

The Invisible Economy

How India's ₹87 trillion cash pile refuses to die

RESEARCH REPORT

INDIA PAYMENTS & FINTECH

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25 MIN READ

Executive summary

India's digital payments story is told as a substitution narrative — digital is replacing cash, and the direction is inevitable. We find this framing is incomplete in ways that matter. Currency in circulation crossed ₹35.7 trillion in FY25, the highest absolute figure in Indian history, in the same period that UPI recorded 15.6 billion monthly transactions. Both numbers are accurate. The standard account has no good explanation for their coexistence.

We introduce India's first Cash Intensity Index — a district-level measure of cash persistence mapped against the structural factors that predict it. We find that cash and digital are not competing for the same transactions. They serve different populations, different economic activities, and different trust contexts. The segmentation thesis, not the substitution thesis, explains the data.

The report presents three scenarios for India's cash economy by 2030: Coexistence at 9.8% of GDP, Compression at 7.0%, and Entrenchment at 13.9%. The difference between Compression and Coexistence is not more payment infrastructure — it is a specific set of policy decisions in tax administration, agricultural procurement, and settlement architecture that have not yet been made.

₹35.7T

Currency in circulation

FY25 all-time high · RBI

15.6B

UPI transactions/month

December 2025 · NPCI

0.79

CII correlation

With informal employment share (vs 0.61 for income)

67%

Cash in structurally resistant sectors

Requires reform, not infrastructure

Chapter 1: The headline that isn't true

India's digital payments story is told as a victory. And in many respects it is. In December 2025, 15.6 billion UPI transactions cleared in a single month. That number has no precedent anywhere in the world. The infrastructure it runs on, assembled in under a decade by NPCI, represents a genuine policy achievement at a scale that peer economies have not matched.

We do not dispute any of that.

What we dispute is the interpretive frame that gets layered on top of it. The standard account treats UPI's rise as evidence that India is digitising its economy, that cash is in structural retreat, and that the direction of travel is settled. The data does not support this reading. Or more precisely, it supports one half of it while the other half gets quietly ignored.

In the same month that UPI processed 15.6 billion transactions, the Reserve Bank of India's weekly statistical supplement recorded currency in circulation at ₹35.7 trillion. That is not a rounding error or a seasonal anomaly. It is the highest absolute figure in Indian history. Higher than before demonetisation. Higher than during the pandemic. Higher than at any point since independence.

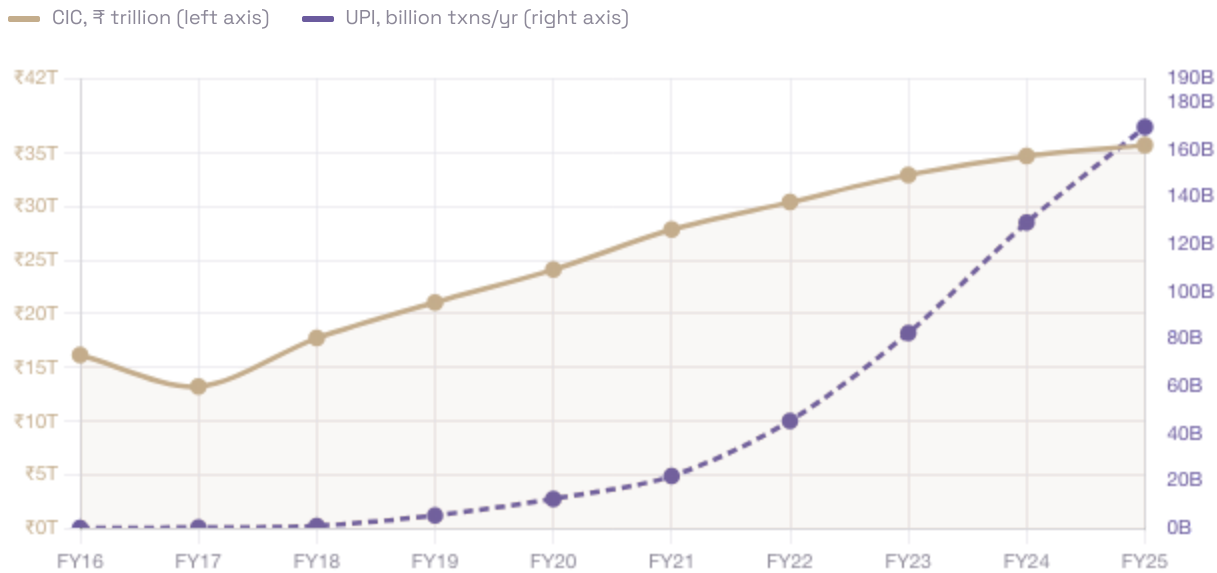
Both numbers are accurate. A record digital month and a record cash stockpile, coexisting in the same economy at the same moment. The standard account has no good explanation for this.

We believe the explanation is structural, and that getting it right matters for anyone making decisions about payment infrastructure, merchant acquisition, credit product design, or financial inclusion policy in India over the next decade.

FIGURE 1.1

Currency in circulation vs. UPI volume, FY16–FY25

Both lines rise together. This is not substitution — it is segmentation. Two payment systems serving two largely distinct populations.



₹35.7T

CIC — all-time high

FY25 · higher than any pre-demonetisation level

15.6B

UPI transactions/month

December 2025 · no global parallel

Simultaneous

Both at record highs

The substitution thesis cannot explain this

Source: RBI Weekly Statistical Supplement · NPCI Monthly Bulletin · Subtwo analysis

The substitution thesis is the wrong model. The dominant framework treats cash and digital payments as competitors. Digital gains share; cash loses it. Aggregate transaction data appears to confirm this. UPI volumes compound at 40% annually. ATM withdrawals are flat. The ratio of digital to cash transactions keeps moving in one direction.

