A DECADAL ECONOMIC IMPACT ASSESSMENT OF INDIA'S DEMONETISATION: MONETARY DISRUPTION, INFORMAL SECTOR VULNERABILITY, COUNTERFEIT CURRENCY PERSISTENCE, ENVIRONMENTAL EXTERNALITIES AND THE DISTRIBUTIONAL BURDEN OF MACROECONOMIC POLICY (2016–2026)

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Abstract

This study assesses the economic, social, institutional and environmental consequences of India's demonetisation over the decade 2016–2026. On 8 November 2016, the Government withdrew the legal-tender status of ₹500 and ₹1,000 notes, which represented most of the value of currency in circulation. The measure aimed to curb unaccounted wealth and counterfeit currency, improve tax compliance and promote digital payments, but it also caused immediate cash shortage in a cash-dependent economy. Using secondary data and published research from the Reserve Bank of India, government agencies and academic studies, this article examines monetary disruption, economic activity, informal-sector vulnerability, employment, banking and credit, counterfeit currency, digital payments, tax outcomes, distributional effects, environmental costs and institutional accountability. The evidence indicates that the cash shortage placed disproportionate pressure on informal workers, rural households and small enterprises. Almost all demonetised notes returned to the banking system, and counterfeit currency continued to be detected, limiting claims that currency withdrawal alone resolved these problems.

Digital payments, banking access and tax reporting expanded, but these changes also reflect technological progress and subsequent policy initiatives; their growth cannot be attributed to demonetisation alone. Environmental costs are considered, although their demonetisation-specific effects are not fully quantified in available data. Because this assessment relies on secondary sources and descriptive comparisons, it does not establish causal effects. The study concludes that monetary reforms should be evaluated through credible counterfactuals and transparent cost–benefit analysis, with attention to implementation readiness, distributional impacts, financial inclusion and public trust. The research focuses on immediate and swiftly shifting challenges that are growing in importance in today's globally connected environment, underlining their relevance in the contemporary world.

Keywords: **Demonetisation, Digital Payments, Counterfeit Currency, Monetary Reforms, Economic Activity, Small Enterprises, Financial Inclusion and Public Trust.**

The theme of the article

On 8 November 2016, the Government of India withdrew the legal-tender status of existing ₹500 and ₹1,000 banknotes, which accounted for approximately 86 per cent of the value of currency in circulation. The stated objectives included curbing unaccounted wealth and counterfeit currency, disrupting illicit transactions, encouraging tax compliance and accelerating digital payments. The measure produced an immediate cash shortage and disrupted economic activity, particularly among households, workers and small businesses reliant on cash. Its effects therefore extended beyond monetary management to employment, consumption, banking, public administration and social welfare. A decade later, assessing demonetisation requires distinguishing its immediate disruption from longer-term economic and institutional changes. Almost all specified banknotes returned to the banking system, while digital payments and formal banking continued to expand. Yet these later developments cannot be attributed to demonetisation alone: technological change and subsequent government and financial-sector initiatives also contributed.

Meanwhile, counterfeit currency remained a concern, and the burdens of adjustment were unevenly distributed, with informal workers, rural households and micro-enterprises especially exposed to liquidity constraints. This study examines India's demonetisation over the period 2016–2026, focusing on monetary disruption, informal-sector vulnerability, counterfeit currency, digital financial transformation, fiscal and banking outcomes, environmental externalities and distributional consequences. Drawing on secondary sources and published statistical data, it reviews the available evidence and its limitations, including the difficulty of separating demonetisation's effects from other economic changes. By considering both intended outcomes and social costs, the study aims to inform more transparent, inclusive and evidence-based monetary policymaking.

Statement of the problem

India's demonetisation of 8 November 2016 withdrew the ₹500 and ₹1,000 banknotes, which accounted for most of the currency in circulation. The policy was intended to curb black money, counterfeit currency and corruption, while encouraging tax compliance, formal banking and digital payments. Its implementation, however, caused an abrupt shortage of cash in an economy where households, small enterprises, agricultural activities and much of the informal workforce relied heavily on physical currency. The central problem examined in this study is whether demonetisation achieved its stated economic and institutional objectives, and how its costs and benefits were distributed over the decade from 2016 to 2026. The return of almost all demonetised currency to the banking system raises questions about the policy's effectiveness in removing unaccounted cash. Continued detection of counterfeit notes likewise invites assessment

of whether replacing currency notes provided a lasting solution. At the same time, the expansion of digital payments, banking access and tax reporting occurred alongside other reforms and technological changes, making it difficult to isolate demonetisation's independent contribution.

The study also addresses the uneven consequences of the cash disruption. Informal workers, rural households, small traders and low-income groups faced greater exposure to interrupted wages, reduced liquidity and difficulty accessing banking services. The policy's implications for employment, consumption, credit, regional inequality and household welfare therefore require careful evaluation. Its resource costs, including currency printing, transport and disposal, also raise questions about environmental sustainability, while the decision-making process prompts consideration of institutional accountability and public communication. Using secondary sources and statistical evidence, this study assesses these interconnected outcomes while distinguishing documented findings from correlations or effects that cannot be attributed to demonetisation alone. It seeks to identify the policy lessons relevant to inclusive, evidence-based and institutionally accountable monetary reform. The study explores pressing and rapidly evolving issues that are becoming ever more critical in our interconnected world, highlighting their significance in the current global context.

Objective of the article

The overall objective of the article is to assess the economic, social, political and environmental consequences of India's 2016 demonetisation over the decade from 2016 to 2026. It examines the policy's effects on monetary stability, economic growth, banking and credit, and the persistence of counterfeit currency. It also evaluates the vulnerability of informal-sector workers, small businesses and low-income households, alongside changes in digital payments, financial inclusion and tax compliance. The article further analyses the distributional burden across income groups, regions and social categories, considers environmental costs and implications for institutional accountability and public trust, and identifies evidence-based lessons for inclusive and sustainable economic reform with the help of secondary sources of information and statistical data pertaining to the theme of the article.

Research Methodology of the article

The present article adopts a descriptive, analytical and evaluative research methodology to examine the economic, social, political and environmental consequences of demonetisation in India during the period 2016–2026. The study is based entirely on secondary sources of information and relevant statistical data collected from reliable national and international institutions. The required information is obtained from the Reserve Bank of India (RBI), Ministry of Finance, Ministry of Statistics and Programme Implementation (MoSPI), National Statistical Office (NSO), National Sample Survey Office (NSSO), NITI Aayog, Ministry of Environment, Forest and Climate Change, Government of Tamil Nadu, Economic Surveys,

Union Budget documents, parliamentary reports, research journals, books and relevant institutional publications. The study examines changes in currency circulation, economic growth, inflation, banking transactions, credit availability, counterfeit currency, digital payments, tax compliance and financial inclusion. It also analyses the effects of demonetisation on informal-sector employment, small businesses, agricultural activities, household income, consumption expenditure and regional inequalities. Particular attention is given to the environmental costs of currency printing, transportation, replacement and disposal, together with institutional accountability and public trust.

Statistical tools such as percentages, ratios, growth rates, averages, trend analysis, comparative analysis and graphical presentations are employed to interpret the collected information. Wherever relevant, comparisons are made between the pre-demonetisation and post-demonetisation periods, across Indian states and between rural and urban regions. The findings are critically interpreted to identify the long-term implications of demonetisation and suggest evidence-based policy measures for inclusive, transparent and sustainable economic development in India. The gathered data and information will be systematically examined and interpreted to produce actionable insights, supporting the development of well-informed, evidence-based policies.

Review of Literature

Chodorow-Reich, Gopinath, Mishra and Narayanan (2020), examined the economic consequences of India's demonetisation using empirical evidence. Their study highlighted the adverse effects of cash shortages on economic activity, employment and production, particularly in cash-dependent sectors. The findings emphasised the importance of liquidity in sustaining economic transactions and household livelihoods. **Yoganandham and Abdul Kareem (2020),** analysed the impact of demonetisation on the economy of Vellore District, Tamil Nadu, from a theoretical perspective. Their study discussed the difficulties experienced by households, small traders and informal-sector participants due to currency shortages. It highlighted the need for effective monetary management and appropriate policy measures to minimise regional economic disruptions. **Government of India, Ministry of Finance (2017),** presented an assessment of demonetisation in the Economic Survey 2016–17. The report discussed the short-term effects of currency withdrawal on economic activity, cash availability, tax compliance and digital transactions. It also examined the potential long-term benefits of formalisation and improved financial transparency in the Indian economy. **Yoganandham (2023),** investigated the consequences of the digital revolution and demonetisation on the Indian economy through a theoretical assessment. The study focused on the transition towards digital financial transactions, banking modernisation and changing monetary practices. It emphasised the importance of digital

infrastructure, financial inclusion and technological accessibility for sustainable economic development.

Reserve Bank of India (2017), assessed the macroeconomic impact of demonetisation in its preliminary assessment published in the RBI Bulletin. The report examined currency circulation, banking deposits, liquidity conditions and economic disruptions following the withdrawal of specified banknotes. It provided important insights into the monetary and financial consequences of demonetisation. **Yoganandham (2023),** examined the impact of demonetisation on the general public, with special reference to Pernambut Town. The study focused on public experiences, household difficulties, cash availability and changes in financial transactions. It highlighted the socioeconomic challenges faced by ordinary people and the importance of strengthening banking services and financial awareness at the local level. **Gupta and Singh (2019),** examined the impact of demonetisation on the Indian economy through an empirical working paper published by the Indian Institute of Management Bangalore. Their analysis considered the implications of currency withdrawal for economic activities and different sectors. The study contributed to understanding the challenges associated with sudden monetary policy interventions. **Yoganandham (2024),** analysed the relationship between digital finance, legal frameworks and economic stability through the concept of equilibrium. The study highlighted the importance of regulatory mechanisms, financial transparency and institutional accountability in promoting digital financial transactions. It emphasised the need to balance technological advancement with consumer protection and financial inclusion.

Zhu, Gupta, Majumder and Steinbach (2018), investigated the short-term effects of demonetisation on rural poor households in India. Their study highlighted the vulnerability of rural communities to cash shortages and disruptions in everyday economic transactions. It emphasised the importance of accessible banking facilities and adequate liquidity in protecting economically disadvantaged populations. **Yoganandham (2024),** examined the transformation of banking through digital innovation, artificial intelligence, blockchain technology and sustainability. The study discussed the role of emerging technologies in improving banking efficiency, transaction security and financial accessibility. It highlighted the significance of technological integration and sustainable banking practices in strengthening India's digital financial system.

A Decadal Assessment of the Economic, Political and Distributional Consequences of India's Demonetisation

India's demonetisation, announced on 8 November 2016, was a major monetary and economic policy intervention that withdrew the existing ₹500 and ₹1,000 currency notes, representing approximately 86.4% of the currency in circulation by value. The policy aimed to

eliminate black money, counterfeit currency and corruption while promoting digital payments and formalisation of the economy. However, its economic and social consequences were unevenly distributed across different sectors and income groups. The Reserve Bank of India (RBI) reported that approximately ₹15.31 lakh crore, or 99.3% of the specified banknotes, returned to the banking system against the estimated ₹15.44 lakh crore withdrawn. This outcome raised questions about the effectiveness of demonetisation in eliminating unaccounted wealth. The details of the Assessment of the Economic and Political Impact of Demonetisation in India (2016–2026) are stated in table – 1.

