ANNEX 3: INDIA

Digital Public Infrastructure as Competition Policy

This Annex is part of the CGAP Focus Note 'Advancing Competition for Financial Inclusion: Six Policy Considerations for Financial Authorities' published May 2026.

At any hour of the day, Indians are sending and receiving money in real time at volumes unmatched anywhere else. India's Unified Payments Interface (UPI) now processes more than 130 billion transactions a year, accounting for nearly half of all real-time retail payment transactions worldwide (NPCI 2024; Ministry of Finance 2025). These are small, routine payments for wages, food, transport, rent, and remittances rather than occasional or high-value transfers. Digital payments have become a normal part of daily life across the country, cutting across age, gender, income levels, and regions, with more than 500 million unique users—roughly half of India's adult population (BCG 2024). A decade ago, such widespread use would have seemed unlikely in a country still shaped by cash and informality. Rapid gains in financial access alone do not explain how payments moved so quickly from the margins to the mainstream (Demirgüç-Kunt et al. 2025).

What sets India apart is how its financial regulators organized market infrastructure to widen access and support competition. Digital identity came first, sharply reducing the cost of bringing new customers into the formal system. Payments followed, built as shared public infrastructure: a single interoperable network open to all licensed banks and payment providers, and free for users, rather than markets forming around private platforms. Data-sharing frameworks came later, setting rules for how financial information could move, with consent, across institutions. Each layer was treated as something all providers could use, not something any one of them could own or control. Competition unfolded in how firms served customers on top of common rails, not through control of the rails themselves. The Digital Public Infrastructure (DPI)-led approach reshaped where and how competition emerged in retail finance, and why its effects were powerful in some areas and limited in others.

Before the Rails Came: Early Years of Retail Finance

The digitization and modernization of India's financial sector began around the turn of the millennium, building on decades of policy intervention since independence (Mohan and Ray 2017). Twenty-five years ago, India was an informal, cash-based economy. The formal banking sector was dominated by public sector banks, holding nearly 80 percent of banking assets (RBI 2009). Physical access was limited, with one bank branch for every 16,000 people and only about one in three adults holding an

account (Demirgüç-Kunt and Klapper 2013). For most households and small firms, especially in rural areas and relating to informal work, cash was the default for daily transactions. Credit access was narrower, still. More than 80 percent of rural borrowing came from informal lenders, while fewer than one in five rural borrowers relied on institutional credit (NSSO 2005). Even where accounts existed, usage was thin: as accounts were often opened to receive wages or government transfers and then quickly cashed out (Demirgüç-Kunt et al. 2015).

Earlier policy responses reflected this structure. Financial inclusion was pursued through mandates imposed on incumbent banks rather than through competition that might encourage new and more efficient providers (CGAP 2009). Regulators relied on branch expansion requirements and priority lending targets for sectors such as agriculture, small businesses, housing, education, and exports. To lower barriers for low-income customers, the Central Bank introduced basic accounts and permitted new delivery channels, including banking agents; however, banks had limited incentives to promote these accounts actively and uptake was low (RBI 2005). Microfinance institutions and nonbank lenders expanded quickly, becoming a lifeline for many low-income households. Their growth, however, was uneven, marked by gaps in oversight, multiple lending, rising indebtedness, weak borrower protection, and unsustainable funding models. These conditions culminated in repeated crisis episodes, political intervention, and a sharp contraction in credit (Malegam Committee 2011). Over time, regulators introduced differentiated licenses, including for small finance banks and payments banks, and applied tiered prudential norms to widen participation across institutions (RBI 2014). Collectively, these measures expanded the availability of accounts and providers, but they did not lead to regular adoption or use by most households. Paper-based identification, in-person verification, and fragmented payment systems kept costs high and interoperability weak, ill-suited for small, frequent transactions.

Against this backdrop, two major developments reshaped access. First, the introduction of Aadhaar in 2009 created a universal biometric ID system, enabling individuals to verify their identity remotely, instantly, and at low cost. The system was supported by shared utilities including the Central KYC (CKYC) registry that reduced duplication in onboarding across institutions (GovIndia 2016; RBI 2016). Second, the Jan Dhan Yojana, launched in 2014, directed public sector banks to open (a) basic accounts for every household, with no minimum balance requirements; (b) a debit card on India's domestic RuPay network; and (c) accident insurance cover, linking these accounts to Aadhaar to channel social transfers directly to beneficiaries (Ministry of Finance 2016). Over 500 million accounts were opened, with coverage reaching nearly every household by the end of the decade (Ministry of Finance 2023). Together, these initiatives removed long-standing barriers to formal access. For the first time, most Indians had not only a verifiable ID but also a functional bank account; however, widespread use still lagged. Over a third of accounts remained inactive and most daily transactions continued in cash (Demirgüç-Kunt et al. 2025; Ministry of Finance 2023). The inclusion challenge had shifted from access to use.