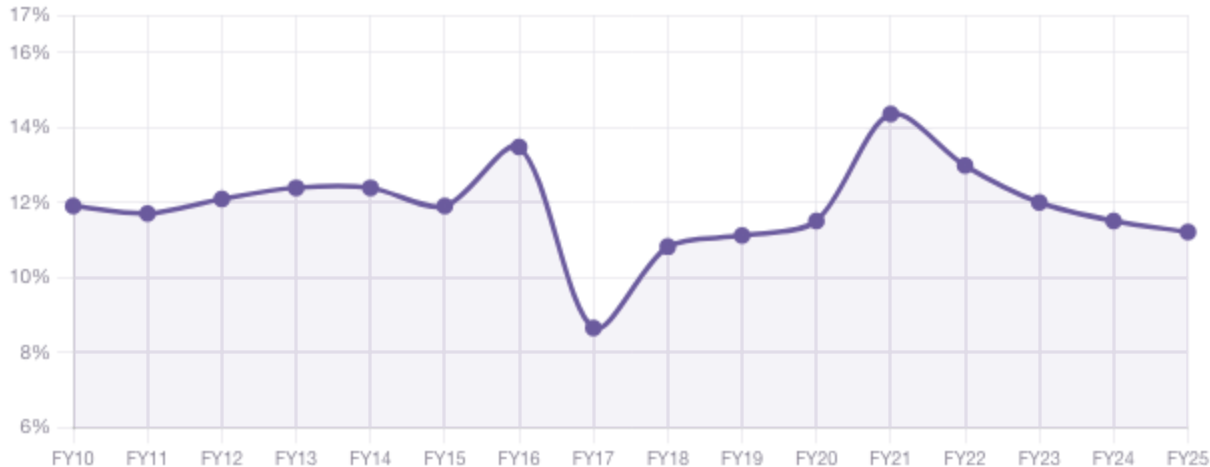
The problem with this framework is that it measures the wrong thing. Transaction count is not a measure of economic reach. A single agricultural procurement worth ₹80,000 paid in cash does not show up in any digital transaction dataset. Meanwhile, the same rural family might generate thirty UPI transactions in the same month paying for groceries, mobile recharges, and school fees. The thirty transactions win on count. The one cash transaction wins on value.

When we disaggregate India's payment flows by transaction size, geography, sector, and income band rather than by aggregate count, a different picture emerges. Cash and digital are not primarily competing for the same transactions. They are serving different populations, different economic activities, and different trust contexts. The growth of one does not mechanically constrain the other.

FIGURE 1.2

Currency as % of GDP, FY10–FY25

Structural decline is real but modest. The 16-year average is 12.1%. Today's 11.3% is not a collapse — it is mean reversion after a COVID spike.



Source: RBI Annual Report · CSO GDP data · Subtwo analysis

What demonetisation actually measured. In November 2016, the government demonetised 86% of currency by value overnight. What happened next is less discussed. By March 2018, currency in circulation had returned to 96% of its pre-demonetisation level in absolute terms. By FY2020 it had exceeded it. The populations that had temporarily shifted to digital largely shifted back. The populations that had never shifted at all resumed without interruption.

The evidence suggests that demonetisation did permanently accelerate digital adoption among households that were already partially digital. But it had essentially no lasting effect on the cash-intensive segments of the economy. These segments re-monetised at rates that our analysis shows were nearly identical to their pre-shock baseline within 18 months.

Chapter 2: Where cash lives

The instinct when mapping cash persistence is to reach for the obvious variables. Poor states are more cash-intensive. Rural districts are more cash-intensive. These correlations exist and we do not dismiss

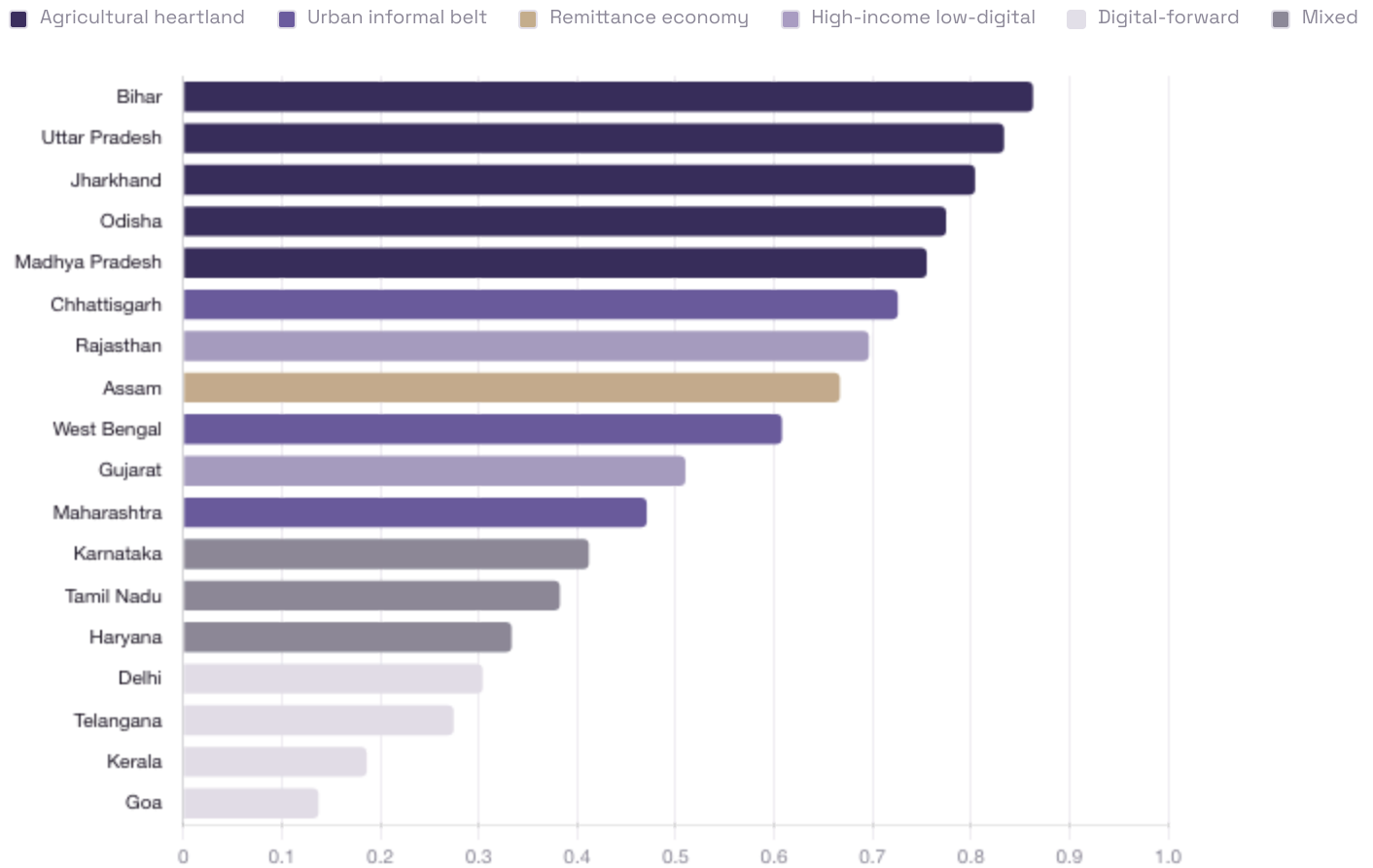
them. But they explain less of the variance than most analysts assume.