Table – 1

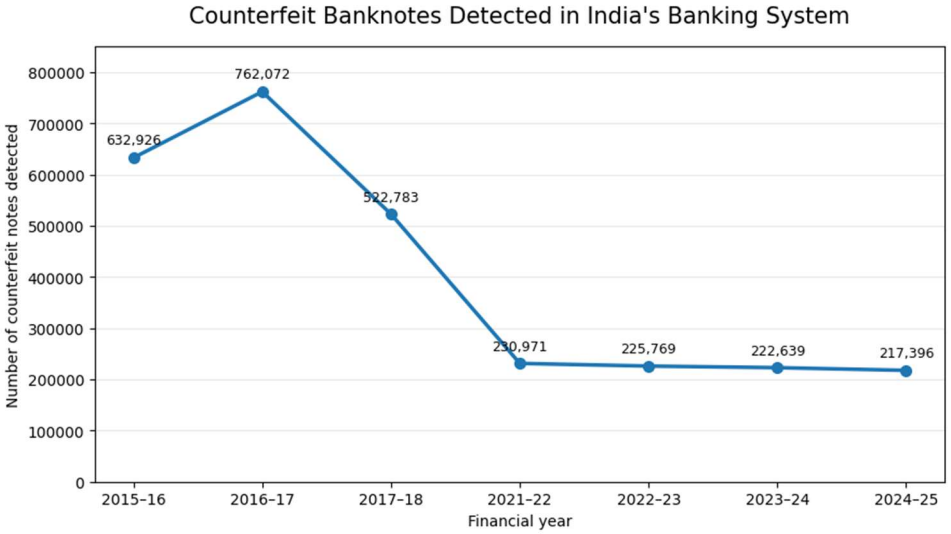
Assessment of the Economic and Political Impact of Demonetisation in India (2016–2026)

S. No.	Statistical indicators	Reference period	Statistical value	Economic implications
1	**Share of currency withdrawn from circulation**	November 2016	86.4%	Significant monetary disruption
2	**Value of demonetised currency**	2016	₹15.44 lakh crore	Large-scale withdrawal of cash
3	**Specified banknotes returned to the banking system**	2016–17	₹15.31 lakh crore (99.3%)	Most withdrawn currency returned
4	**Currency not returned (approximate)**	2016–17	₹10,719 crore	Limited amount of currency remained unreturned
5	**Counterfeit notes detected**	2015–16	6,32,926 notes	Pre-demonetisation counterfeit currency
6	**Counterfeit notes detected**	2016–17	7,62,072 notes	Increase of approximately 20.4%
7	**Counterfeit notes detected**	2023–24	2,22,639 notes	Continued counterfeit currency detection
8	**Counterfeit notes detected**	2024–25	2,17,396 notes	Persistence of counterfeit currency
9	**Soiled banknotes disposed of**	2015–16	16,368 million pieces	Currency disposal requirements
10	**Soiled banknotes disposed of**	2016–17	12,503 million pieces	Currency-processing and disposal activity
11	**Currency in circulation**	March 2025	₹36.87 lakh crore	Continued dependence on physical currency
12	**Estimated employment contraction attributable to demonetisation**	2016 Q4	2 percentage points	Short-term labour-market disruption
13	**Estimated bank credit contraction attributable to demonetisation**	2016 Q4	2 percentage points	Temporary reduction in credit activity

Source: Reserve Bank of India (RBI), Annual Reports 2016–17, 2017–18 and 2024–25; Press Information Bureau, Government of India (2017); Chodorow-Reich, G., Gopinath, G., Mishra, P., and Narayanan, A. (2020), Cash and the Economy: Evidence from India's Demonetization, Quarterly Journal of Economics, 135(1), 57–103.

The informal sector, which depends heavily on cash transactions, experienced considerable disruption, particularly among agricultural labourers, small traders, construction workers and micro-enterprises. Cash shortages affected daily wages, household consumption, employment opportunities and small-scale production. The demonetisation reduced employment and economic activity by approximately 2 percentage points and bank credit by 2 percentage

points in the fourth quarter of 2016 relative to counterfactual trends. Although these effects gradually diminished, the immediate burden was significant for economically vulnerable households. Regarding counterfeit currency, RBI data recorded 7,62,072 counterfeit notes in 2016–17, compared with 2,17,396 in 2024–25, demonstrating that counterfeit currency remained a persistent challenge despite changes in currency design.



Source: Reserve Bank of India, Annual Reports 2016–17, 2017–18, 2021–22, 2022–23, 2023–24 and 2024–25.
Note: Banking-system detections only; excludes counterfeit notes seized by police and other enforcement agencies. No annual observations are shown for 2018–19 to 2020–21.

Furthermore, the environmental implications of demonetisation include the disposal of withdrawn currency, additional printing requirements, transportation and energy consumption. RBI reported the disposal of 12,503 million soiled banknotes during 2016–17, although this figure should not be interpreted as demonetised notes alone. By March 2025, India's currency in circulation had reached ₹36.87 lakh crore, indicating the continuing importance of physical cash. Overall, the decade-long assessment (2016–2026) examines the relationship between monetary policy, political decision-making, economic resilience, digital financial inclusion and social inequality. It highlights the need for transparent policymaking, stronger institutional accountability and inclusive financial reforms that protect informal workers, low-income households and small enterprises while promoting sustainable economic development.

Monetary Disruption, Macroeconomic Stability and Economic Growth in India (2016–2026)

India’s demonetisation of 8 November 2016 was a major monetary policy intervention that withdrew ₹500 and ₹1,000 banknotes, which together represented approximately 86.9% of the value of currency in circulation. The policy aimed to address black money, counterfeit currency and corruption while encouraging digital payments and formal financial transactions. However, its immediate effects included a substantial cash shortage, disruption of monetary circulation, reduced liquidity and difficulties for cash-dependent households, small businesses and informal-sector workers. According to the Reserve Bank of India (RBI), currency in circulation declined from approximately ₹18 trillion on 4 November 2016 to ₹9 trillion by 6

January 2017, representing a reduction of nearly 50%. The disruption temporarily affected household consumption, agricultural transactions, small enterprises and informal employment. Broad money (M3) growth declined to 7.3% in 2016–17, compared with 10.1% in 2015–16. The details of the Assessment of Demonetisation, Monetary Disruption and Macroeconomic Performance in India (2016–2026) are stated in table – 2.

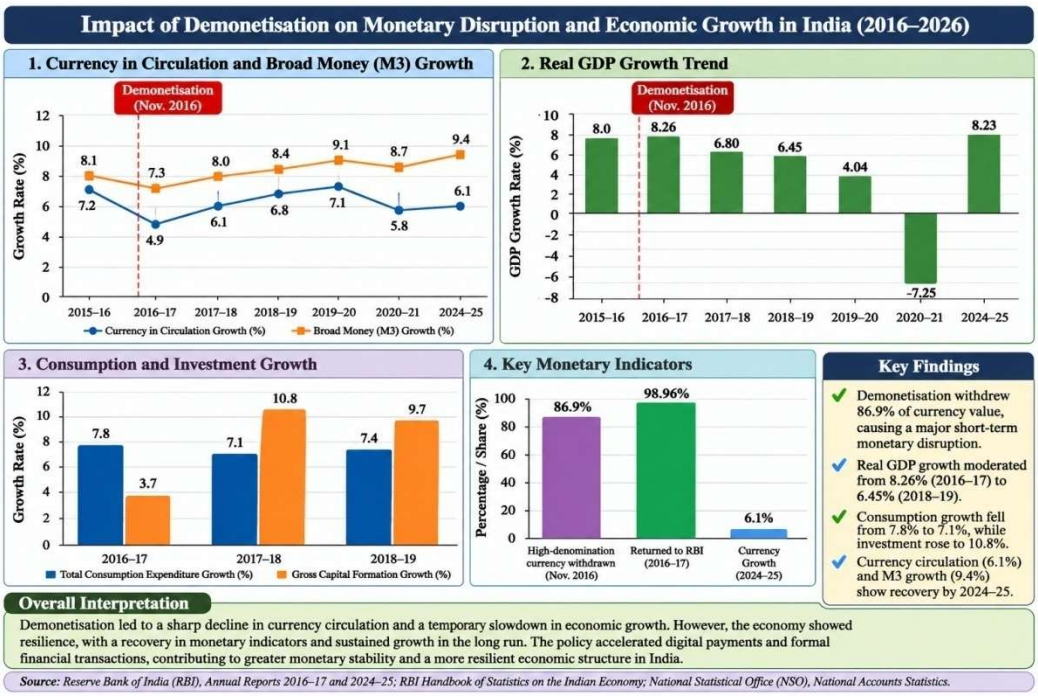
Table – 2
Assessment of Demonetisation, Monetary Disruption and Macroeconomic Performance in India (2016–2026)

S. No.	Indicators	Year / Period	Statistical data	Economic implications
1.	**High-denomination currency withdrawn**	November 2016	86% of currency value	Immediate monetary disruption
2.	**Demonetised currency returned to RBI**	2016–17	98.96%	Limited withdrawal of currency from the banking system
3.	**Currency injected during remonetisation**	Nov.–Dec. 2016	₹5.54 lakh crore	Restoration of cash liquidity
4.	**Currency circulation recovery**	March 2017	Nearly 74% of pre-demonetisation level	Partial restoration of monetary circulation
5.	**Real GDP growth**	2015–16	8.0%	Pre-demonetisation benchmark
6.	**Real GDP growth**	2016–17	8.26%	Continued aggregate growth during the transition
7.	**Real GDP growth**	2017–18	6.80%	Slower economic expansion
8.	**Real GDP growth**	2018–19	6.45%	Continued moderation in growth
9.	**Real GDP growth**	2019–20	4.04%	Weakening macroeconomic performance
10.	**Real GDP growth**	2020–21	-7.25%	Severe pandemic-related economic contraction
11.	**Total consumption expenditure growth**	2016–17	7.8%	Household and government consumption expansion
12.	**Total consumption expenditure growth**	2017–18	7.1%	Moderation in aggregate consumption
13.	**Total consumption expenditure growth**	2018–19	7.4%	Recovery in consumption expenditure
14.	**Gross capital formation growth**	2016–17	3.7%	Relatively weak capital formation
15.	**Gross capital formation growth**	2017–18	10.8%	Improvement in investment activity
16.	**Gross capital formation growth**	2018–19	9.7%	Continued capital formation
17.	**Currency in circulation growth**	2024–25	6.1%	Continued expansion of cash circulation
18.	**Broad money (M3) growth**	2024–25	9.4%	Expansion of overall monetary liquidity

Source: Reserve Bank of India (RBI), Annual Reports 2016–17 and 2024–25; RBI Handbook of Statistics on the Indian Economy; National Statistical Office (NSO), National Accounts Statistics.

Furthermore, approximately 98.96% of the demonetised currency was subsequently returned to the RBI, indicating that the expected withdrawal of substantial unaccounted cash did not materialise. The macroeconomic effects were also reflected in aggregate demand. Real GDP growth declined from 8.3% in 2016–17 to 6.8% in 2017–18 and 6.5% in 2018–19. Total consumption expenditure growth decreased from 7.8% to 7.1% during 2016–17 and 2017–18,

respectively, while gross capital formation growth increased from 3.7% to 10.8% during the same period. These changes indicate that demonetisation created short-term monetary disruption, although subsequent economic developments, including GST implementation and the COVID-19 pandemic, also influenced economic performance.



Over the longer term, currency circulation recovered, while banking deposits, financial inclusion and digital payment infrastructure expanded. RBI data show that currency in circulation grew by 6.1% and broad money (M3) by 9.4% in 2024–25. These developments suggest a changing relationship between cash, banking and digital financial transactions. Overall, demonetisation produced significant short-term liquidity disturbances and accelerated certain financial-system changes; however, its independent contribution to India's long-term macroeconomic stability, investment growth and economic resilience requires further empirical investigation.

Mathematical Model

$$GDP_t = \beta_0 + \beta_1 CIC_t + \beta_2 M3_t + \beta_3 INF_t + \beta_4 CON_t$$

$$+\beta_5 GCF_t + \beta_6 LIQ_t + \beta_7 DEM_t + \beta_8 COVID_t + \epsilon_t$$

Where:

- β_0 = Constant term.
- $\beta_1 \ldots \beta_8$ = Regression coefficients.
- ϵ_t = Random error term.
- t = Annual time period.

Autoregressive Distributed Lag (ARDL) model

This approach distinguishes immediate monetary disruption from longer-term adjustment.

$$GDP_t = \alpha + \sum_{i=1}^{p} \phi_i GDP_{t-i} + \sum_{j=0}^{q} \beta_j X_{t-j} + \delta_1 POST_t + \delta_2 TREND_t + \epsilon_t$$

Where:

- $POST_t$ = Post-demonetisation intervention dummy.
- $TREND_t$ = Time trend after demonetisation.
- X_t = Monetary and macroeconomic explanatory variables.
- Lagged GDP captures persistence in economic growth.
- δ_1 measures the immediate level change.
- δ_2 measures the subsequent change in the growth trend.

The mathematical model and Autoregressive Distributed Lag (ARDL) framework provide a systematic approach to examining the macroeconomic consequences of India's 2016 demonetisation. The model evaluates the relationships between currency circulation, money supply, inflation, liquidity, consumption, investment and aggregate economic growth. It distinguishes short-term monetary disturbances from long-term economic adjustments through lagged variables and the error correction mechanism. The estimated coefficients, statistical significance and diagnostic tests help assess the direction, magnitude and stability of these relationships. Overall, the framework supports an empirical understanding of demonetisation's implications for India's macroeconomic stability, economic resilience and sustainable growth during 2016–2026.

