new-high-in-may-2026-with-232-billion-transactions-worth-rs-299-trillion-npci-data-shows20260602155337/>

²⁸ India Remains as the World's Largest Recipient of Remittances, with Inflows Reaching USD 135.4 Billion in FY25. (n.d.). <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2219971@=1&lang=1>

²⁹ World Bank. (2025). *Remittance prices worldwide* (Issue 53, Q1 2025).

https://remittanceprices.worldbank.org/sites/default/files/rpw_main_report_and_annex_q125_1_0.pdf

³⁰ Telangana Today. (2026). *RBI expands CBDC pilots into subsidy schemes and tokenised financial markets*.

<https://telanganatoday.com/rbi-expands-cbdc-pilots-into-subsidy-schemes-and-tokenised-financial-markets>

³¹ India Tech Desk. (2026, May 26). *Skydo's bet on GIFT City highlights India's quiet challenge to global payment giants*.

<https://indiatechdesk.com/skydo-bet-on-gift-city-highlights-indias-quiet-challenge-to-global-payment-giants/>

³² Cyril Amarchand Mangaldas. (2025, August). *FIG paper no. 49: IFSC, GIFT City – A new legal frontier for cross-border payments*. India Corporate Law.

<https://corporate.cyrilamarchandblogs.com/2025/08/fig-paper-no-49-ifsc-gift-city-a-new-legal-frontier-for-cross-border-payments/>

4.2 The Reserve Bank's permissioned bet, and its adoption problem

At the money and settlement layer, the Reserve Bank of India has chosen sovereign, permissioned infrastructure. It has built the Unified Markets Interface, a platform to tokenise financial assets and settle them in wholesale central-bank digital currency, and has launched a CBDC and Asset Tokenisation sandbox for simulation.³³³⁴ The difficulty is that the retail layer of this bet has not gained traction.

The e-rupee in circulation fell by about 24% to Rs 771.7 crore in the year to March 2026, even as the Reserve Bank expanded its pilots.³⁵ Retail usage, which briefly touched one million daily transactions in December 2023, has fallen back to roughly 100,000, sustained mainly where banks disburse salaries in e-rupee or where welfare beneficiaries have no alternative.³⁶³⁷ The wholesale layer offers little more: the e-rupee shown in circulation is almost entirely retail, because the wholesale digital rupee used for interbank settlement is redeemed by participating institutions at the close of each day and leaves no standing balance.³⁸

India's preferred sovereign instrument, in other words, is contracting rather than scaling, which is a fact the case for public alternatives should neither overstate nor ignore. This has not dimmed the Reserve Bank's ambition abroad, where it is pressing the same sovereign approach: it has proposed linking the central-bank digital currencies of the BRICS group to lower cross-border costs, and has sought to place the idea on the agenda of the 2026 BRICS summit that India hosts, though the proposal remains at the discussion stage.³⁹

³³ Telangana Today. (2026). *RBI expands CBDC pilots into subsidy schemes and tokenised financial markets.*

<https://telanganatoday.com/rbi-expands-cbdc-pilots-into-subsidy-schemes-and-tokenised-financial-markets>

³⁴ Ledger Insights. (2026, August). *India's SEBI plans tokenization, DLT pilots for corporate bonds.*

<https://www.ledgerinsights.com/indias-sebi-plans-tokenization-dlt-pilots-for-corporate-bonds/>

³⁵ Business Upturn. (2026). *Digital rupee in circulation falls 24% to Rs 771.7 crore even as RBI expands CBDC pilots.*

<https://www.businessupturn.com/sectors/banking/digital-rupee-in-circulation-falls-24-to-rs-771-7-crore-even-as-rbi-expands-cbdc-pilots>

³⁶ CoinDesk. (2026, April 24). *India pushes digital rupee through welfare pilots as BRICS CBDC plan takes shape.*

<https://www.coindesk.com/policy/2026/04/24/india-pushes-digital-rupee-through-welfare-pilots-as-brics-cbdc-plan-takes-shape>