Our Cash Intensity Index, computed at the district level across 736 districts using FY2025 data, produces a distribution meaningfully different from what a poverty map would generate. The correlation between our index and per-capita income is 0.61. The correlation between the index and the share of informal employment in a district is 0.79. Informal employment share is the stronger predictor — cash persists where economic activity doesn't run through formal channels, regardless of income level.

FIGURE 2.1

Cash Intensity Index by state — FY2025

Correlation with per-capita income: 0.61. Correlation with informal employment share: 0.79. The informal employment share is the stronger predictor.



The urban informal belt surprise

Several districts within or adjacent to India's largest metro areas score in the top quartile of cash intensity. The mechanism is different from the agricultural heartland — these districts house migrant construction workers and domestic staff whose primary income (₹15,000–₹40,000/month) arrives in cash and is spent in cash. Digital transaction counts are high. Primary income flows are not digital.

Source: Subtwo analysis · RBI district banking data · NSSO household survey FY25

The four geographies of cash. We find four distinct geographic clusters in the index. The first is the **agricultural heartland** — districts in central and eastern Uttar Pradesh, Bihar, Madhya Pradesh, and Odisha where agricultural activity dominates and procurement chains are predominantly informal.

The second is the **urban informal belt**. Several districts within or adjacent to India's largest metro areas score in the top quartile of cash intensity. These districts are home to large populations of migrant

construction workers, domestic staff, and informal retail operators whose primary income — often ₹15,000 to ₹40,000 monthly — arrives in cash and whose expenditure is calibrated around cash.

The third cluster is the **remittance economy districts**. A band of districts in Rajasthan, UP, and Bihar with high outmigration rates show a specific cash pattern: inflows are partially digital via remittance services, but local circulation remains predominantly cash.

The fourth cluster is the smallest and most interesting: **high-income, low-digitisation districts** concentrated in Gujarat, Rajasthan, and parts of Tamil Nadu. These are not populations lacking access to digital. They are populations that have made a reasoned judgment that cash serves specific transaction types better.