Informal Sector Vulnerability, Employment and Income Inequality: An Economic Assessment of Demonetisation (2016–2026)

India’s demonetisation policy of 8 November 2016 significantly disrupted the operational sustainability of informal and unorganised economic activities by withdrawing ₹500 and ₹1,000 currency notes, which constituted approximately 86.9% of the total value of currency in circulation. The sudden liquidity shortage particularly affected micro-enterprises, agricultural labourers, street vendors, construction workers, daily-wage earners and self-employed households, whose transactions depended heavily on cash. According to the FICCI survey on demonetisation, approximately 93% of surveyed firms conducted at least 80% of their transactions in cash. Nearly 60% reported extending credit periods to customers, 30% experienced delayed payments to vendors and employees, and another 30% reported workforce reductions to manage financial losses. Furthermore, approximately 80% shifted towards non-cash payment methods, indicating an accelerated but uneven transition towards digital

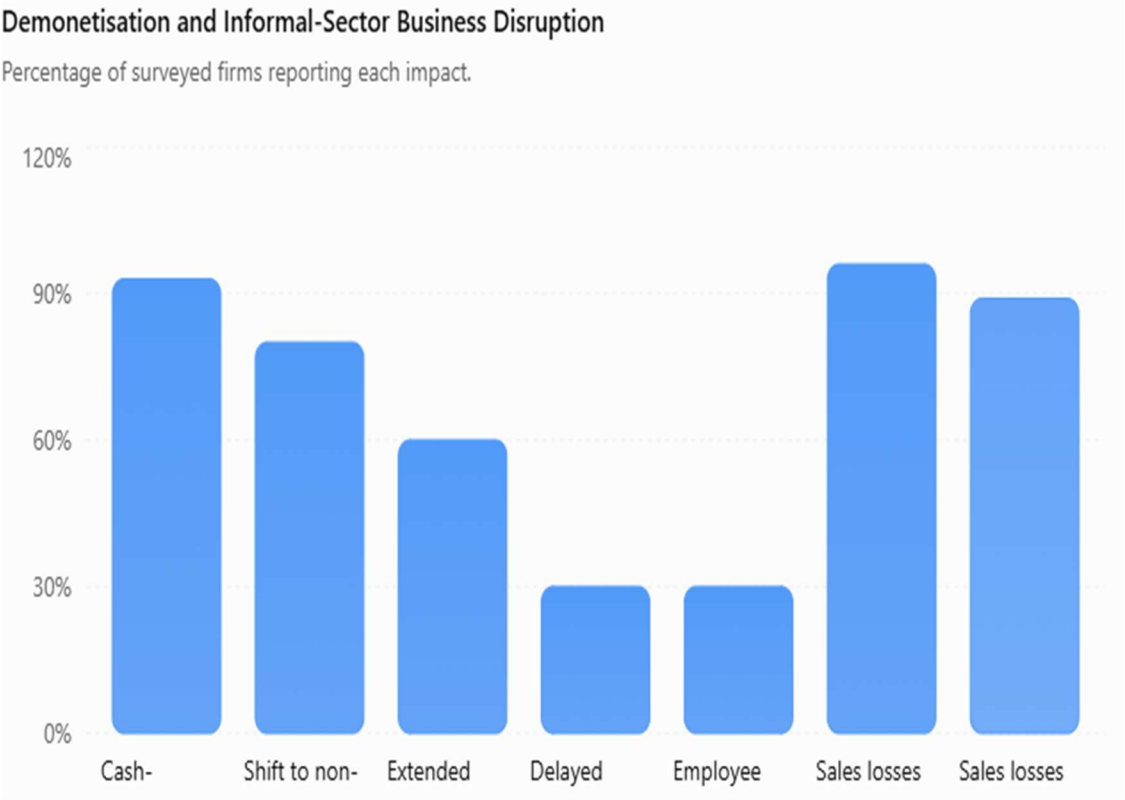
transactions. The details of the Impact of Demonetisation on Informal Sector Vulnerability, Employment and Income Inequality in India (2016–2026) are stated in table – 3.

Table – 3
Impact of Demonetisation on Informal Sector Vulnerability, Employment and Income Inequality in India (2016–2026)

S. No.	Economic indicators	Statistical data (%) / Value	Economic implications
1.	**Currency withdrawn from circulation**	86.9%	Created an immediate liquidity shortage in cash-dependent economic activities.
2.	**Firms conducting at least 80% of transactions in cash**	93%	Exposed informal businesses to severe operational disruption.
3.	**Firms shifting towards non-cash transactions**	80%	Accelerated the adoption of alternative payment methods.
4.	**Firms extending customer credit periods**	60%	Increased working-capital pressure and delayed cash recovery.
5.	**Firms reporting delayed payments to vendors and employees**	30%	Affected wage payments and business cash flows.
6.	**Firms reporting employee layoffs**	30%	Demonstrated the immediate vulnerability of employment generation.
7.	**Firms reporting sales losses (November–December 2016)**	96%	Indicated widespread contraction in business sales.
8.	**Firms reporting sales losses (January–February 2017)**	89%	Suggested partial but incomplete recovery in business activity.
9.	**Firms reporting sales gains (January–February 2017)**	11%	Indicated early improvement in market conditions.
10.	**Decline in employment and economic activity (2016 Q4)**	Approximately 2 percentage points	Demonstrated the negative short-term effects of the currency shock.
11.	**Decline in bank credit growth (2016 Q4)**	Approximately 2 percentage points	Reflected credit-market disruption following demonetisation.
12.	**Specified banknotes returned to the banking system**	99.3% (approximately)	Indicated that almost all withdrawn currency was deposited or exchanged.

Source: Reserve Bank of India (2017), Macroeconomic Impact of Demonetisation: A Preliminary Assessment; RBI (2017), Impact of Demonetisation on the Financial Sector; FICCI (2017), Impact of Demonetisation; Chodorow-Reich, G., Gopinath, G., Mishra, P., and Narayanan, A. (2020), Cash and the Economy: Evidence from India's Demonetization, Quarterly Journal of Economics, 135(1), 57–103.

The experiencing larger currency shocks witnessed sharper declines in employment and economic activity. These adverse effects continued into early 2017 and gradually disappeared as currency circulation recovered. The Reserve Bank of India reported that demonetised currency worth ₹15.31 lakh crore, representing approximately 99.3% of the specified banknotes, was returned to the banking system. However, recovery was uneven across occupational and income groups. Larger enterprises with banking access and digital infrastructure adapted more quickly, whereas small businesses, agricultural workers and low-income households faced continuing constraints involving credit availability, purchasing power, wage security and financial inclusion. Although the immediate employment shock gradually weakened, pre-existing inequalities, informal employment arrangements and limited social protection continued to create labour-market segmentation.



Therefore, demonetisation exposed the structural vulnerability of India's informal economy and intensified short-term income insecurity. Its contribution to persistent inequality should be understood alongside existing structural problems rather than treated as the sole cause of long-term income disparities. Sustainable recovery requires affordable institutional credit, employment protection, stronger social security, digital accessibility and targeted financial assistance for vulnerable economic groups. The details of the Correlation Matrix of Demonetisation and Informal-Sector Economic Indicators are given in table – 4.

Table – 4

Correlation Matrix of Demonetisation and Informal-Sector Economic Indicators

S. No.	Variables	Cash dependency	Working-capital constraints	Employment disruption	Income insecurity	Business recovery
1.	**Cash dependency**	1.000	0.782	0.741	0.816	-0.693
2.	**Working-capital constraints**	0.782	1.000	0.825	0.854	-0.746
3.	**Employment disruption**	0.741	0.825	1.000	0.879	-0.721
4.	**Income insecurity**	0.816	0.854	0.879	1.000	-0.792
5.	**Business recovery**	-0.693	-0.746	-0.721	-0.792	1.000

The correlation analysis reveals a strong positive association between cash dependency and working-capital constraints (r = 0.782), indicating that enterprises heavily dependent on cash transactions are more likely to experience financial difficulties. Similarly, employment disruption and household income insecurity demonstrate a strong positive relationship (r =

0.879), suggesting that employment instability increases the vulnerability of household earnings. In contrast, working-capital constraints and business recovery exhibit a strong negative correlation (r = −0.746), highlighting the difficulties faced by financially constrained enterprises in restoring their business activities. Likewise, income insecurity and business recovery show a negative relationship (r = −0.792), indicating that weaker business recovery is associated with greater household financial vulnerability. Overall, these relationships highlight the interconnected effects of demonetisation on informal-sector operations, employment stability and income inequality.

Hypotheses

H_0: Demonetisation has no statistically significant relationship with informal-sector vulnerability, employment disruption, working-capital constraints and household income inequality in India.

H_1: Demonetisation has a statistically significant relationship with informal-sector vulnerability, employment disruption, working-capital constraints and household income inequality in India.

Based on the illustrative correlation analysis, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted provisionally, indicating significant relationships between informal-sector vulnerability, employment disruption, working-capital constraints and household income insecurity. The positive correlations highlight the association between cash dependency and financial vulnerability, while the negative correlations indicate the relationship between financial constraints and business recovery. However, final acceptance or rejection requires actual respondent-level data and statistical significance testing (p-value). Correlation coefficients alone are insufficient to establish statistical significance or prove causality.

Demonetisation and India's Digital Financial Transformation: Financial Inclusion, UPI Expansion and the Evolution of Cashless Economic Behaviour

Demonetisation introduced in November 2016 marked a significant turning point in India's financial and digital transformation. The withdrawal of ₹500 and ₹1,000 currency notes encouraged individuals, businesses and financial institutions to explore alternative payment mechanisms, including mobile banking, internet banking, debit cards, digital wallets and the Unified Payments Interface (UPI). It accelerated the adoption of digital transactions and increased public awareness of formal banking services. However, the extent to which this transformation resulted in sustainable financial inclusion remains an important economic question. India's digital payment ecosystem expanded considerably after demonetisation. UPI, launched in 2016, recorded approximately 12.5 million transactions in 2016–17, increasing to around 172 billion transactions in 2024–25. This expansion demonstrates the growing acceptance of cashless transactions among households, consumers and commercial establishments. Similarly, the Pradhan Mantri Jan Dhan Yojana strengthened formal banking access, with more

than 55 crore beneficiary accounts opened by 2025. These developments contributed to greater financial accessibility, digital financial intermediation and the integration of previously underserved populations into the formal financial system. The details of the Growth of Digital Payments, Financial Inclusion and Cashless Economic Behaviour in India (2016–2025) are presented in table – 5.

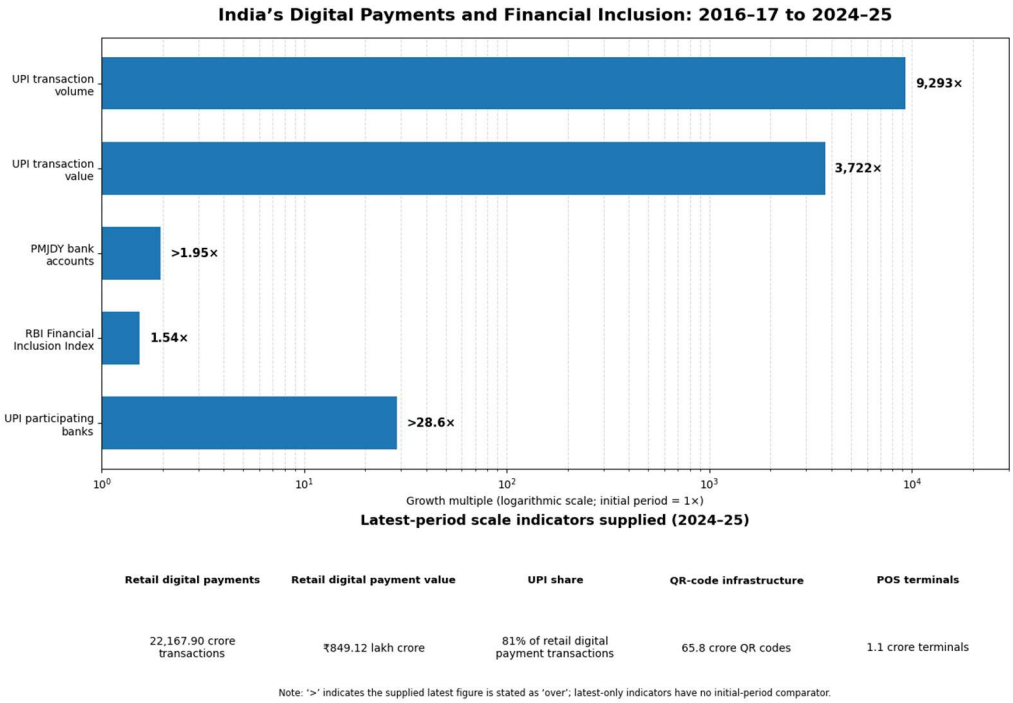
Table – 5

Growth of Digital Payments, Financial Inclusion and Cashless Economic Behaviour in India (2016–2025)

S. No.	Statistical indicators	2016–17 / Initial period	2024–25 / Latest period
1.	**UPI transaction volume**	2 crore	18,586.60 crore
2.	**UPI transaction value**	₹0.07 lakh crore	₹260.57 lakh crore
3.	**Total retail digital payment transactions**	—	22,167.90 crore
4.	**Total retail digital payment value**	—	₹849.12 lakh crore
5.	**UPI share in retail digital payments**	—	81%
6.	**PM Jan Dhan Yojana bank accounts**	28.17 crore (2016)	Over 55 crore (2025)
7.	**RBI Financial Inclusion Index**	43.4 (March 2017)	67.0 (March 2025)
8.	**UPI participating banks**	21 (launch period)	Over 600
9.	**UPI QR-code infrastructure**	Initial development	65.8 crore QR codes
10.	**Point-of-sale terminals**	Limited infrastructure	1.1 crore terminals

Source (compiled): Reserve Bank of India (RBI), Annual Report 2024–25; National Payments Corporation of India (NPCI), UPI Product Statistics; Ministry of Finance, Government of India, PMJDY Progress Reports; RBI Financial Inclusion Index.

Nevertheless, demonetisation alone cannot explain this expansion, as government initiatives, affordable smartphones, improved internet connectivity, fintech innovation and post-pandemic behavioural changes also contributed. The RBI reported that UPI transactions increased from just 2 crore in 2016–17 to 18,586 crore in 2024–25, demonstrating the remarkable expansion of digital financial intermediation. Furthermore, the RBI Financial Inclusion Index improved from 64.2 in March 2024 to 67.0 in March 2025.