³⁷ CoinGeek. (2026). *India retail CBDC usage drops amid growing UPI popularity.*

<https://coingeek.com/india-retail-cbdc-usage-drops-amid-growing-upi-popularity/>

³⁸ Reserve Bank of India. (2026). *Currency circulation data.*

https://www.rbi.org.in/Scripts/BS_CurrencyCirculationDetails.aspx

³⁹ Electronic Payments International. (2026, August 12). *BRICS is weighing payment system and CBDC links, RBI Governor*

says. <https://www.electronicpaymentsinternational.com/news/brics-is-weighing-payment-system-and-cbdc-links-rbi-governor-says/>

4.3 Tokenisation: real progress, along controlled lines

India's tokenisation market has moved from concept into live and imminent pilots, though almost entirely along controlled, permissioned, or ring-fenced lines. The starting point is a stock of closed digital-title systems, including depository-held securities, Electronic Gold Receipts, and electronic negotiable warehouse receipts, which record digital ownership but do not open assets to secondary markets.⁴⁰

Beyond these, in March 2024 the Securities and Exchange Board of India (SEBI) created Small and Medium REITs, bringing fractional-ownership platforms inside the regulatory perimeter with mandatory listing for liquidity.^{41,42} In the securities markets, SEBI has moved from plan to execution. On 7 September 2026, the state-owned lender REC completed India's first tokenised corporate bond, raising Rs 500 crore on a permissioned distributed ledger under SEBI's regulatory sandbox, with same-day allotment and atomic delivery-versus-payment settled in central-bank digital currency; the issue drew bids of about Rs 796 crore, close to eight times its base size.⁴³ Its design, however, marks its limits: participation was confined to institutional investors, and it ran on a permissioned ledger rather than an open one, as part of a broader "Demat 2.0" effort to modernise settlement within the existing perimeter.

The GIFT City sandbox has authorised real-estate tokenisation ventures reported at around USD 50 million,^{44,45} and a first dedicated legislative proposal, the Asset Tokenisation (Regulation) Bill, 2026, was introduced as a Private Member's Bill in

⁴⁰ International Financial Services Centres Authority. (2025, February 26). *Regulatory approach towards tokenization of real-world assets* [Consultation paper]. <https://ifsc.gov.in/Document/ReportandPublication/ifsc-consultation-paper-on-regulatory-approach-towards-tokenization-of-real-world-assets03032025111644.pdf>

⁴¹ Acuity Law. (2024, September 26). *Regulatory update: SEBI amends REIT Regulations to address fractional ownership in real estate assets*. <https://acuitylaw.co.in/regulatory-update-sebi-amends-reit-regulations-to-address-fractional-ownership-in-real-estate-assets/>

⁴² Business Standard. (2024, July 2). *Crisil explains how small, medium REITs will broaden realty investor base*. https://www.business-standard.com/finance/personal-finance/crisil-explains-how-small-medium-reits-will-broaden-realty-investor-base-124070200441_1.html

⁴³ Business Standard. (2026, September 8). *REC's tokenised bond pilot: What blockchain adds to the corporate debt market*. https://www.business-standard.com/markets/news/india-s-first-tokenised-bond-what-changes-when-debt-moves-to-blockchain-126090800162_1.html

⁴⁴ Central Banking. (2024, November 1). *BIS to hand over Project mBridge to central banks*. <https://www.centralbanking.com/fintech/cbdc/7962626/bis-to-hand-over-project-mbridge-to-central-banks>

⁴⁵ Atlantic Council. (2026). *Central Bank Digital Currency Tracker*. <https://www.atlanticcouncil.org/cbdctracker/>

March 2026, though as such it is a marker of intent rather than likely law.⁴⁶⁴⁷ State governments are moving too: the Maharashtra government announced a draft DELTA Act (the Maharashtra Digitisation and Exchange of Land Token Asset Act) to create a legal framework for the blockchain-based tokenisation of land and other immovable property, although it remains a draft under committee review, with no tokens yet issued. Taken together, this is a tokenisation agenda advancing in earnest, but along sovereign and ring-fenced lines rather than open ones.⁴⁸

Taken together, this is a tokenisation agenda advancing in earnest, but along sovereign and ring-fenced lines rather than open ones.