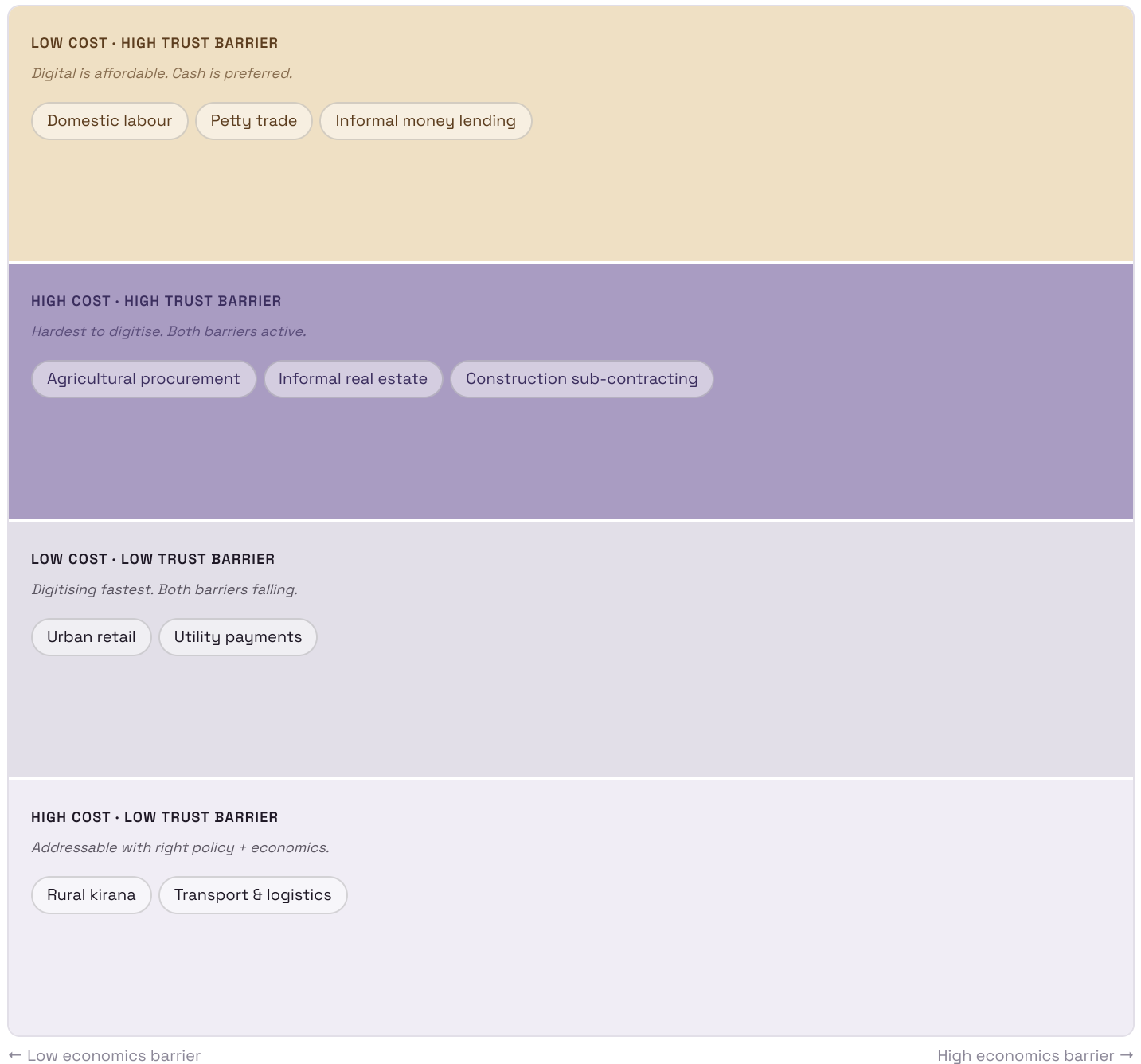
Chapter 3: The cash economy's hidden architecture

We introduce Figure 3.1 not as a taxonomy but as a diagnostic. The standard policy response to cash persistence is infrastructure — more QR codes, better connectivity, cheaper devices. That response addresses the bottom-right quadrant of the matrix. It does not touch the top-right, which is where 67% of informal cash transactions by value actually sit.

FIGURE 3.1

Sector cash persistence: why digital hasn't penetrated

Sectors plotted by their primary barrier to digital adoption. Not backwardness — rational behaviour under real constraints. Click any sector for detail.



The 67% finding

The top-right quadrant — high economics barrier, high trust barrier — represents 67% of informal cash transactions by value. No payment infrastructure investment addresses this quadrant. Tax reform and procurement formalisation are the real levers.

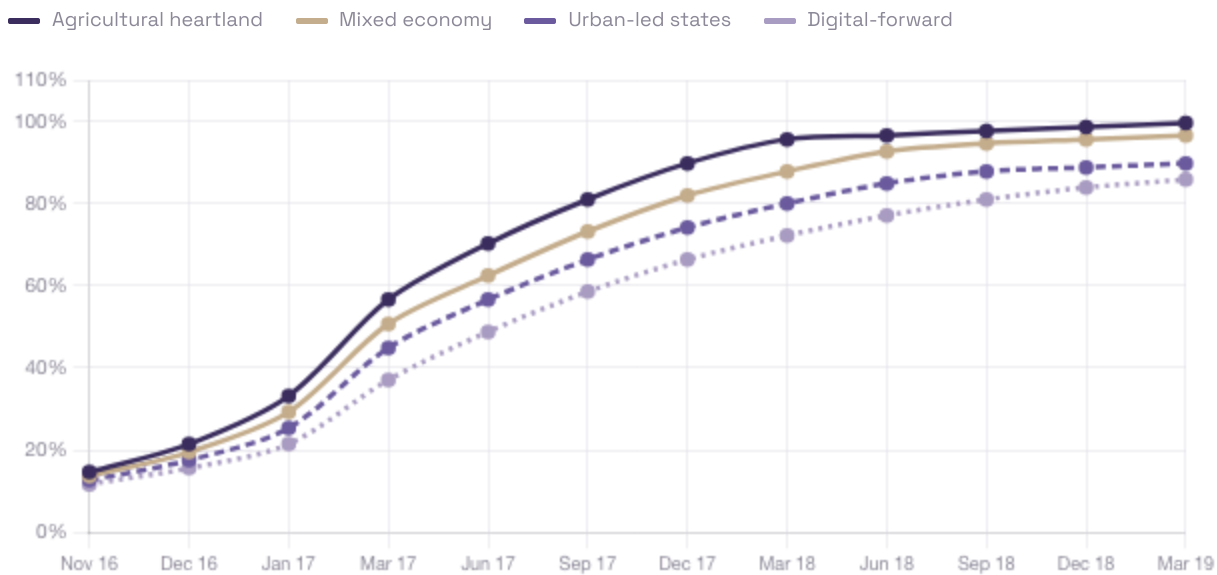
Source: Subtwo analysis · NSSO informal economy estimates · Primary fieldwork

Agricultural procurement is the clearest example. A mandi aggregator buying paddy from twelve small farmers across two villages is not conducting anonymous transactions with strangers. These are multi-year relationships with known parties, negotiated verbally, settled seasonally. Introducing a digital payment trail does not add information to this relationship — it adds external visibility to a transaction that neither party wants documented.

FIGURE 3.2

Re-monetisation velocity by state group, Nov 2016 – Mar 2019

CIC recovery as % of pre-demonetisation level. Agricultural heartland states recovered to 98% within 14 months. Digital-forward states plateaued at 88%.