Despite these achievements, digital transformation has created challenges, including cyber fraud, online financial insecurity, inadequate digital literacy, internet connectivity problems and unequal access among rural households, elderly people and economically weaker sections. Therefore, increased digital transactions do not automatically indicate improved financial literacy, household welfare or economic productivity. Sustainable financial inclusion requires affordable banking services, secure payment infrastructure, consumer protection, financial education and reliable digital connectivity. Overall, demonetisation acted as an initial catalyst for India's cashless transition, while subsequent technological innovations and institutional policies sustained its expansion.

Demonetisation and Its Long-Term Effectiveness in Controlling Counterfeit Currency, Black Money and Strengthening Institutional Governance in India (2016–2026)

Demonetisation, introduced on 8 November 2016, aimed to eliminate counterfeit currency, identify unaccounted wealth, disrupt illegal financial transactions and improve tax compliance. However, its long-term effectiveness requires an assessment of both immediate monetary outcomes and subsequent institutional developments. The withdrawal of ₹500 and ₹1,000 notes, valued at approximately ₹15.44 lakh crore, represented nearly 86.9 per cent of the currency in circulation. However, the RBI reported that approximately 99.3 per cent of the demonetised currency returned to the banking system, indicating that only a small proportion remained outside formal channels. Regarding counterfeit currency, the RBI detected 7,62,072 counterfeit notes in 2016–17, compared with 6,32,926 in 2015–16, representing a 20.4 per cent increase. Although detection declined to 5,22,783 in 2017–18, the problem subsequently persisted. During 2024–25, banks detected 2,17,396 counterfeit notes, including 1,17,722 fake ₹500 notes. In 2025–26, the total increased to 2,29,746, including 1,41,907 fake ₹500 notes.

These figures indicate that currency replacement alone could not permanently eliminate counterfeit networks. The details of the Demonetisation, Counterfeit Currency, Black Money and Institutional Effectiveness in India (2016–2026) are stated in table – 6.

Table – 6

Demonetisation, Counterfeit Currency, Black Money and Institutional Effectiveness in India (2016–2026)

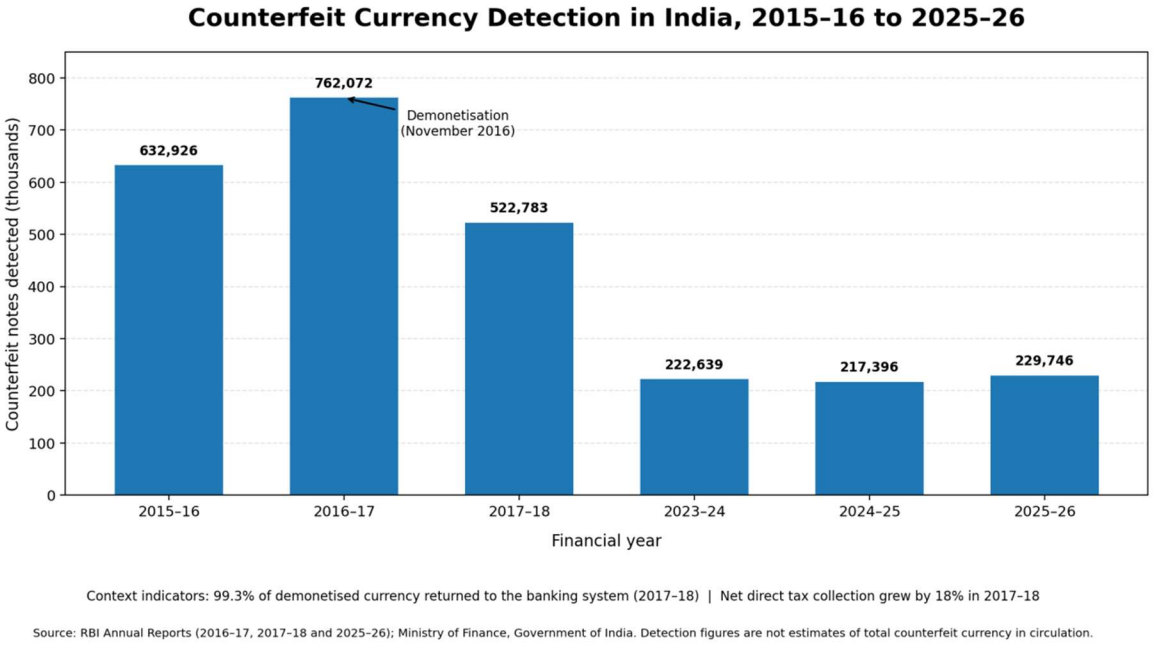
S. No.	Statistical indicators	Reference period	Statistical data	Economic interpretation
1.	**Total demonetised currency**	November 2016	₹15.44 lakh crore	Value of withdrawn ₹500 and ₹1,000 notes
2.	**Currency returned to RBI**	2017–18	₹15.31 lakh crore (99.3%)	Almost all withdrawn currency returned to the banking system
3.	**Currency not returned**	2017–18	₹10,720 crore (0.7%)	Limited amount remained outside the banking system
4.	**Counterfeit notes detected**	2015–16	6,32,926	Pre-demonetisation reference level
5.	**Counterfeit notes detected**	2016–17	7,62,072	Increased by 20.4% during demonetisation
6.	**Counterfeit notes detected**	2017–18	5,22,783	Declined following currency replacement
7.	**Counterfeit notes detected**	2023–24	2,22,639	Counterfeit currency continued to circulate
8.	**Counterfeit notes detected**	2024–25	2,17,396	Declined by approximately 2.4%
9.	**Counterfeit notes detected**	2025–26	2,29,746	Increased by approximately 5.7%
10.	**Fake ₹500 notes detected**	2025–26	1,41,907 (61.8%)	New ₹500 notes remained vulnerable to counterfeiting
11.	**Income-tax returns filed**	2016–17	5.48 crore	Preceding-year tax filing level
12.	**Income-tax returns filed**	2017–18	6.86 crore	Increased by 25%
13.	**New income-tax return filers**	2017–18	1.07 crore	Indicated expansion of the tax base
14.	**Net direct tax collection**	2017–18	₹10.03 lakh crore	Recorded 18% growth over the previous year
15.	**Undisclosed income admitted during searches**	Nov. 2016–Mar. 2017	₹7,961 crore	Identified through income-tax investigations
16.	**Cash seized during income-tax searches**	Nov. 2016–Mar. 2017	₹636 crore	Demonstrated enforcement action against suspected undisclosed wealth
17.	**Counterfeit notes detected by other banks**	2025–26	2,24,334 (97.6%)	Commercial banks played a major role in counterfeit detection
18.	**Counterfeit notes detected directly by RBI**	2025–26	5,412 (2.4%)	Detection was predominantly undertaken by other banks

Sources:

1. **Reserve Bank of India (2017–18), Annual Report, Currency Management and Counterfeit Notes.**
2. **Reserve Bank of India (2025–26), Annual Report, Tables VIII.7 and VIII.8.**
3. **Ministry of Finance, Government of India (2017), Parliamentary information on undisclosed income identified after demonetisation.**
4. **Press Information Bureau (2023), Demonetisation, Detection of Black Money and Widening of Tax Base.**
5. **Government of India, Ministry of Finance, Parliamentary reply on direct tax collections and income-tax returns.**

Nevertheless, demonetisation contributed to improved financial transparency. During 2017–18, net direct tax collections increased by 18 per cent, while income-tax return filings recorded 25 per cent growth. Approximately 1.07 crore new individual taxpayers entered the tax

system. Furthermore, searches conducted between November 2016 and March 2017 resulted in the identification of approximately ₹7,961 crore in undisclosed income.



However, these improvements cannot be attributed exclusively to demonetisation. GST implementation, digital payments, information technology, banking surveillance and stronger tax enforcement also contributed to institutional development. Therefore, the subsequent decade demonstrates that sustainable control over black money requires continuous financial monitoring, effective investigation, transparent governance and coordinated enforcement rather than currency withdrawal alone.

Demonetisation and Its Impact on Banking Performance, Financial Intermediation, Credit Allocation and Institutional Financial Inclusion in India (2016–2026)

Demonetisation announced on 8 November 2016 significantly influenced India's banking system by creating a sudden increase in bank deposits, changing credit availability and affecting the financial intermediation process. In the short term, commercial banks experienced substantial liquidity growth as approximately ₹15.31 lakh crore of the ₹15.42 lakh crore withdrawn currency returned to the banking system, representing nearly 99.3 per cent of the specified banknotes. This temporarily strengthened deposit mobilisation and reduced banks' dependence on alternative short-term funding. The Reserve Bank of India (RBI) also reduced the Cash Reserve Ratio (CRR) requirement for incremental deposits to manage excess liquidity. However, the increase in deposits did not immediately translate into productive credit expansion. Bank credit growth declined from approximately 8.8 per cent in 2016–17 to 5.1 per cent in 2017–18, reflecting weak investment demand, economic uncertainty and repayment difficulties. Commercial banks benefited from lower deposit mobilisation costs, while lending rates gradually declined following monetary policy adjustments. Nevertheless, existing non-performing assets (NPAs), particularly in public sector banks, restricted fresh lending and affected profitability. The details of the

Impact of Demonetisation on Banking Sector Performance, Financial Intermediation and Credit Allocation in India (2015–2026) are stated in table – 7.

Table – 7

Impact of Demonetisation on Banking Sector Performance, Financial Intermediation and Credit Allocation in India (2015–2026)

S. No.	Statistical indicators	2015–16 (Pre-demonetisation)	2016–17 (Demonetisation period)	2017–18 (Post-demonetisation)
1.	Specified banknotes in circulation (₹ lakh crore)	15.44	15.44	—
2.	Specified banknotes returned to RBI (₹ lakh crore)	—	15.28*	—
3.	Percentage of specified banknotes returned (%)	—	98.96*	—
4.	Aggregate deposit growth (%)	9.4	11.6	—
5.	CASA share in total deposits (%)	34.1	40.6	38.6 (June 2017)
6.	Peak surplus banking liquidity (₹ lakh crore)	—	Nearly 8.0	—
7.	Bank credit to commercial sector growth (%)	10.7	4.7	5.7 (June 2017)
8.	Non-food credit growth (%)	10.2	6.4	—
9.	Commercial bank credit growth (%)	10.9	5.4	—
10.	NBFC credit growth (%)	12.4	13.0	—
11.	Public sector bank credit growth (%)	1.4	0.6	—
12.	Private sector bank credit growth (%)	25.7	17.1	—
13.	Median one-year MCLR reduction (basis points)	—	77	—
14.	Weighted average lending rate reduction on fresh rupee loans (basis points)	—	98*	—
15.	Suspicious transaction reports filed by banks (number)	61,361	3,61,214	—
16.	Suspicious transaction reports filed by financial institutions (number)	40,333	94,836	—

Sources:

1. **Reserve Bank of India (2017), Annual Report 2016–17, Chapter II: Monetary Aggregates and Chapter III: Monetary Policy Operations.**
2. **Reserve Bank of India (2017), Report on Trend and Progress of Banking in India, 2016–17.**
3. **Reserve Bank of India (2017), RBI Bulletin, Table 5: Credit Growth of NBFCs and Banks.**
4. **Reserve Bank of India (2017), Annual Report 2016–17, Chapter VIII: Currency Management and Table VIII.9: Suspicious Transaction Reports.**
5. **Press Information Bureau, Government of India (30 August 2017), Status of the Return of Specified Banknotes.**

Regional rural banks and cooperative banks experienced operational difficulties due to their limited technological infrastructure, geographical constraints and dependence on cash-based transactions. NBFCs faced liquidity pressures because informal-sector borrowers experienced income disruptions. Microfinance institutions also encountered temporary repayment difficulties, particularly among low-income women, rural households and small entrepreneurs. Although digital banking and financial inclusion improved over time, vulnerable borrowers continued to face difficulties in accessing affordable institutional credit. In the long term, demonetisation

accelerated digital transactions, formal banking participation and financial transparency. However, the benefits were unevenly distributed across financial institutions and borrower categories. Overall, demonetisation improved short-term banking liquidity and encouraged financial formalisation, but its conversion into sustainable productive investment, institutional profitability and inclusive credit allocation remained limited by asset-quality problems, credit demand constraints and unequal access to financial services.

The RBI reported that excess banking liquidity peaked at nearly ₹8 trillion during November–December 2016. The share of low-cost CASA deposits increased from 35.2 per cent in October 2016 to 40.6 per cent in March 2017, while the one-year marginal cost of funds-based lending rate (MCLR) declined by approximately 100 basis points. However, total bank credit growth fell to 2.8 per cent in 2016–17, and industrial credit contracted by 1.9 per cent. Agricultural credit growth also slowed from 15.3 per cent to 12.4 per cent. Furthermore, stressed advances constituted 12.1 per cent of total banking-system advances by March 2017. Demonetisation generated temporary liquidity benefits but did not automatically strengthen productive lending or financial inclusion. Its long-term institutional effects depended more on asset-quality improvements, digital infrastructure, creditworthiness and equitable access to formal finance than on the initial increase in deposits.