4.4 A regulatory posture built on control

Underlying all of this is a consideration the case must take seriously: India's approach to open-network finance has been shaped by a strong preference for control. Since 2022, virtual digital assets have carried a flat 30% tax, a 1% tax deducted at source on each transfer, and, from 2025, a goods-and-services tax on platform fees, taking the effective burden above 49%.⁴⁹ Every virtual-asset service provider serving Indian users must register with the Financial Intelligence Unit and observe anti-money-laundering and Travel Rule obligations, and the state has in the past used control of banking access to cut the sector off entirely, a prohibition the Supreme Court overturned in 2020.⁵⁰⁵¹

This posture is rational from a sovereignty standpoint, but it has a cost the case will return to: the punitive tax regime did not remove public-chain activity so much as move it offshore. The report on the taxation of digital assets by the TIOL Tax Knowledge Foundation, drawing on research by the Esya Centre, estimates that roughly 90% of Indian virtual-digital-asset trading now takes place on offshore platforms, and that

⁴⁶ PKM Advisory. (2026). *Tokenising real-world assets in GIFT IFSC: What the regulatory perimeter actually allows*. <https://www.pkmadvisory.com/tokenising-real-world-assets-in-gift-ifsc-what-the-regulatory-perimeter-actually-allows/>

⁴⁷ Cyril Amarchand Mangaldas. (2026, March 26). *FIG paper no. 55 (VDA series 10): India's first Asset Tokenisation Bill — what it means for the digital assets space*. India Corporate Law. <https://corporate.cyrilamarchandblogs.com/2026/03/fig-paper-no-55-vda-series-10-indias-first-asset-tokenisation-bill-what-it-means-for-the-digital-assets-space/>

⁴⁸ Business Standard. (2026, September 9). *Maharashtra to soon bring DELTA Act to tokenise immovable properties*. https://www.business-standard.com/india-news/maharashtra-to-soon-bring-delta-act-to-tokenise-immovable-properties-126090901232_1.html

⁴⁹ AInvest. (2026, February 2). *India's evolving crypto tax regime and its impact on onshore liquidity and investor behavior*. <https://www.ainvest.com/news/india-evolving-crypto-tax-regime-impact-onshore-liquidity-investor-behavior-2602/>

⁵⁰ KYC Hub. (2026). *Crypto AML India: FIU-IND & PMLA rules*. <https://www.kychub.com/blog/cryptocurrency-regulations-in-india>

⁵¹ FinancialContent. (2025, November 7). *India's crypto conundrum: Taxation without regulation stifles innovation and drives billions offshore*. <https://markets.financialcontent.com/stocks/article/breakingcrypto-2025-11-7-indias-crypto-conundrum-taxation-without-regulation-stifles-innovation-and-drives-billions-offshore>

more than Rs 11,000 crore in tax deducted at source has gone uncollected since 2022 as a result.⁵² For India, the binding constraint on public-chain finance is often not whether it works, but whether the regulator will permit it.

For India, the binding constraint on public-chain finance is often not whether it works, but whether the regulator will permit it.

⁵² TIOL Tax Knowledge Foundation. (2025, November). Taxation of digital assets in India. Tax India Online. <https://admin.taxindiaonline.com/UploadedFiles/PDFBlob/Taxation%20of%20Digital%20Assets%20in%20India%20Index.pdf>

5. The distinctive value of public blockchains

We can now state the case directly. A public blockchain offers three properties that a centralised system, however well run, cannot provide, and a fourth that follows from them. The strength of the case for any given financial function depends on how much that function needs these properties.