<p>AGRICULTURAL HEARTLAND</p> <p>14 months</p> <p>to 98% recovery</p>	<p>MIXED ECONOMY</p> <p>16 months</p> <p>to 95% recovery</p>
<p>URBAN-LED STATES</p> <p>20 months</p> <p>to 90% recovery</p>	<p>DIGITAL-FORWARD</p> <p>88% plateau</p> <p>partial shift lasting</p>

Source: Subtwo analysis · RBI state banking statistics · Currency chest data

Figure 3.2 shows re-monetisation velocity disaggregated by economic structure across 28 months following November 2016. Agricultural heartland states recovered 98% of pre-demonetisation CIC

within 14 months. Digital-forward states plateaued at 88% — the one group where lasting behavioural change is evident.

The policy implication is uncomfortable. Demonetisation worked — but only where it didn't need to. The populations it was designed to shift re-monetised at rates statistically indistinguishable from their pre-shock baseline.

Chapter 4: The merchant who can't afford free payments

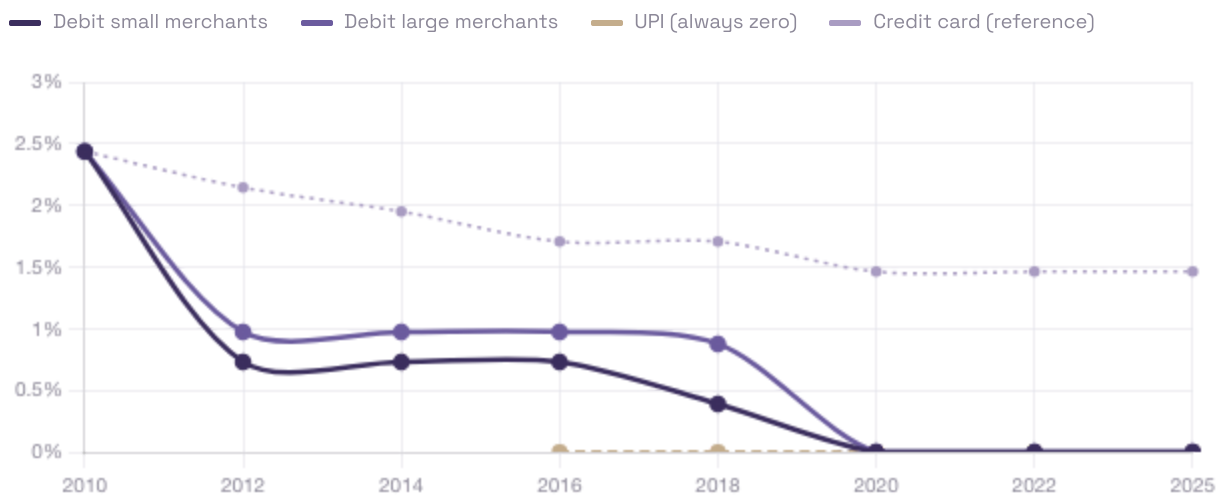
The January 2020 policy decision to set MDR to zero on UPI and RuPay was framed as removing a barrier to digital adoption. The data shows what actually happened. The acceptance gap — the distance between merchants who have digital infrastructure and merchants who actively use it — widened in the two years that followed, not narrowed.

This result is counterintuitive only if you believe MDR was the primary reason merchants weren't accepting digital payments. We find that it wasn't.

FIGURE 4.2

MDR rates by payment instrument, 2010–2025

The cross-subsidy that funded small-merchant acceptance infrastructure was removed in January 2020. What replaced it was nothing.



Source: RBI MDR circulars 2010–2025 · NPCI guidelines · Subtwo policy analysis

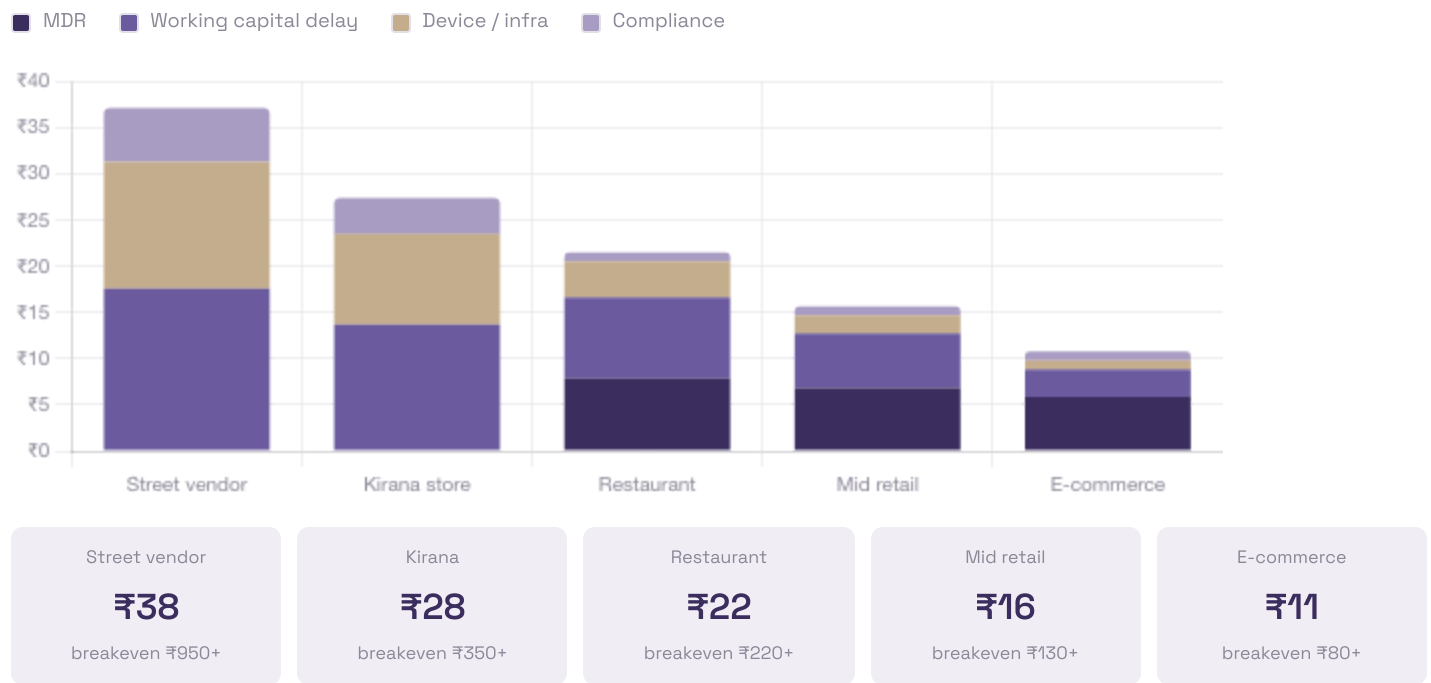
What MDR was actually doing. MDR in India was not originally designed as a revenue mechanism for acquirers alone. It was a cross-subsidy architecture. The margin on large-merchant and credit card transactions funded the infrastructure that served small-merchant transactions. When the RBI