Building the Rails for Everyday Use

Payments proved to be the hinge on which India’s financial inclusion challenge turned. Existing retail payment options were fragmented across bank transfers, card networks, and closed-loop wallets.

Many of them were costly or impractical for low-value, high-frequency transactions, leaving cash dominant, despite rising account ownership.

UPI was launched in 2016 to organize retail payments as shared public infrastructure rather than through competing private networks. It enabled real-time, account-to-account payments and connected all participating banks and payment service providers on a single interoperable layer (RBI 2017; Cornelli et al. 2024). It was conceived by the Reserve Bank of India (RBI) and built and operated by the National Payments Corporation of India (NPCI), a nonprofit entity owned by RBI and the Indian Banks' Association. It facilitates instant transfers using simplified identifiers, including virtual payment addresses, phone numbers, or QR codes; it also supports person-to-person, person-to-merchant, bill payments, and recurring mandates. Banks participate directly, while nonbank payment apps operate as authorized third-party application providers through sponsor banks, contracted bilaterally on a commercial basis and allowing broad entry without control over settlement or liquidity. The system operates continuously, works on low-end smartphones, and is free for users, with merchant discount rates set by the government at zero for most small-value transactions (Ministry of Finance 2025). At the time of its launch, few jurisdictions had implemented fast payment systems with mandatory interoperability, open access for nonbank providers, and zero pricing at national scale, placing India among early global adopters of a public-utility approach to retail payments (Cornelli et al. 2024; Frost et al. 2024).

Several design choices were made to support inclusion and create the conditions for contestability at scale. Participation by large banks was effectively mandatory, ensuring immediate reach and preventing fragmentation. Interoperability was forced rather than voluntary, so any user on one UPI-enabled app could transact seamlessly with users of any other app or bank. Standardized APIs and protocols, reinforced by regulatory mandates including the RBI's requirement for interoperable QR codes, removed proprietary formats as a source of advantage (RBI 2020). Pricing was suppressed at the infrastructure layer through zero user fees and zero merchant discount rates, supported by public incentives rather than cost recovery.

Adoption was initially modest. Many banks viewed UPI as a threat to their proprietary digital channels and had limited incentives to actively promote it, and transaction volumes remained low in the first year after launch (RBI 2017). Uptake accelerated sharply following two external shocks. In November 2016, the Government of India announced demonetization, withdrawing high-denomination currency notes and representing approximately 86 percent of currency in circulation. Although it was a deeply contested measure—in the short term at least—it created a sudden economy-wide demand for noncash payment alternatives, with UPI—launched only months earlier—well positioned to absorb the shift (GovIndia 2016; RBI 2017). Usage further surged during the COVID-19 pandemic, reinforcing earlier shifts as lockdowns and public health concerns increased demand for remote and contactless transactions and accelerated the expansion of routine digital payments (Klapper et al. 2022; Cornelli et al. 2024).

Trade-Offs of Open Access

In democratizing access to payments infrastructure through open, low-cost, and interoperable rails, UPI removed control over proprietary infrastructure as a source of advantage and reoriented competition toward the application layer. Banks and nonbank firms competed on identical terms, lowering switching costs and expanding choice for consumers and merchants, while shifting rivalry away from ownership of payment networks and toward customer-facing services. This contestable environment supported rapid entry and experimentation, contributing to the emergence of one of the world's largest fintech ecosystems, with more than 10,000 firms operating across payments, merchant services, lending, and embedded finance, and a combined market value exceeding US$90 billion (EY 2025). Adoption followed at scale. By the first half of 2025, nearly all payments in India were digital in terms of volume and value, reflecting how a shared, interoperable payments rail became the default channel for everyday use (RBI 2025a; RBI 2025b; Cook and Raman 2019; Cornelli et al. 2024).

However, these gains were accompanied by trade-offs that flowed directly from how the payments layer was organized. By design, UPI consolidated high-frequency retail payments onto a single, shared rail. While this eliminated fragmentation and accelerated network-wide adoption, it concentrated transaction volumes and operational dependence within one system. By 2025, UPI accounted for roughly 85 percent of all digital payment transactions by volume, even as it represented a much smaller share of transaction value, reflecting its dominance over low-value high frequency transactions (RBI 2025a; Cornelli et al. 2024). At this scale, concentration carried governance implications. Influence overrule-setting and system design rested primarily with banks and regulated institutions through NPCI's governance structure, while nonbank providers had broad access but limited formal voice in the evolution of the core infrastructure (Cook and Raman 2019; Cornelli et al. 2024). NPCI has introduced rule-based measures, including a 30-percent transaction-share cap for third-party apps, to manage provider-level concentration, although enforcement has been deferred to December 2026 (Alex 2025; Kalra 2024). Even with such checks, the prevailing governance framework prioritizes scale and system stability, while competition is confined to services built on top of the shared rail.