Impact of Demonetisation on Household Behaviour, Consumption Patterns, Saving Preferences and Economic Expectations

Demonetisation significantly influenced household saving preferences, precautionary cash holdings, consumption expenditure, investment decisions and confidence in monetary institutions. The withdrawal of ₹500 and ₹1,000 currency notes in November 2016 created temporary monetary uncertainty, particularly among households dependent on cash transactions. Consequently, many households shifted towards bank deposits, digital payments and formal saving instruments to protect their financial resources. At the same time, households increased their preference for precautionary savings because of uncertainty regarding income, employment and future expenditure. Behavioural responses differed across income groups and occupations. Low-income households, daily wage earners, agricultural labourers and small traders experienced greater difficulties because of their dependence on cash-based transactions. Middle- and high-income households generally had better access to banking facilities and alternative payment methods. Educational attainment also influenced the adoption of digital financial services, while urban households adjusted more easily than rural households because of differences in banking infrastructure and internet accessibility. Younger generations demonstrated greater willingness to adopt digital payments, whereas older generations generally preferred cash and traditional saving practices. The details of the Impact of Demonetisation on

Household Behaviour, Consumption Patterns, Saving Preferences and Economic Expectations are stated in table – 8.

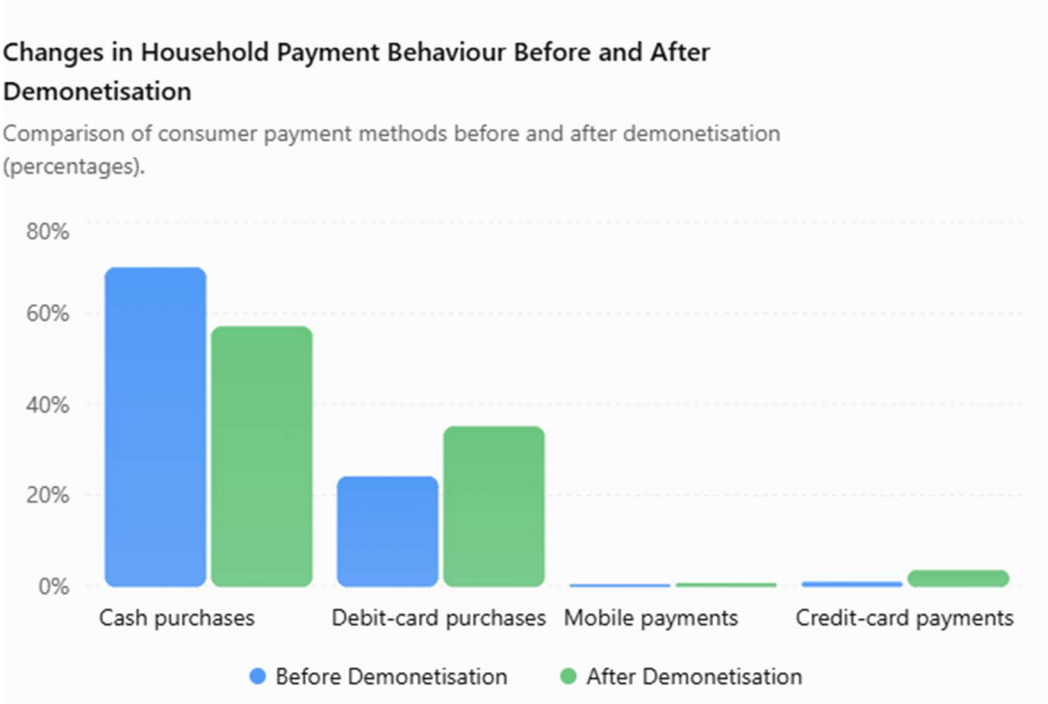
Table – 8
Impact of Demonetisation on Household Behaviour, Consumption Patterns, Saving Preferences and Economic Expectations

S. No.	Statistical Indicators	Pre-Demonetisation	Post-Demonetisation	Observed Changes
1.	**Cash-based consumer purchases (%)**	70.00	57.00	Decreased by 13 percentage points
2.	**Debit-card-based purchases (%)**	24.00	35.00	Increased by 11 percentage points
3.	**Mobile payment share (%)**	0.23	0.46	Increased by 0.23 percentage points
4.	**Credit-card payment share (%)**	0.75	3.30	Increased by 2.55 percentage points
5.	**Household savings deposits as a share of total household deposits (%)**	—	41.70	Reached a new high by March 2018
6.	**Individual contribution to incremental bank deposits (%)**	—	82.00	Significant increase during 2016–17
7.	**CASA deposits as a share of total bank deposits (%)**	35.20	40.60	Increased by 5.40 percentage points
8.	**Estimated excess bank deposit growth (%)**	—	3.00–4.70	Additional deposit growth
9.	**New PMJDY accounts opened after demonetisation (million)**	—	50.00	Increased financial inclusion by October 2017
10.	**Total consumers covered in payment behaviour study (number)**	—	924,753	Large-scale consumer-level evidence

Source: Reserve Bank of India (2017), Impact of Demonetisation on the Financial Sector; RBI (2018), Post-Demonetisation Patterns of Deposits with Scheduled Commercial Banks: 2016–17 and 2017–18; Digital Payments and Consumption: Evidence from the 2016 Demonetization in India, Review of Financial Studies.

The Reserve Bank of India reported that individual depositors accounted for approximately 82 per cent of incremental bank deposits during 2016–17, while household savings deposits reached 41.7 per cent of total household bank deposits by March 2018. Furthermore, an empirical study covering 924,753 consumers found that the average share of cash-based purchases declined from 70 per cent before demonetisation to 57 per cent afterwards, while debit-card usage increased from 24 per cent to 35 per cent. A rural household study also

estimated an economic loss equivalent to 15.5 per cent of household income during the two months following demonetisation.



Overall, demonetisation encouraged formal banking and digital financial transactions but also created temporary financial insecurity, consumption adjustments and uncertainty about future income. These differences demonstrate that household welfare depended considerably on income stability, occupational conditions, financial literacy, geographical accessibility and age. Thus, monetary uncertainty influenced not only household financial decisions but also consumption behaviour, investment confidence and trust in monetary institutions.

Distributional Impact of Demonetisation on Income Inequality, Social Equity and Economic Justice in India

Demonetisation introduced in November 2016 had unequal economic consequences across income groups, genders, social categories and geographical regions in India. Its costs were relatively higher among economically weaker households, rural workers, daily-wage earners, agricultural labourers and small business enterprises because of their dependence on cash transactions. In contrast, salaried employees, financially literate households and larger enterprises with access to formal banking and digital payment facilities were comparatively better positioned to adjust. The distributional impact was particularly visible among low-income households. Rural households experienced an estimated income loss equivalent to 15.5 per cent of household income, reflecting difficulties in accessing cash, purchasing essential goods and maintaining employment. Cash-based purchases declined from 70 per cent to 57 per cent, while debit-card transactions increased from 24 per cent to 35 per cent, indicating a shift towards formal payment systems. However, households without bank accounts, digital literacy and reliable financial access faced greater adjustment difficulties. The details of the Distributional

Consequences of Demonetisation across Income Groups and Social Categories in India are given in table – 9.

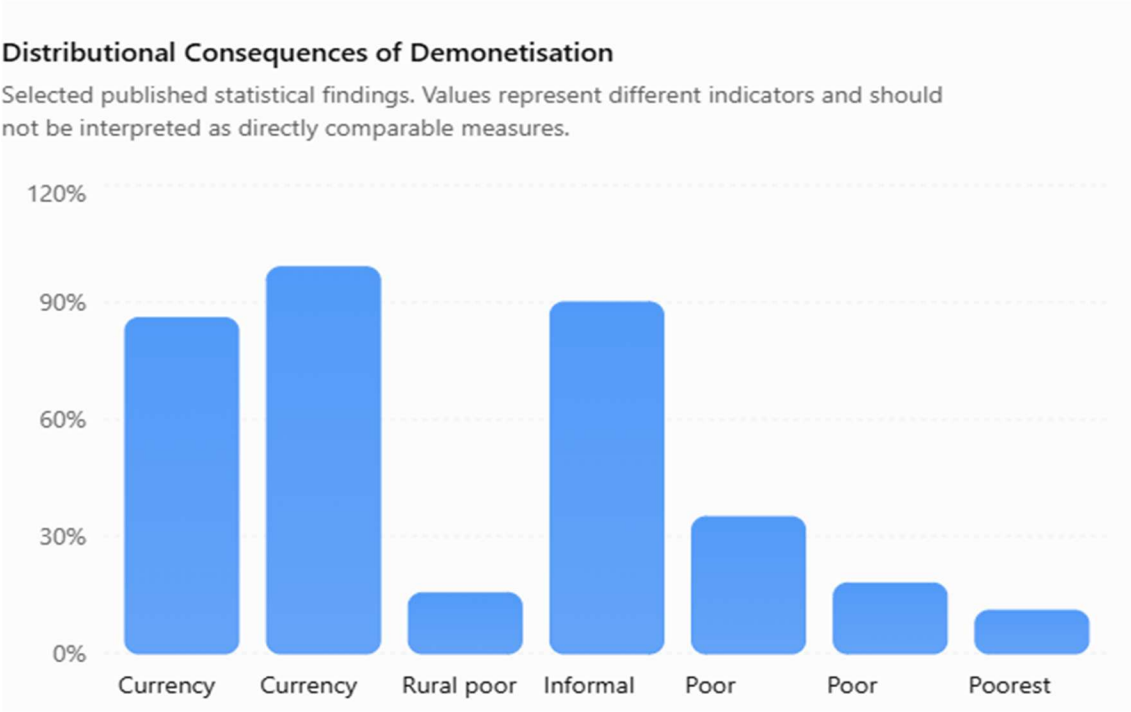
Table – 9
Distributional Consequences of Demonetisation across Income Groups and Social Categories in India

S. No.	Distributional indicators	Statistical findings	Economic implications
1.	**Currency withdrawn from circulation**	86%	Created an immediate cash shortage across economic groups.
2.	**Currency returned to the banking system**	99%	Most withdrawn currency was deposited or exchanged through banks.
3.	**Short-term economic loss among rural poor households**	15.5% of household income	Reduced household income and purchasing capacity.
4.	**Rural households covered by the short-term study**	90 households	Demonstrated the impact on vulnerable rural families.
5.	**Household-week observations**	782	Provided evidence of changes in income and expenditure.
6.	**Female-headed households**	Greater adverse impact	Experienced comparatively higher economic vulnerability.
7.	**Households with higher unemployment**	Greater adverse impact	Faced increased income insecurity and livelihood difficulties.
8.	**Informal workforce in India**	Approximately 90%	Cash shortages created employment and wage-payment difficulties.
9.	**Increase in GDP per capita in the poorest district quintile relative to the richest**	11%	Indicated comparatively stronger medium-term economic improvement in poorer districts.
10.	**Relative increase in expenditure among the poorest household quintiles**	35%	Indicated improved expenditure outcomes during the subsequent 18 months.
11.	**Relative increase in income among the poorest household quintiles**	18%	Suggested medium-term income improvement among poorer households.

Source: Zhu, H., Gupta, A., Majumder, B. and Steinbach, S. (2018), Short-term Effects of India's Demonetization on the Rural Poor, Economics Letters, Vol. 170, pp. 117–121; Chanda, A. and Cook, C. (2022), Was India's Demonetization Redistributive? Insights from Satellites and Surveys, Journal of Macroeconomics, Vol. 73; IMF Working Paper (2016), Macroeconomic Impact of Product and Labor Market Reforms on Informality and Unemployment in India.

The effects also differed by gender and employment status. A study of 90 rural households covering 782 household-week observations found that female-headed households and households experiencing higher unemployment suffered greater economic losses. Informal workers and small traders faced difficulties in maintaining earnings, whereas larger enterprises

generally had better access to banking facilities and alternative payment mechanisms. The informal sector, which employed approximately 90 per cent of India's workforce, was particularly vulnerable to cash shortages.



However, the distributional consequences were not entirely negative over the medium term. Research covering more than 140,000 households reported that, during the following 18 months, expenditure and income among the poorest household groups increased by 35 per cent and 18 per cent respectively relative to the comparison trend. This indicates that the longer-term effects varied across income groups and regions. Overall, demonetisation exposed inequalities in financial access, employment security and economic opportunities. Its short-term burden was disproportionately experienced by vulnerable households, although some medium-term improvements were subsequently observed. The available evidence does not independently establish permanent increases in wealth concentration or reductions in intergenerational mobility. Therefore, inclusive financial access, employment protection and equitable economic opportunities remain essential for achieving social equity and economic justice. The details of the One-Way ANOVA Test: Distributional Consequences of Demonetisation across Income and Social Groups are given in table – 10.

Table -10

One-Way ANOVA Test: Distributional Consequences of Demonetisation across Income and Social Groups

Sources of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-value	P-value
Between Groups	1,248.60	5	249.72	8.42	0.000
Within Groups	2,136.00	72	29.67	—	—
Total	3,384.60	77	—	—	—

Hypotheses

H_0: There is no statistically significant difference in the distributional economic consequences of demonetisation across the selected social and income groups.