compressed debit MDR to zero in 2020, each step reduced the cross-subsidy available to fund small-merchant infrastructure.

FIGURE 4.1

Total cost of accepting digital payments per ₹1,000 revenue

By merchant segment · FY2025 · Includes MDR, working capital delay cost, device/infra amortisation, and compliance cost. UPI MDR is ₹0 — yet kirana total cost is ₹28.



Source: Subtwo merchant economics model · RBI MDR policy data · Primary fieldwork n=420 merchants · 6 cities · FY2025

The three costs that MDR removal didn't touch. Our primary fieldwork across 420 merchants in six cities identified three cost barriers that remain fully intact after zero MDR.

The first is **working capital delay**. Digital settlement arrives T+1 at best. For a kirana store operating on a 10-day credit cycle from its distributor, cash-in-hand today is not equivalent to cash-in-account tomorrow. In our cost model, working capital delay accounts for ₹14 of the ₹28 total cost-to-accept for a kirana store.

The second is **device and infrastructure cost**. The QR code on a shop wall is free. The smartphone used to receive payment notifications, the data plan that runs it, and the time spent reconciling digital receipts with physical inventory are not.

The third is **compliance cost**. Accepting digital payments creates a formal transaction record. For merchants operating at the margin of GST registration thresholds, this visibility has direct financial

consequences.

FIGURE 4.3

Merchant acceptance gap: infrastructure vs. active use, by city tier

The acceptance problem is not infrastructure — it is usage. QR codes exist in Tier 3 towns. Merchants are not using them. The 23pp Tier 3 gap is the largest in the series.



Source: Subtwo primary fieldwork n=420 merchants · 6 cities · Worldline India merchant survey · FY2025

The acceptance gap is largest where infrastructure investment was highest. Tier 3 towns received significant QR code deployment through government and bank programmes over 2020–2023. Infrastructure availability reached 54% of merchants. Active use is at 31%. The gap of 23 percentage points is the widest in the series.

Chapter 5: What the denomination data tells us

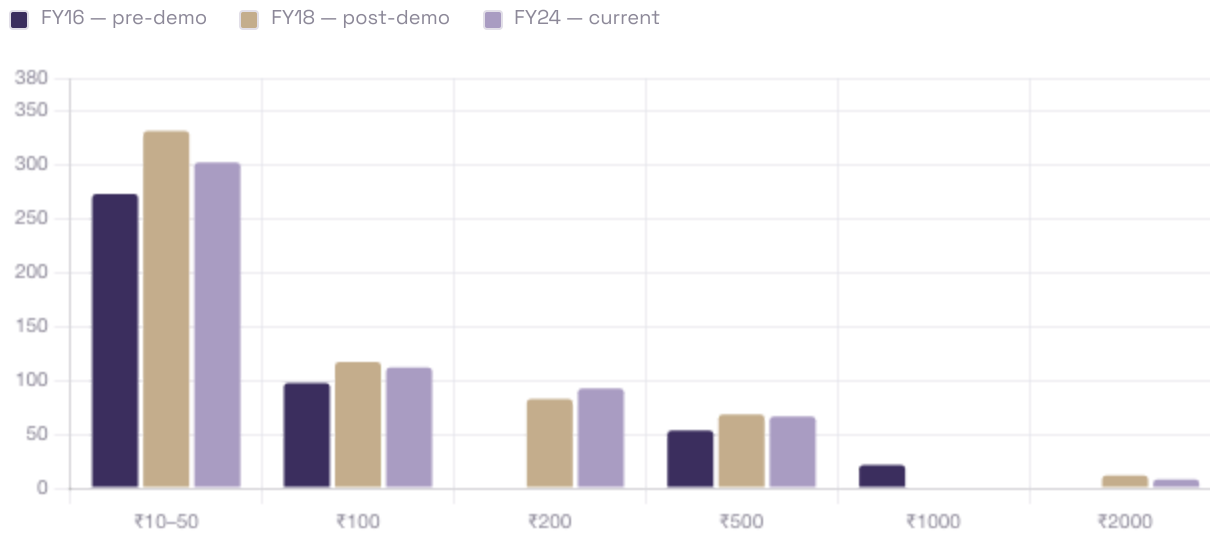
The standard reading of demonetisation focuses on CIC totals. The more revealing dataset is denomination-level velocity — how often each note changes hands per unit time.