Pricing created a second set of competition implications. Zero pricing for person-to-person and merchant payments removed cost barriers for consumers, but it displaced cost recovery away from the point of use and toward cross-subsidization by the government and ecosystem participants. This raised questions around long-term sustainability (Ministry of Finance 2025). Banks, payment service providers, and fintech firms bear the ongoing costs of UPI's infrastructure, cybersecurity, compliance, and fraud management, while facing limited ability to earn direct revenue from payment transactions. As a result, competition has centered on customer acquisition and scale rather than on pricing or product differentiation, with firms seeking to maximize transaction volumes to spread fixed costs and secure strategic positions in the ecosystem. Consequently, innovation and investment have concentrated on payments, onboarding, and transaction facilitation, while fewer providers have expanded meaningfully into savings, credit, or insurance—activities that require underwriting, capital commitment, and long-term risk management, and are central to deepening financial inclusion (EY 2025; Cornelli et al. 2024). To date, the impact of India's DPI approach has been most visible in payments, where shared infrastructure directly reduced barriers, spurred innovation, and accelerated

adoption. Whether similar dynamics extend to other financial services will depend on the evolution of complementary data-sharing frameworks, credit markets, and regulatory regimes.

A third trade-off emerged around consumer protection as digital payments scaled rapidly. As UPI volumes expanded, consumer risks, including fraud, phishing, and social engineering, increased, with more than 1.3 million cyber fraud cases reported in 2024 and survey evidence indicating that roughly one in five households had experienced or narrowly avoided payment-related fraud (Mukherjee 2025; Shukla 2025). This does not reflect the absence of consumer protection mechanisms, but rather how they were structured: safeguards were largely embedded as ex post institutional processes rather than as ex ante features of the payment rail itself. UPI was designed to prioritize instant settlement, interoperability, and near-zero cost, which limited transaction reversibility, standardized chargebacks, and insurance-backed protections. In practice, transactions are final once executed; liability in fraud cases often hinges on whether payments are classified as authorized; and redress remains fragmented across banks, payment service providers, and other institutions, with reimbursement outcomes uneven. These gaps are not technical constraints inherent to real-time payments themselves, rather, they reflect policy and design choices. Fast payment systems enable funds to be moved quickly in ways that are often difficult to track, which criminal actors exploit, while consumer harm is shaped by whether transactions can be paused or reversed, how liability is assigned in cases of deception, and whether redress is timely and predictable. In India, design choices prioritized efficiency and scale, increasing the importance of clear liability, effective redress, and trust frameworks as adoption deepens.

Beyond Payments: Data, Credit, and the Next Phase of DPI

India's version of open finance, the Account Aggregator (AA) framework, extends the DPI logic of shared infrastructure from payments to financial data by enabling consent-based, standardized sharing of customer information across institutions. Rather than creating new databases, AA separates data access from data use: individuals authorize licensed Account Aggregators to transmit specific categories of financial information, including bank accounts, investments, and tax data, from regulated data holders to data users for defined purposes and durations (RBI 2021). Designed and overseen by the Reserve Bank of India, the framework combines public rule-setting with private participation and with multiple licensed AA entities operating under common technical and governance standards. From a competition perspective, AA is intended to reduce information asymmetries that historically favored incumbents with proprietary data. It enabled multiple providers to assess the same customer on comparable terms and shifted rivalry toward underwriting, product design, and customer outcomes rather than preferential access to data while potentially lowering comparison and switching costs for consumers. In principle, this creates conditions for competition in credit, savings, and other financial products that depend on risk assessment rather than transaction volume alone (Kumaraswamy and Salman 2025).