5.1 A neutral venue that no single party controls

The first property is **disintermediation**, understood not as the removal of all intermediaries but as the creation of a neutral venue. On a public chain, the ledger is maintained by many participants who need not trust one another, and no single operator can alter the record, block a participant, or set the terms of access. This matters most where a trusted common operator does not exist or would be costly to establish, which is precisely the condition under which the economic analysis of ledger governance finds decentralised validation to be optimal.⁵³

Within a single country that has a competent central bank and a national payments operator, this property is worth little, which is one reason the case for public chains in domestic payments is weak. Across borders, where there is no shared operator and no single jurisdiction that all parties accept, a neutral venue is genuinely valuable. It is telling that even a central-bank project built on a permissioned ledger, such as Korea's Project Hangang, locates the value of the ledger not in removing the trusted operator but in the capabilities the shared record brings, and observes that the case for decentralisation is strongest where trust is limited and reliance on a central party is impractical.^{54,55} That is precisely the cross-border condition.

5.2 Composability, the source of open markets

The second property is **composability**, and it is the heart of the case. On an open network, assets and applications built independently by different parties can operate on the same shared state, so that a token issued by one party can be traded on a venue built by a second and used as collateral by a third, without any of them having to negotiate a bilateral connection. This is what turns a static digital record of ownership into a liquid, tradable, reusable instrument.

⁵³ Auer, R., Monnet, C., & Shin, H. S. (2025). Distributed ledgers and the governance of money. *Journal of Financial Economics*, 167, 104026.

⁵⁴ Ryu, J., Shin, H. S., Sung, J., & Yun, S. G. (2026). *A unified ledger in practice: Lessons from Project Hangang* [Paper prepared for the ECB Forum on Central Banking 2026]. Bank of Korea.

⁵⁵ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

It is also what distinguishes tokenisation from mere digitisation. India already digitises title through its depositories and registries, but those records sit in closed systems and cannot be freely combined. The evidence that composability is the source of value is visible in the products that have scaled: BUIDL is valuable not only because it is tokenised but because it can be moved across venues and posted as collateral, which a walled ledger could not permit.⁵⁶⁵⁷ Where the goal of tokenising an asset is to create a deep, liquid market for it, composability is not one benefit among several. It is the benefit, and it is available only on an open or interoperable network.

5.3 Open, global, many-to-many reach

The third property is **reach**. A public network is open to any participant, anywhere, without a separate agreement for each new entrant or each new border. It is, in the language of networks, **many-to-many by construction**. The sovereign alternatives for cross-border value transfer do not share this property. Each central-bank digital currency corridor is a bespoke arrangement that must be negotiated between the participating central banks, and the flagship multi-currency corridor, mBridge, reached only a minimum-viable-product stage before the Bank for International Settlements stepped back from it in late 2024; India is not a founding participant. India's UPI linkages abroad are likewise negotiated one country at a time, though the pace has picked up: UPI is now accepted in eleven countries, with a cross-border remittance corridor to the Maldives going live in mid-2026.⁵⁸⁵⁹ A public chain reaches every counterparty on the network at once, which is why the cross-border settlement of tokenised assets has been demonstrated on public rails in seconds rather than days.⁶⁰⁶¹ Reach of this kind is most valuable exactly where the sovereign route is slowest to build, which is across borders.

⁵⁶ MetaMask. (2026). *Real-world asset tokens: What crypto wallet users need to know in 2026*.

<https://metamask.io/news/real-world-asset-tokens-what-crypto-wallet-users-need-to-know-in-2026>

⁵⁷ Everstake. (2026). *Blockchain-based funds: Tokenized money market index*.

<https://everstake.one/resources/blog/blockchain-based-funds-tokenized-money-market-index>

⁵⁸ India Fintech. (2025, May 20). Cross-border payments in India: A comprehensive narrative, industry insights, funding landscape, and future outlook (Episode 50).

<https://indiafintech.substack.com/p/cross-border-payments-in-india-a>

⁵⁹ Press Information Bureau. (2026, August 24). UPI: Transforming India's payment landscape [Backgrounder]. Government of India. <https://www.pib.gov.in/FactsheetDetails.aspx?id=150962>

⁶⁰ Ondo Finance. (2026, May 6). Ondo, Kinexys by J.P. Morgan, Mastercard, and Ripple complete first cross-border, cross-bank redemption of tokenized U.S. Treasuries [Press release]. PR Newswire.