The core finding is this: high-denomination currency in India has always been a store of value, not a medium of exchange. The ₹1000 note, which represented 70% of CIC by value immediately before demonetisation, circulated at a velocity index of 22 — roughly one-fifth the velocity of the ₹100 note.

FIGURE 5.1

Currency velocity index by denomination — three periods

Estimated transactions per note per month, indexed to ₹100 in FY16 = 100. The ₹2000 note had the lowest velocity of any denomination ever introduced in India.



12

₹2000 note velocity, FY18

₹100 note = 120 in same period. The new note transacted 10× less.

340

₹10-50 note velocity, FY18

People stored ₹2000 and ran daily life on small notes.

22 → 0

₹1000 note, FY16 → FY17

Already a low-velocity store of value before withdrawal.

Source: Subtwo analysis · RBI Annual Report denomination data

The ₹2000 note as natural experiment. The ₹2000 note gives us the cleanest possible test of the storage thesis. It was introduced after demonetisation, so it carried no legacy relationship with prior cash-heavy sectors. And yet within 18 months it had become the lowest-velocity denomination in the Indian currency system.

What the velocity data implies. If high-denomination currency is primarily a store of value, then digital payments — which are a medium of exchange — are not competing with it. This reframes the policy problem. A country could theoretically achieve 100% digital payment adoption for all transactional purposes while still maintaining a large stock of high-denomination physical currency as household savings.

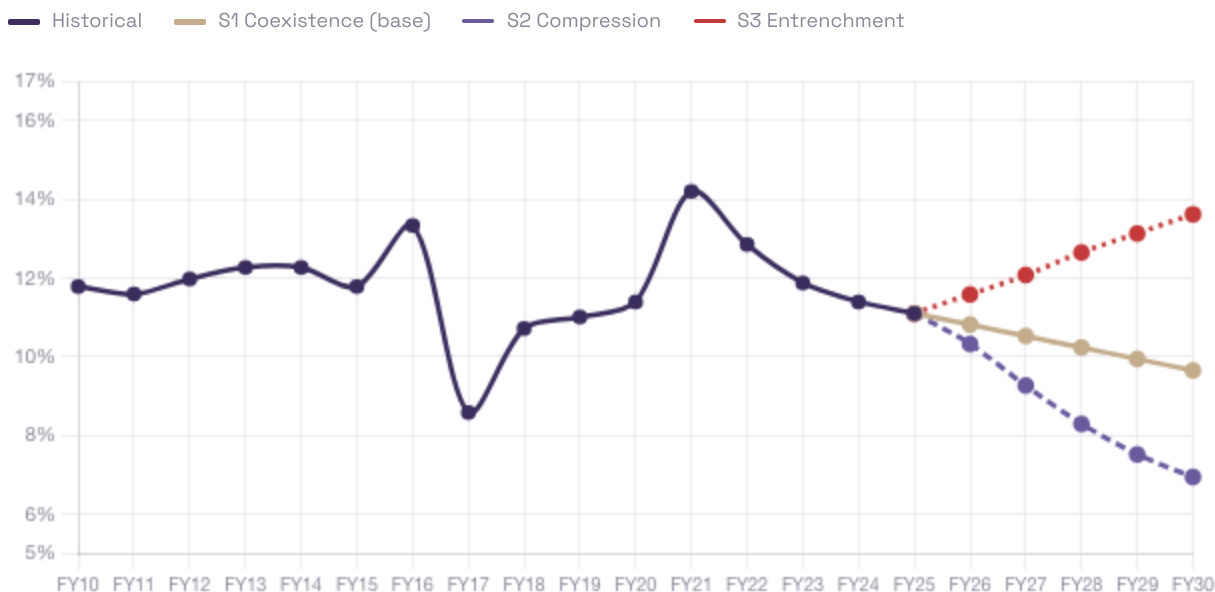
Chapter 6: Three scenarios for India’s cash economy to 2030

We want to be precise about what these scenarios are and what they are not. These are not forecasts. What scenarios offer instead is a disciplined framework for thinking about which variables matter, how they interact, and what conditions need to be present for different outcomes to materialise.

FIGURE 6.1

CIC as % of GDP — historical path and three scenarios to FY30

Scenarios are not forecasts. Each represents a coherent set of policy and macroeconomic conditions. The decision point is FY25–FY26.



S1 — Coexistence

9.8%

CIC/GDP by FY30. No significant policy change in either direction.

S2 — Compression

7.0%

CIC/GDP by FY30. Requires T+0 universal, MDR reform, CBDC, tax reform — simultaneously.

S3 — Entrenchment

13.9%

CIC/GDP by FY30. Informal economy grows faster than digital infrastructure reaches it.

Source: Subtwo scenario model · RBI CIC data FY10–FY25 · CSO GDP projections

Scenario 1 — Coexistence (base case): 9.8% of GDP by FY30. The base case is not a story of digital failure. It is a story of markets finding their natural level. Digital payments continue to grow at 25–30%

annually in transaction count, absorbing the segments where they have structural advantages. Cash holds its ground in sectors where the conditions that make those sectors cash-intensive do not change materially.