Adoption has accelerated rapidly, but its effects on credit access, pricing, and longer-term financial use are still emerging (Salman, Fernandez Vidal, and Paikine 2024). By late 2025, the ecosystem comprised 16 licensed AAs, more than 780 participating financial institutions, and data linked for over 112 million users, covering more than 2.1 billion financial accounts. Consent volumes have risen sharply,

averaging around 284,000 per day in FY25 as adoption expanded (Sahamati 2025a; Sahamati 2025b; Kundu 2025). Lending remains the dominant use case, reflecting strong demand for faster and more convenient credit assessment. At the same time, applications have broadened to include personal finance management, wealth aggregation, and insurance, with the AA ecosystem facilitating an estimated Re 1.6 trillion (approximately US$20 billion) in loans during 2025 (Sahamati 2025b). While AA makes data access easier, its impact on competition and downstream outcomes depends on factors beyond the data rail itself, including lender risk appetite, balance-sheet capacity, consumer protection, and supervisory coordination (Cornelli et al. 2024; Frost et al. 2024).

Beyond payments and data sharing, India has begun extending the DPI approach into e-commerce and credit through initiatives that include the Open Network for Digital Commerce and the Open Credit Enablement Network. On the one hand, the former network is an open, interoperable one, promoted by the Government of India to reorganize digital commerce around common protocols rather than vertically integrated marketplaces. This allows buyers, sellers, logistics providers, and applications to connect and transact across applications without being tied to a single platform (e.g., enabling a small merchant using one app to be discovered by customers on another and fulfilled by a choice of logistics providers) (ONDC 2023; Ministry of Commerce and Industry 2024). By lowering entry barriers for small merchants and standardizing how transactions are discovered and fulfilled, the network has the potential to bring a wider set of small businesses into formal digital channels. Over time, digitally recorded sales and transaction data generated through Open Network for Digital Commerce participation can complement consent-based data sharing under the AA framework, helping lenders observe sales patterns and cash flows that are invisible in informal retail, as well as deepen financial inclusion of micro and small enterprises. The Open Credit Enablement Network, on the other hand, applies a similar logic to credit origination by standardizing parts of the loan application and underwriting process, enabling lenders to offer credit through multiple platforms without building separate, customized technical connections for each platform (iSPIRT 2023; Bag 2023). Both initiatives remain early-stage, with limited evidence so far on their effects at scale; nevertheless, they illustrate how India is layering DPI beyond payments to shape how competition and access evolve in commerce and credit.

Lessons for Regulators

- **Open access to financial infrastructure is a core driver of competition:** Ensuring fair and open access to core financial infrastructure such as payment systems, digital ID, and data rails can unlock downstream competition at scale. Lowering licensing barriers and tailoring prudential requirements can widen entry, but they are rarely sufficient when incumbents control essential infrastructure. In India, while licensing, supervision, and conduct reforms lowered entry barriers and eased compliance, it was open access to payments and data infrastructure that delivered the largest gains in adoption of digital payments and innovation while also reducing the scope for gatekeeping and rent seeking by incumbents.
- **Open infrastructure works best when key layers move together:** Competition effects of digital public infrastructure are strongest when core layers are opened in a coordinated sequence rather than in isolation. In India, linking digital ID, real-time payments, and consent-

based data sharing expanded contestability across onboarding and transactions, while gaps in other data layers (including credit bureau information, fraud and default registries, and merchant cash-flow data) now mark the boundary of where competition can deepen. Moreover, early infrastructure choices influence where firms invest and innovate, as competition tends to concentrate around the rails that were first opened. Which rails are opened and in what sequence determines whether bottlenecks are dismantled or simply reappear elsewhere in the system.

- **Who pays for and governs DPI shapes long-term impact:** Early decisions on funding and governance shape the long-term sustainability of DPI. In India, UPI's zero pricing model for users and most merchants accelerated adoption, while the costs of operating and maintaining the system were absorbed elsewhere in the ecosystem, including through government support and cross-subsidization by participating institutions. This enabled rapid scale but reduced flexibility to adjust pricing once usage became universal. Governance arrangements reinforced this outcome: while they proved effective in delivering scale, interoperability, and trust, the concentration of activity on a single rail elevated concerns around resilience and representation. Banks retained formal influence through NPCI, while payment service providers and fintech firms that rely heavily on UPI had limited influence in its evolution. Choices around who funds shared infrastructure and who participates in its governance become defining features of market structure once platforms reach scale.
- **Weak consumer protection can undermine the inclusion and competition gains of DPI:** Shared, interoperable infrastructure can drive rapid adoption of digital finance, but weak consumer protection can undermine trust at scale and reverse hard-won gains. In India, UPI prioritized instant settlement, low cost, and universal access, while protections including chargebacks, standardized liability, and dispute resolution were largely deferred to ex post institutional processes. As adoption has deepened, risks relating to fraud and consumer losses have become more visible, particularly among newly included users. Where embedding safeguards ex ante is constrained by design trade-offs, strong ex post redress, liability clarity, and active risk monitoring become essential.

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