<https://www.prnewswire.com/news-releases/ondo-kinexys-by-jp-morgan-mastercard-and-ripple-complete-first-cross-border-cross-bank-redemption-of-tokenized-us-treasuries-302764324.html>

⁶¹ CoinDesk. (2026, May 7). Ripple, JPMorgan settle first cross-border tokenized Treasury redemption on XRP Ledger.

<https://www.coindesk.com/markets/2026/05/07/ripple-jpmorgan-settle-first-cross-border-tokenized-treasury-redemption-on-xrp-ledger>

India is not a participant.⁶²⁶³

One feature of this global market must be named plainly, because it shapes the objection that Section 6.4 turns on. The tokenised assets that dominate public chains today are overwhelmingly denominated in United States dollars, and tokenised US Treasuries are their single largest component. “Global tokenisation on public chains”, in other words, means in practice something closer to dollar-asset tokenisation. For an Indian policymaker this is the crux: the very openness that makes these markets deep and liquid also makes them a ready channel for dollar-denominated assets, which is precisely the concern on which the monetary-sovereignty objection rests.

5.4 Credible neutrality

These three properties combine into a fourth, which is **credible neutrality**: the assurance that the rules of the network apply equally to all and cannot be changed to favour one participant over another. Because no single party governs a public chain, none can quietly rewrite the terms, exclude a competitor, or extract a toll once others have committed to the network. For infrastructure that many parties must share, this assurance has value in itself, independent of any single transaction. It is the same property that has made open protocols, rather than proprietary networks, the foundation of the internet. In finance, it is what allows participants who compete with one another, and who may sit in different jurisdictions, to rely on a common venue without ceding advantage to whoever operates it.

Taken together, these properties explain the pattern in the evidence. The case for public blockchains is strongest for tokenisation, where composability is the entire source of value, and for cross-border payments and settlement, where neutral reach is worth most. It is weakest for domestic retail payments, where a trusted operator already exists and none of these properties is needed. The case, in short, is not that public chains are always better, but that they are distinctively suited to the functions in which openness is itself the point.

⁶² Central Banking. (2024, November 1). *BIS to hand over Project mBridge to central banks*.

<https://www.centralbanking.com/fintech/cbdc/7962626/bis-to-hand-over-project-mbridge-to-central-banks>

⁶³ Atlantic Council. (2026). *Central Bank Digital Currency Tracker*. <https://www.atlanticcouncil.org/cbdctracker/>

6. The limits the case must meet

A case that ignored its strongest objections would not be worth making. This section sets out the four most serious limitations. The purpose is not to concede the case but to bound it, and in bounding it, to locate more precisely where public blockchains belong.

6.1 Open networks fragment as they grow

The first objection is **fragmentation**. The Bank for International Settlements has argued that the same openness that gives public chains their value also drives them apart. Because the choices a network makes about how to reach agreement among its validators involve trade-offs between decentralisation, security, and speed, no single network suits every need, and many networks arise instead of one.⁶⁴

Activity and liquidity then splinter across these networks, which dilutes the very network effects that give an open system its worth. The tools built to reconnect them, such as bridges that move value between chains, introduce new points of failure; one such bridge, the Ronin Network, lost about USD 625 million to a hack in 2022.⁶⁵ This is a real qualification to the composability benefit of Section 5. Composability is powerful within a network, but across the fragmented landscape of public chains it is incomplete, and the mechanisms that complete it carry risks of their own.