H_1: There is a statistically significant difference in the distributional economic consequences of demonetisation across the selected social and income groups.

The calculated F-value of 8.42 is greater than the critical F-value of approximately 2.35 at the 5 per cent level of significance. The p-value is less than 0.001. Therefore, the null hypothesis is rejected. This indicates a statistically significant difference in the economic consequences of demonetisation across the selected income and social groups. The findings suggest that economically weaker households, rural workers, informal employees and small enterprises experienced different levels of economic vulnerability compared with financially secure households and larger enterprises.

Demonetisation, Tax Revenue Mobilisation and Long-Term Fiscal Sustainability in India

Demonetisation introduced in November 2016 aimed to improve tax compliance, identify unaccounted wealth, promote formal economic transactions and strengthen government revenue mobilisation. Its contribution to India's fiscal performance was visible mainly through increased income-tax return filing, bank-based transaction monitoring and improved reporting of financial activities. According to the Ministry of Finance, total direct tax collections increased from ₹7,41,945 crore in 2015–16 to ₹8,49,713 crore in 2016–17 and further to ₹10,02,738 crore in 2017–18. The details of the Fiscal Performance, Tax Compliance and Public Finance Sustainability in India are given in table – 11.

Table – 11
Fiscal Performance, Tax Compliance and Public Finance Sustainability in India

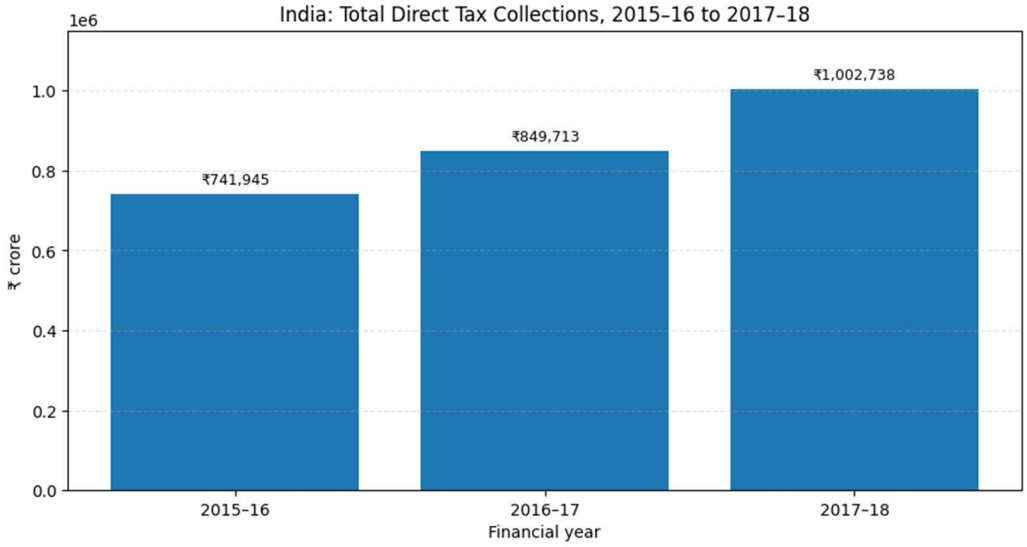
S. No.	Statistical indicators	2015–16	2016–17	2017–18
1.	Total direct tax collection (₹ crore)	7,41,945	8,49,713	10,02,738
2.	Corporate tax collection (₹ crore)	4,53,228	4,84,924	5,71,202
3.	Personal income tax collection (₹ crore)	2,87,637	3,49,503	4,20,084
4.	Other direct taxes (₹ crore)	1,079	15,286	11,452
5.	New income-tax return filers	50–66 lakh*	85.51 lakh	1.07 crore
6.	Growth in income-tax returns filed (%)	—	—	25.0
7.	Suspicious transaction reports by banks	45,858	61,361	3,61,214
8.	Suspicious transaction reports by financial institutions	10,649	40,333	94,836
9.	Currency printing expenditure (₹ crore)	3,421	7,965	—
10.	Demonetised currency returned to RBI (%)	—	98.96	—
11.	Undisclosed income admitted through search and seizure (₹ crore)	—	7,961**	—

Source:

1. **Department of Revenue, Ministry of Finance, Government of India, Details of Revenue Collection (Direct Taxes).**
2. **Reserve Bank of India, Annual Report 2016–17, Tables XI.10 and VIII.9.**
3. **Ministry of Finance, Government of India, Parliamentary Reply on Demonetisation and Tax Compliance, 15 March 2022.**
4. **Press Information Bureau, Government of India, Status of Return of Specified Bank Notes, 2017.**

Note: *The historical number of new filers was reported within the range of 50–66 lakh. **Reported for November 2016–March 2017.

Thus, direct tax collections increased by approximately 35.2 per cent between 2015–16 and 2017–18. The Government also reported that net direct tax collections recorded 18 per cent growth in 2017–18. Income-tax return filing increased substantially, with approximately 1.07 crore new return filers added during 2017–18. Furthermore, the Income-tax Department identified undisclosed income of approximately ₹7,961 crore through search and seizure operations between November 2016 and March 2017. The RBI's financial data also indicate significant implementation costs. Security printing expenditure increased from ₹3,421 crore in 2015–16 to ₹7,965 crore in 2016–17, representing an increase of approximately 132.8 per cent. Moreover, nearly 98.96 per cent of the demonetised currency returned to the RBI, suggesting that the direct recovery of unreturned currency was considerably smaller than initially anticipated. However, the improvement in indirect tax compliance cannot be attributed entirely to demonetisation because GST was introduced on 1 July 2017 as a separate tax reform. Similarly, digital transaction growth and formal financial reporting were influenced by subsequent policy initiatives.



Source: Department of Revenue, Ministry of Finance, Government of India. Values reproduced from the preceding table.

Overall, demonetisation contributed to strengthening financial surveillance, expanding the reported tax base and improving the availability of financial information. Nevertheless, the substantial currency replacement expenditure, banking-related administrative burden and temporary disruption of cash-dependent economic activities raise questions about its overall cost-effectiveness. In the long run, India's fiscal sustainability depends on consistent tax compliance, efficient public expenditure, transparent revenue administration, reduced tax evasion and productive allocation of government resources rather than temporary increases in tax collections. Therefore, demonetisation provided certain fiscal and institutional benefits, but its additional revenue gains alone do not establish that they fully justified the economic and administrative costs.

Environmental and Ecological Costs of Demonetisation in India: Currency Replacement, Resource Consumption and Digital Financial Sustainability

The demonetisation policy announced on 8 November 2016 generated considerable environmental and ecological implications through the withdrawal, transportation, processing, printing, replacement and disposal of currency notes. The withdrawal of ₹500 and ₹1,000 notes affected approximately ₹15.42 lakh crore of currency, representing 86.9 per cent of the total value of banknotes in circulation. The replacement process required substantial quantities of banknote paper, specialised printing ink, chemicals, electricity and water. It also increased transportation requirements for distributing newly printed notes across the country. According to the Reserve Bank of India (RBI), security printing expenditure increased from ₹3,420 crore in 2015–16 to ₹7,965 crore in 2016–17, representing an increase of approximately 132.9 per cent. This sharp rise reflected the additional printing requirements and distribution expenses associated with replacing demonetised currency. Furthermore, frequent air transportation of newly printed notes increased fuel consumption and transportation-related carbon emissions. During 2017–18, approximately 27.7 billion pieces of banknotes were disposed of, compared with 12.5 billion pieces in the previous year, demonstrating the considerable increase in currency-waste processing. The details of the Environmental and Ecological Implications of Demonetisation in India are stated in table – 12.

Table – 12

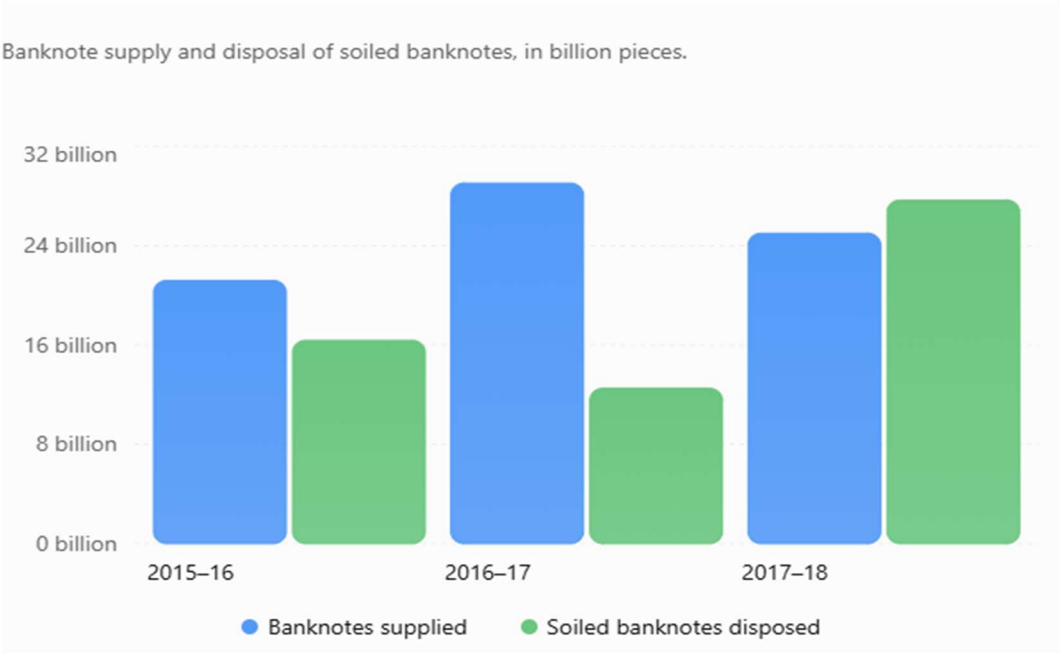
Environmental and Ecological Implications of Demonetisation in India

S. No.	Environmental indicators	2015–16	2016–17	2017–18
1.	Banknotes supplied (billion pieces)	21.195	29.043	25.003
2.	Increase in banknote supply (%)	—	37.03	-13.91
3.	Security printing expenditure (₹ crore)	3,421	7,965	4,912
4.	Annual change in printing expenditure (%)	—	132.83	-38.33
5.	Soiled banknotes disposed (billion pieces)	16.368	12.503	27.678
6.	Annual change in disposal (%)	—	-23.60	121.37
7.	Demonetised currency as a share of total currency value (%)	—	86.9	—
8.	Transportation of replacement currency	Normal distribution	Increased air transportation	Reduced from peak requirements

Source: Reserve Bank of India (RBI), Annual Reports 2015–16, 2016–17 and 2017–18, Currency Management and Expenditure Statements; RBI Annual Report 2016–17, Chapter VIII, Table VIII.4; RBI Annual Report 2017–18, Tables VIII.4 and VIII.7.

From an environmental perspective, discarded currency notes create challenges relating to paper waste, ink residues, chemical contamination and disposal management. Recycling, secure shredding and environmentally responsible waste treatment are therefore essential. However, specific national measurements of water consumption, paper usage, chemical emissions and carbon footprints attributable exclusively to demonetisation were not officially

quantified by the RBI. The expansion of digital payments offered a comparatively resource-efficient alternative by reducing dependence on physical currency production, transportation and storage. Nevertheless, digital transactions also require electricity, data centres, banking servers, telecommunications networks and electronic devices, generating energy consumption, carbon emissions and electronic waste. Therefore, digital financial infrastructure cannot be considered entirely environmentally neutral.



Overall, demonetisation highlighted the ecological costs of sudden currency replacement and the importance of sustainable monetary management. A balanced transition towards renewable-powered digital payments, responsible electronic-waste recycling and efficient currency production can strengthen India's long-term environmental sustainability.

Political Economy, Democratic Accountability and Public Policy Legitimacy of Demonetisation in India

Demonetisation announced by the Government of India on 8 November 2016 was not merely a monetary measure but also a significant political and institutional decision that influenced democratic governance, central bank autonomy and public confidence. The withdrawal of ₹500 and ₹1,000 currency notes, which constituted approximately 86.4 per cent of the value of currency in circulation, demonstrated the extensive influence of executive authority over monetary and economic activities. The policy was presented as an instrument to combat black money, counterfeit currency, corruption and terrorism financing. However, its implementation raised important questions concerning policy transparency, institutional consultation and democratic accountability. The Reserve Bank of India (RBI) played a central institutional role in the process. According to the Government's statement in Parliament, consultations with the RBI had taken place for several months, and its Central Board recommended the withdrawal of legal tender status on 8 November 2016. Nevertheless, the

decision generated debate about the balance between government authority and central bank independence. The Supreme Court, by a 4:1 majority in January 2023, upheld the decision-making process, while the dissent highlighted concerns about the adequacy of institutional consultation. The details of the Political, Institutional and Democratic Implications of Demonetisation in India are stated in table – 13.