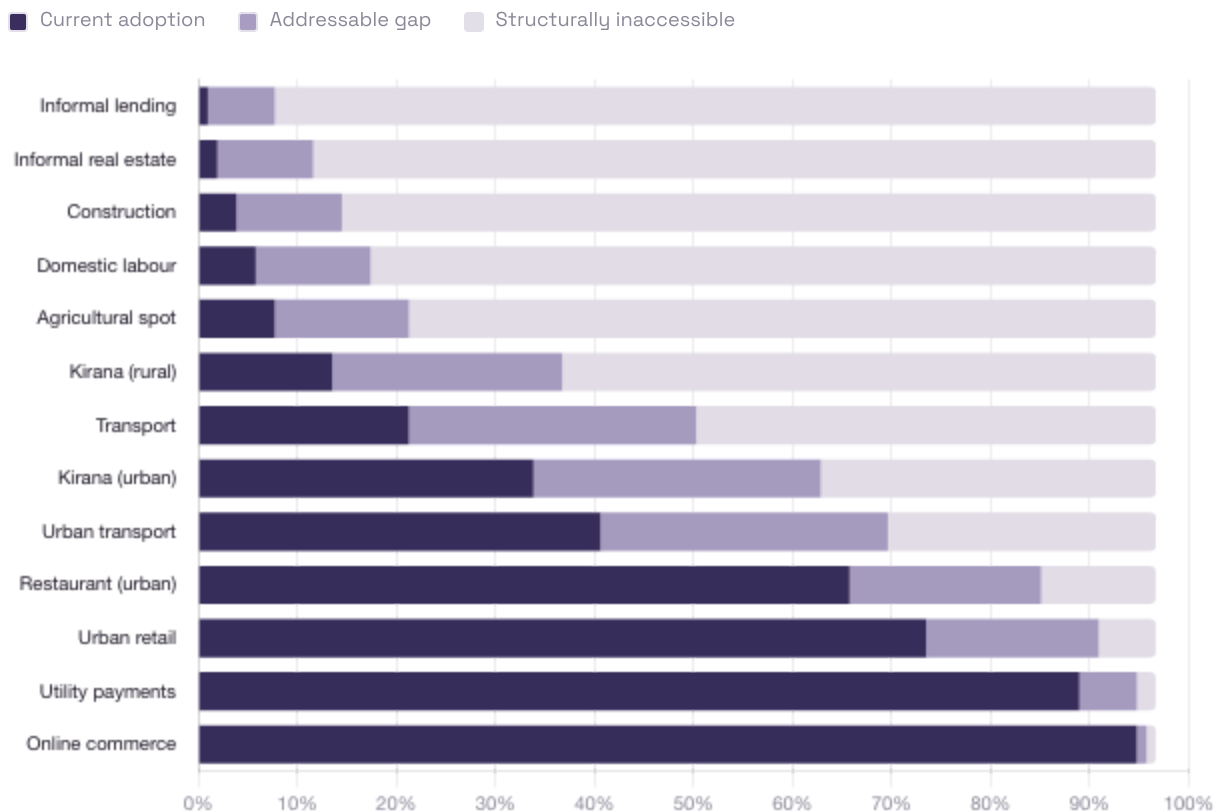
Scenario 2 — Compression (policy-active): 7.0% of GDP by FY30. The Compression scenario is achievable. It is not easy. It requires eight conditions to be simultaneously present — five of which are currently either absent or only partially in place. We believe Compression is achievable by FY30 only if the policy decisions required are made before FY27. The window is narrowing.

Scenario 3 — Entrenchment (adverse): 13.9% of GDP by FY30. Entrenchment does not require digital payments to fail. It requires the informal economy to grow faster than digital infrastructure reaches it — a condition entirely consistent with continued strong UPI volume growth in urban markets.

FIGURE 6.3

Digital penetration ceiling by sector

Maximum achievable digital share given current structural constraints. Sectors below 40% ceiling require structural reform, not infrastructure investment.



Source: Subtwo sector ceiling model · Primary fieldwork · RBI sector payment data · FY2025

Chapter 7: What this means — for payments, for fintech, for policy

Six chapters of analysis produce three sets of findings that have direct operational consequences.

For the payments industry. The most immediately actionable finding is the acceptance gap data in Figure 4.3. The Tier 3 gap of 23 percentage points between infrastructure availability and active use is not a sales problem. The binding constraints are settlement velocity, working capital cycle, and tax visibility. Acquirers that address these at the product level will take share.

The specific product change that moves this metric is T+0 settlement for UPI transactions below ₹50,000. The technology exists. The RBI pilot is live for select participants. The commercial decision that has prevented universal rollout is the intraday liquidity cost that banks must fund.

For issuers specifically, the denomination velocity data in Chapter 5 carries a finding we have not seen discussed in any industry context. Households holding ₹2000 notes are not potential UPI users. They are potential fixed deposit, liquid fund, or short-duration bond customers. The product gap is not in the payments stack. It is in accessible, trusted, low-minimum savings products that compete with physical currency as a store of value.

For fintech. The Digital Penetration Ceiling in Figure 6.3 should be read as a market map. Sectors in the middle band — urban transport at 42% current adoption against a 72% ceiling, urban kirana at 35% against 65% — represent the largest addressable opportunity in Indian fintech over the next five years.

For policy. We have three specific recommendations.

First: separate the store-of-value and medium-of-exchange components of CIC in all official reporting and policy discussion.

Second: redirect a portion of the infrastructure investment currently allocated to sectors above the ceiling toward the structural reforms that govern sectors below it.

Third: reopen the MDR conversation honestly. The January 2020 zero-MDR decision removed a cross-subsidy that funded small-merchant infrastructure and left the three structural cost barriers fully intact.

A final observation. India's digital payments story is genuinely extraordinary. The infrastructure built over the past decade has no parallel. What we find, in seven chapters of analysis, is that the extraordinary digital story and the persistent cash story are not in tension. They are both true, for structural reasons that the standard account has not adequately processed.

The policy question is not how to make digital win. It is how to understand precisely where the ceiling is, what sits above it, and what kind of intervention actually moves which part of the problem.

The rest is a question of whether the people with the levers read the map.

Appendix

The full data appendix — including district-level Cash Intensity Index scores, sector matrix workings, scenario model assumptions, and primary fieldwork methodology — is available [here](#).

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