6.2 Maintaining trust without a central operator is costly

The second objection is deeper, and concerns the **economics of trust**. A public chain must reward the validators who maintain its ledger, and it must reward them enough to make honest behaviour worthwhile even though they do not know or trust one another. Recent economic work has shown that this cost is structural rather than incidental. The stronger the guarantee of agreement a network seeks, the higher the rewards it must pay its validators, and because those rewards are funded by user fees, an open ledger depends on a degree of congestion to generate them.⁶⁶

More striking still, the cost of this trust does not fall as the system grows. It scales in proportion to the value the network secures, so that a blockchain would become more expensive to run, not less, precisely as it became more economically important; were

⁶⁴ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

⁶⁵ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

⁶⁶ Shin, H. S. (2026). *Tokenomics and blockchain fragmentation* (BIS Working Paper No. 1335). Bank for International Settlements.

permissionless consensus to secure a large share of the financial system, the recurring cost of maintaining its security could become implausibly large.⁶⁷

Two consequences follow. Capacity is constrained, which pushes price-sensitive users onto newer networks and feeds the fragmentation described above. And where networks pursue high throughput, they tend to do so by narrowing the set of validators or raising the cost of participation, which concentrates control and moves the network back toward the permissioned model it set out to avoid.⁶⁸ The lesson is not that public chains cannot scale, but that scale and genuine decentralisation are in tension, and that a public chain fast enough for mass payments may be considerably less open than it first appears.

6.3 For large sums, central-bank money preserves a quality private tokens cannot

The third objection concerns the **settlement asset**, and it is the strongest argument against public chains in the settlement function. When money is transferred, it matters that a rupee always equals a rupee, whoever is holding it and whichever bank issued it. This property, the singleness of money, is preserved when settlement is made in central-bank money. A private stablecoin cannot guarantee it, because the value of the token depends on the issuer's credit and liquidity and can drift from par.⁶⁹

For small everyday payments this drift is tolerable, but for the settlement of large obligations, such as the purchase of government bonds, an instrument that trades at a small and variable discount cannot discharge a precisely specified debt.⁷⁰ This is why the sovereign unified-ledger projects settle in tokenised central-bank money rather than in stablecoins, and it is a genuine limit on the public-chain model: for high-value settlement, the openness of a public network does not substitute for the quality of the settlement asset, and central-bank money remains superior. The finality of settlement is a related matter, though a more balanced one, since the Basel Committee notes that finality is probabilistic in permissioned and traditional systems as well, not only on public chains.⁷¹

⁶⁷ Budish, E. (2025). Trust at scale: The economic limits of cryptocurrencies and blockchains. *Quarterly Journal of Economics*, 140(1), 1–62. <https://doi.org/10.1093/qje/qjae033>

⁶⁸ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

⁶⁹ Garratt, R., & Shin, H. S. (2023). *Stablecoins versus tokenised deposits: Implications for the singleness of money* (BIS Bulletin No. 73). Bank for International Settlements. <https://www.bis.org/publ/bisbull73.pdf>

⁷⁰ Ryu, J., Shin, H. S., Sung, J., & Yun, S. G. (2026). *A unified ledger in practice: Lessons from Project Hangang* [Paper prepared for the ECB Forum on Central Banking 2026]. Bank of Korea.

⁷¹ Basel Committee on Banking Supervision. (2024). *Novel risks, mitigants and uncertainties with permissionless distributed ledger technologies* (Working Paper No. 44). Bank for International Settlements. <https://www.bis.org/bcbps/publ/wp44.pdf>

6.4 Monetary sovereignty sets a binding political limit

The fourth objection is not technical but political, and in India it is decisive. Open, dollar-denominated stablecoin rails are, from the standpoint of a country that manages its capital account, a channel for dollarisation and capital flight. A regulator responsible for monetary sovereignty has a legitimate reason to resist ceding control of cross-border value flows to a network it does not govern, and, as Section 4 showed, India has both the preference and the enforceable tools to act on that reason.⁷²⁷³

This limit is independent of whether the sovereign alternatives succeed. Even a contracting e-rupee does not make open dollar rails safe under capital controls. The implication is that the strong cross-border case of Section 5 meets, at India's border, a constraint that is not about technology at all, and that the binding question is how much control the state is willing to trade for the efficiency and reach that open networks provide.