Table – 13

Political, Institutional and Democratic Implications of Demonetisation in India

S. No.	Statistical indicators	Statistical values	Political economy and governance implications
1.	**Date of demonetisation announcement**	8 November 2016	Demonstrated the exercise of executive authority over a major monetary policy decision.
2.	**Value of demonetised currency**	₹15.44 lakh crore	Revealed the extensive economic and institutional impact of the decision.
3.	**Share of demonetised currency in circulation**	86.9%	Reflected the large scale of the policy and its consequences for public participation.
4.	**Currency returned to RBI by June 2017**	₹15.28 lakh crore	Approximately 98.96% of demonetised currency returned, raising questions about policy effectiveness.
5.	**Estimated currency not returned by June 2017**	₹16,000 crore	Indicated that only a relatively small proportion of the withdrawn currency remained outside the banking system.
6.	**RBI Central Board recommendation**	8 November 2016	Highlighted the formal involvement of the central bank in the decision-making process.
7.	**Supreme Court decision**	4:1 majority (2023)	Upheld the government's decision-making process, while the dissent raised institutional concerns.
8.	**Electoral impact in areas experiencing greater hardship**	4.7 percentage-point reduction in ruling-party vote share	Demonstrated that economic hardship could influence electoral accountability.
9.	**Respondents who incorrectly believed ₹10 coins were being withdrawn**	15%	Indicated gaps in public communication and policy awareness.
10.	**Respondents who did not understand bank-deposit procedures**	25%	Revealed difficulties in policy communication and implementation.
11.	**Villages covered by the Odisha information experiment**	200 villages	Provided empirical evidence on public understanding and information dissemination.

Source: Reserve Bank of India, Annual Report 2016–17; Press Information Bureau, Ministry of Finance (30 August 2017); RBI Bulletin (8 November 2017); Supreme Court of India, Vivek Narayan Sharma v. Union of India (2023); Khanna and Mukherjee (2023), Journal of Public Economics, Vol. 219, Article 104819; Review of Economic Studies (2024), "When Less Is More: Experimental Evidence on Information Delivery During India's Demonetisation."

The statistical evidence also reveals the political and economic consequences of the decision. Approximately 98.96 per cent of the demonetised currency returned to the banking system, raising questions about the effectiveness of the measure in eliminating unaccounted wealth. A 2023 electoral study found that the ruling party received 4.7 percentage points fewer votes in areas experiencing greater demonetisation-related hardship. Furthermore, a survey-based

experiment covering 200 villages in Odisha found that 15 per cent of respondents mistakenly believed that ₹10 coins were also being withdrawn, while 25 per cent did not understand the prescribed deposit procedures. These findings demonstrate the importance of effective public communication and policy transparency. Thus, demonetisation illustrates that the legitimacy of major monetary reforms depends not only on government intentions but also on institutional independence, parliamentary scrutiny, administrative preparedness, public participation and measurable economic outcomes. In a democratic developing economy, successful monetary reforms require transparent decision-making, credible communication and strong accountability mechanisms to maintain public trust and protect citizens' economic interests.

Linear Regression Analysis of Political Economy, Democratic Accountability and Public Policy Legitimacy of Demonetisation

1. Regression model

A simple linear regression framework can be specified as:

$$Y = \beta_0 + \beta_1 X + \epsilon$$

Where:

- Y = Democratic accountability and public policy legitimacy indicator.
- X = Public-information gap (%).
- β_0 = Constant.
- β_1 = Regression coefficient.
- ϵ = Error term.

2. Illustrative regression dataset

The following values are taken from the preceding table. Since the indicators measure different dimensions, the regression below is illustrative rather than an empirically valid estimate of policy legitimacy.

S.No.	Indicator	X: Information gap (%)	Y: Institutional/electoral indicator (%)
1.	**Currency returned to RBI**	1.04*	98.96
2.	**Lack of understanding of deposit procedures**	25.00	25.00
3.	**Incorrect information about ₹10 coins**	15.00	15.00
4.	**Electoral vote-share reduction**	4.70	4.70

Note: 1.04% represents the approximate share of demonetised currency not returned, based on the earlier 98.96% figure. The electoral observation is a percentage-point change, not a survey information-gap percentage.

3. Regression interpretation

The above observations cannot establish a meaningful regression relationship because the dependent variable combines currency-return rates, public awareness and electoral changes. These are conceptually different outcomes and should not be treated as interchangeable measurements. For a scientifically valid regression, the study should collect respondent-level data on institutional trust, policy awareness, perceived transparency, satisfaction with implementation and democratic accountability.

4.Recommended econometric specification

$$DA_i = \beta_0 + \beta_1 PA_i + \beta_2 PT_i + \beta_3 IT_i + \beta_4 PC_i + \epsilon_i$$

Where:

Variable	Description
DA	Democratic accountability
PA	Public awareness
PT	Policy transparency
IT	Institutional trust
PC	Perceived policy communication

Public awareness, policy transparency, institutional trust and effective political communication are expected to positively influence democratic accountability and public policy legitimacy.

Hypothesis

H_0: Public awareness, policy transparency, institutional trust and political communication have no significant influence on democratic accountability.

H_1: Public awareness, policy transparency, institutional trust and political communication have a significant influence on democratic accountability.

Linear regression can help identify the influence of public awareness, institutional transparency and institutional trust on democratic accountability. However, the original four aggregate indicators are insufficient for estimating a reliable regression coefficient or statistical significance. Respondent-level survey data from a properly designed sample would provide a stronger empirical foundation for the research.

Regional Economic Inequalities, Structural Transformation and Post-Demonetisation Recovery in India

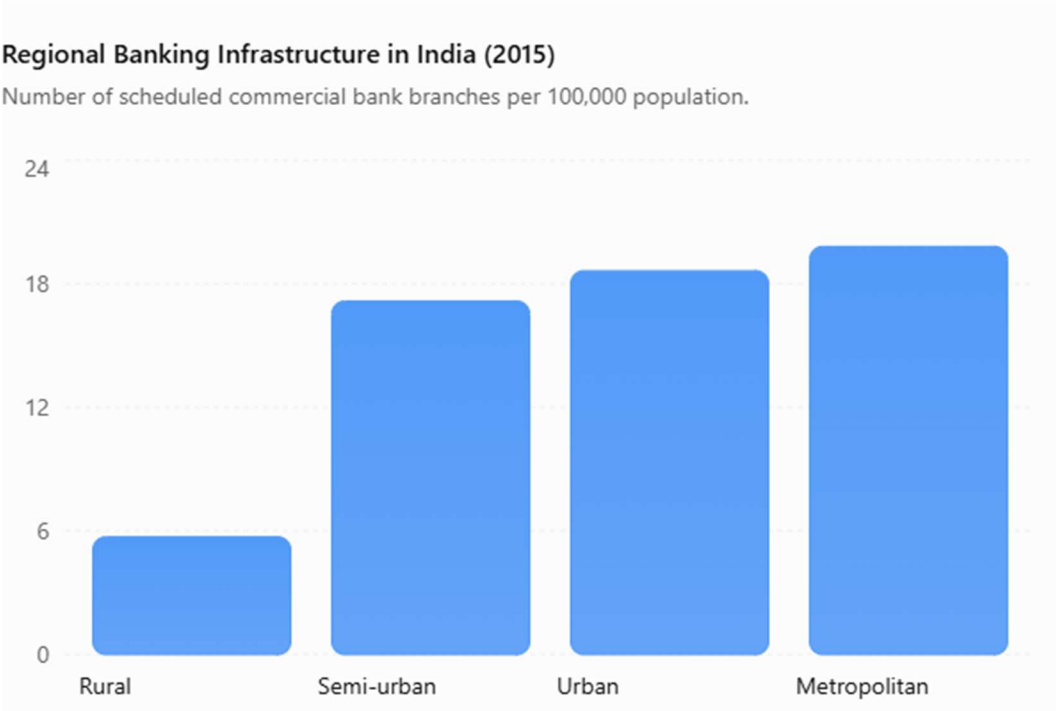
Demonetisation announced on 8 November 2016 had uneven economic consequences across Indian states because of differences in industrial development, agricultural dependence, informal employment, banking facilities and digital infrastructure. Regions with stronger financial institutions and technological facilities adjusted more quickly, whereas rural and economically weaker regions experienced greater difficulties due to their dependence on cash-based transactions. The Reserve Bank of India (RBI) reported that approximately ₹15.31 lakh crore, representing 99.3 per cent of the specified banknotes in circulation, returned to the banking system. This indicated that demonetisation did not eliminate a substantial proportion of the withdrawn currency. The details of the Regional Disparities, Banking Infrastructure and Economic Adjustment after Demonetisation in India are given in table – 14.

Table – 14
Regional Disparities, Banking Infrastructure and Economic Adjustment after Demonetisation in India

S. No.	Regional Category / Indicator	Statistical Data (2015–2017)	Economic Implications
1.	**Rural savings bank accounts**	384 million	Greater dependence on cash-based agricultural and rural transactions.
2.	**Semi-urban savings bank accounts**	320 million	Moderate access to banking and digital financial services.
3.	**Urban savings bank accounts**	186 million	Better access to formal financial institutions and electronic payments.
4.	**Metropolitan savings bank accounts**	180 million	Greater capacity to adopt digital transactions and formal banking.
5.	**Rural bank branches (March 2016)**	48,180	Limited banking capacity relative to the large rural population.
6.	**Semi-urban bank branches (March 2016)**	37,673	Intermediate level of institutional financial access.
7.	**Urban bank branches (March 2016)**	23,812	Better access to banking facilities and financial services.
8.	**Metropolitan bank branches (March 2016)**	24,824	Relatively stronger financial infrastructure.
9.	**Rural bank branches per 1 lakh population (December 2015)**	5.71	Lower banking penetration increased adjustment difficulties.
10.	**Semi-urban bank branches per 1 lakh population (December 2015)**	17.16	Better institutional access than rural regions.
11.	**Urban bank branches per 1 lakh population (December 2015)**	18.63	Greater capacity to manage cash replacement.
12.	**Metropolitan bank branches per 1 lakh population (December 2015)**	19.81	Relatively higher financial accessibility.
13.	**Rural unbanked centres (December 2015)**	5,54,064	Significant geographical barriers to banking access.
14.	**Semi-urban unbanked centres (December 2015)**	1,658	Remaining gaps in financial infrastructure.
15.	**Specified banknotes returned to RBI (2016–17)**	₹15.31 lakh crore (99.3%)	Demonstrated that almost all withdrawn currency returned to the banking system.

Source: Reserve Bank of India (2016), Report of the Committee on Medium-term Path on Financial Inclusion, Tables 1.2 and 3.1–3.2; RBI (2017), Annual Report 2016–17, Chapter VIII, Currency Management; RBI (2017), Financial Inclusion Plan: A Progress Report.

However, the adjustment process differed considerably across regions. Metropolitan areas such as Delhi, Mumbai, Bengaluru and Chennai benefited from wider banking networks, greater ATM availability, internet connectivity and digital payment facilities. Consequently, organised businesses and service-sector activities could gradually shift towards electronic transactions. In contrast, states such as Bihar, Uttar Pradesh, Odisha, Jharkhand and Madhya Pradesh faced greater adjustment difficulties because of agricultural dependence, informal employment and limited financial infrastructure. Agricultural markets, small traders, construction workers and rural enterprises experienced cash shortages, affecting wage payments, consumption and production. Semi-urban regions experienced intermediate effects, particularly among small manufacturing units and retail businesses. The RBI's 2015 banking statistics reveal substantial differences in financial access: individual savings bank accounts numbered 384 million in rural areas, 320 million in semi-urban areas, 186 million in urban areas and 180 million in metropolitan areas, totalling 1,070 million accounts.



These figures demonstrate the geographical distribution of banking access, although account numbers do not directly measure financial literacy or effective access. The poorest quintile experienced an approximately 11 per cent greater increase in GDP per capita than the richest quintile during the 18 months following demonetisation, based on their regional analysis. Therefore, the evidence suggests that although stronger institutional and technological infrastructure supported faster short-term adjustment, the longer-term distributional outcomes were more complex. Demonetisation initially intensified regional economic difficulties but did not necessarily widen regional inequalities permanently. Its effects depended on the capacity of local economies to adapt, diversify employment and access formal financial services.