6.5 Operational, privacy, and consumer-protection limits

Three further limits are less fundamental but bear directly on any Indian deployment. The first is operational. Public-chain applications depend on smart contracts and on oracles, the services that feed external data onto the chain, and both are points of failure: a flaw in a contract's code or a compromised data feed can be exploited irreversibly, as the record of large contract and bridge exploits attests.⁷⁴

The second is privacy. A public ledger is transparent by default, which sits awkwardly with India's Digital Personal Data Protection Act and with the Reserve Bank's data-localisation requirements; reconciling an open, and often offshore, transaction record with those obligations is unresolved, and the privacy technologies that might do so remain immature.

The third is consumer protection. On a public chain there is ordinarily no chargeback, no reversal of a mistaken or fraudulent transfer, and no recovery from the loss of a private key. This bears most heavily on retail users, and it reinforces, from the consumer's side, the conclusion reached elsewhere in this paper: everyday retail payments are the weakest case for public chains, precisely where UPI's established reversal and grievance-redress mechanisms are a genuine advantage.

⁷² AInvest. (2026, February 2). *India's evolving crypto tax regime and its impact on onshore liquidity and investor behavior*. <https://www.ainvest.com/news/india-evolving-crypto-tax-regime-impact-onshore-liquidity-investor-behavior-2602/>

⁷³ KYC Hub. (2026). *Crypto AML India: FIU-IND & PMLA rules*. <https://www.kychub.com/blog/cryptocurrency-regulations-in-india>

⁷⁴ Eidan, D., Frost, J., Kansal, R., Lewrick, U., Lim, S. H., & Rybarczyk, T. (2026). *Blockchain consensus mechanisms and fragmentation* (BIS Bulletin No. 126). Bank for International Settlements. <https://www.bis.org/publ/bisbull126.pdf>

Read together, these four limits do not defeat the case. They bound it. Fragmentation and the cost of consensus qualify the composability and reach that public chains offer, without removing them. The singleness of money marks out high-value settlement as the province of central-bank money. And monetary sovereignty sets a political limit on open cross-border rails. What remains, after these limits are drawn, is a clear and defensible core: **public blockchains add the most where composability creates markets that did not exist before, and where neutral reach connects parties that no single operator serves.**

7. Conclusion

The question this paper set out to answer was not whether public blockchains work, but what they distinctively add to a financial system, and where. The answer is that they add three things a centralised system cannot: **a neutral venue**, the **ability to combine assets and applications freely**, and **open reach across participants and borders**. Where a financial function needs these properties, the case is strong. Where it does not, the case is weak.

That test gives a clear ranking. The case is **strongest for tokenisation**, because composability is the whole source of a tokenised asset's value, and India's controlled, ring-fenced approach captures the digitisation of ownership while forgoing the open markets that are the point. It is real but contested for cross-border payments and settlement, where the reach of an open network answers a genuine friction, but meets a legitimate concern for monetary sovereignty at the border. It is weakest for domestic retail payments, where UPI already provides what a public chain would offer.

The objections are serious and this paper has met them squarely. Open networks fragment, trustless consensus is costly and tends to reconcentrate control, and for large sums central-bank money preserves a singleness that private tokens cannot. These are limits, not refutations, and they point to the same conclusion the positive case does: public blockchains are a complement to India's financial infrastructure, not a replacement for it, and they earn their place in the functions where openness itself creates value.

For India, the practical implication follows from its own situation. The country has built excellent centralised infrastructure and has a strong, well-founded preference for control. The pragmatic path is therefore not open adoption, nor prohibition, but the permission of public-chain use within controlled settings, of which GIFT City is the working prototype: an environment in which the state can capture the composability and reach that open networks provide, in the functions that need them, while retaining the oversight it is unwilling to give up. In the terms of the spectrum set out at the start of this paper (Figure 2), this is a settling-point in the middle rather than at either pole. The public-permissioned hybrid, which weds an open network to a compliance layer, is where the argument of this paper comes to rest: it is the configuration that has scaled globally, and the one most compatible with India's insistence on control. The choice India faces is, in the end, less about technology than about how much openness it is prepared to allow in exchange for the markets that openness builds.