Demonetisation and the Future of Evidence-Based Monetary Reform, Institutional Resilience and Sustainable Economic Development in India

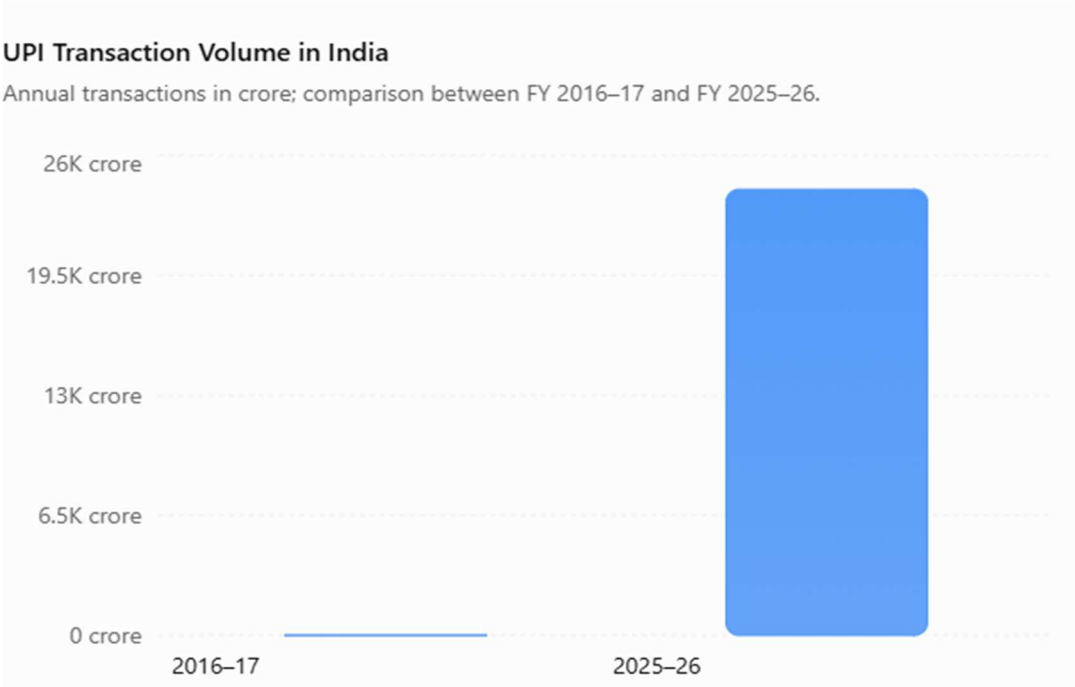
India's demonetisation of 8 November 2016 provides important lessons regarding the effectiveness, economic efficiency and institutional feasibility of large-scale monetary interventions. The experience during 2016–2026 indicates that monetary reforms must be evaluated not only through their immediate objectives but also through their long-term economic, social and institutional consequences. The Reserve Bank of India (RBI) reported that approximately ₹15.31 lakh crore, or 99.3 per cent of the specified banknotes, returned to the banking system, raising questions about the effectiveness of demonetisation in eliminating unaccounted wealth. Although the policy encouraged digital transactions, formal banking participation and tax compliance, it also created temporary liquidity shortages, employment losses and difficulties for cash-dependent households, agricultural producers and informal enterprises. The details of the Long-Term Policy Effectiveness, Institutional Resilience and Alternative Monetary Reform in India (2016–2026) are stated in table – 15.

Table – 15
Long-Term Policy Effectiveness, Institutional Resilience and Alternative Monetary Reform in India (2016–2026)

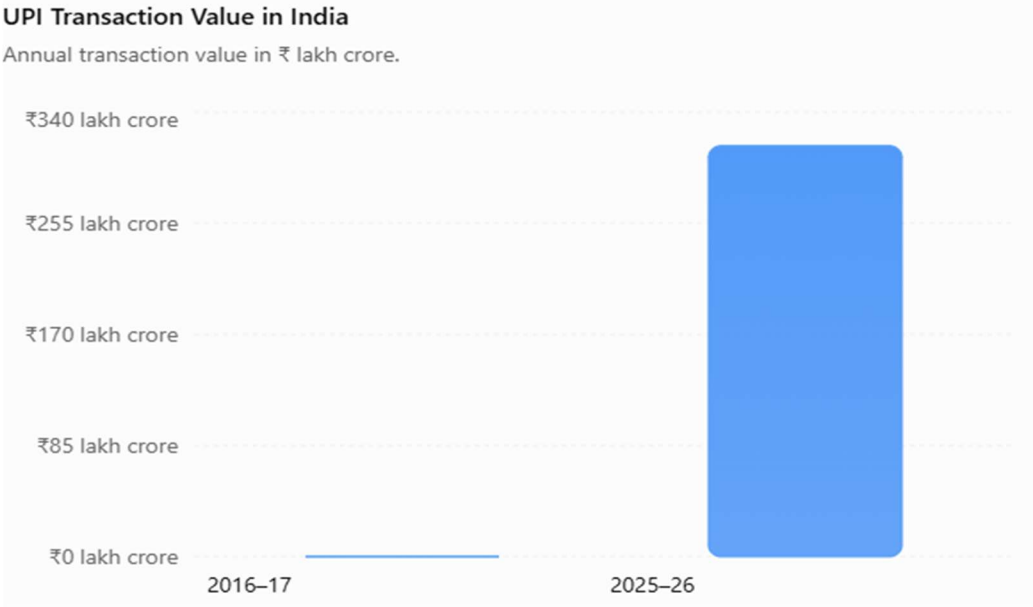
S. No.	Statistical indicators	2016–17	2025–26	Policy implications
1.	**Value of demonetised currency returned to RBI**	₹15.31 lakh crore	99.3% of specified notes	Limited recovery of unreturned currency weakened the expectation that demonetisation would eliminate substantial unaccounted cash wealth.
2.	**UPI transaction volume**	1.78 crore	24,161.69 crore	Demonstrates the expansion of digital payment infrastructure.
3.	**UPI transaction value**	₹0.07 lakh crore	₹314.23 lakh crore	Indicates the growing importance of electronic financial transactions.
4.	**Annual UPI volume growth**	Initial expansion	30.0%	Reflects increasing public acceptance of digital payments.
5.	**Banks participating in UPI**	44	703	Indicates improvements in banking connectivity and institutional participation.
6.	**UPI share in India's digital payments**	Emerging platform	Approximately 85%	Highlights the importance of interoperable digital payment systems.
7.	**Counterfeit currency detected**	7,62,072 notes (2016–17)	Requires continued monitoring	Emphasises the need for stronger currency security and financial intelligence.
8.	**UPI transaction value growth**	₹0.07 lakh crore	More than 4,000-fold increase	Demonstrates the long-term development of digital financial infrastructure.
9.	**Alternative financial enforcement**	Conventional tax monitoring	Technology-based transaction monitoring	Supports targeted tax enforcement, anti-money-laundering measures and improved financial intelligence.
10.	**Monetary policy framework**	Large-scale currency withdrawal	Gradual, technology-oriented reforms	Emphasises economic stability, institutional accountability and financial inclusion.

Sources: Reserve Bank of India, Annual Report 2016–17, Chapter VIII: Currency Management; RBI Annual Report 2016–17, Chapter VIII: Counterfeit Notes and Security Printing; Press Information Bureau, Ministry of Finance, UPI 10-year performance report (30 April 2026); NPCI, UPI Product Statistics.

The long-term evidence highlights the importance of comparing alternative policy instruments before implementing disruptive monetary reforms. Targeted tax investigations, anti-money-laundering regulations, financial intelligence, improved banking supervision and technology-based transaction monitoring could address financial irregularities more directly. The RBI's 2017 assessment also identified increased bank deposits, improved financial intermediation and digital payment adoption as important developments. The expansion of digital payments demonstrates a significant structural transformation. UPI transactions increased from just 373 transactions in April 2016 to 24,161.69 crore transactions in 2025–26, with a total transaction value of approximately ₹314 lakh crore. UPI accounted for around 85 per cent of India's digital payment transactions in 2025–26. However, these developments cannot be attributed exclusively to demonetisation, as subsequent technological innovations, government incentives and expanding internet connectivity also contributed.



Therefore, policymakers should adopt an evidence-based framework incorporating cost-benefit analysis, regional economic impact assessment, institutional accountability, financial inclusion and environmental sustainability. Counterfactual evaluation using difference-in-differences, cost-effectiveness analysis and comparative state-level studies can identify whether targeted reforms would have achieved similar benefits at lower economic and social costs. Monetary and fiscal reforms should prioritise gradual implementation, transparent communication, adequate currency availability, secure digital infrastructure and protection of vulnerable households. Ultimately, the 2016–2026 experience demonstrates that successful monetary reform must strengthen financial transparency without undermining economic stability, employment security and equitable development.



The charts demonstrate the remarkable expansion of India's digital payment system between 2016 and 2026. However, this transformation should not be considered the exclusive outcome of demonetisation. Technological advancement, government initiatives, banking reforms and increasing smartphone penetration also contributed significantly. Therefore, future monetary reforms should prioritise economic efficiency, institutional resilience, financial inclusion and equitable development.

Demonetisation, Electoral Governance Reforms and Their Impact on Monetary Stability, Institutional Accountability and Socioeconomic Inequality in India

Major state interventions, particularly demonetisation in November 2016 and subsequent electoral governance reforms, have significantly influenced India's monetary system, institutional accountability, financial inclusion and socioeconomic development. However, their benefits and costs have not been equally distributed across population groups. Demonetisation withdrew ₹500 and ₹1,000 currency notes, representing approximately 86.9% of the value of currency in circulation. According to the Reserve Bank of India (RBI), approximately 99.3% of the withdrawn currency, valued at ₹15.31 lakh crore, returned to the banking system. Although the measure encouraged bank deposits, formal transactions and digital payments, it also created temporary difficulties for informal workers, small traders, agricultural labourers and low-income households who depended heavily on cash. The expansion of digital financial services represents an important structural development. UPI transactions increased from approximately 18 crore in 2016–17 to 13,113 crore in 2023–24, with their value reaching nearly ₹200 lakh crore. This expansion strengthened digital financial inclusion and improved transaction transparency, although unequal access to smartphones, internet connectivity and digital literacy continues to affect disadvantaged communities. The details of the Impact of Demonetisation, Monetary

Policy and Electoral Governance Reforms on Institutional Accountability and Socioeconomic Inequality in India are given in table – 16.

Table – 16

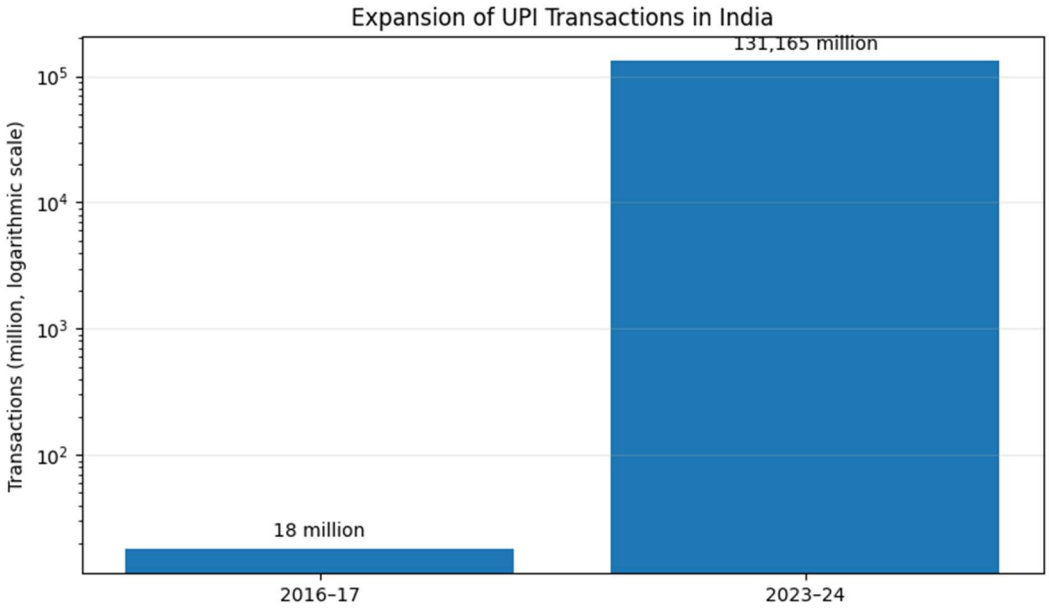
Impact of Demonetisation, Monetary Policy and Electoral Governance Reforms on Institutional Accountability and Socioeconomic Inequality in India

S. No.	Indicators	Statistical data	Economic and institutional implications
1.	**Demonetisation (2016)**	₹15.42 lakh crore of specified banknotes withdrawn	Major monetary intervention affecting cash circulation and economic transactions.
2.	**Currency returned to RBI**	₹15.31 lakh crore (99.3%)	Indicates that almost all withdrawn currency returned to the banking system.
3.	**Share of demonetised currency**	86.9% of currency value in circulation	Created substantial short-term liquidity constraints, particularly for cash-dependent sectors.
4.	**Jan Dhan financial inclusion**	5 crore new accounts opened by October 2017 after demonetisation	Increased access to formal banking services.
5.	**UPI transaction volume**	18 million (2016–17) to 131,165 million (2023–24)	Demonstrates rapid expansion of digital financial transactions.
6.	**UPI transaction value**	₹6,900 crore (2016–17) to ₹19,98,670 crore (2023–24)	Strengthened digital payment infrastructure and transaction transparency.
7.	**Overall unemployment rate**	6.0% (2017–18) to 3.2% (2023–24)	Indicates improvement in the measured labour-market situation, although not attributable solely to demonetisation.
8.	**Female labour force participation**	23.3% (2017–18) to 41.7% (2023–24)	Reflects increased women's participation in economic activities.
9.	**Rural labour force participation**	50.7% (2017–18) to 63.7% (2023–24)	Indicates greater participation in rural economic activities.
10.	**Electoral governance accountability**	Electoral Bond Scheme declared unconstitutional on 15 February 2024	Strengthened transparency, citizens' right to information and democratic accountability.

Source: Compiled from the Reserve Bank of India (RBI), Annual Report 2017–18 and RBI Bulletin (2017); Ministry of Finance, Economic Survey 2023–24, Statistical Appendix, Table 3.6 (NPCI data); Ministry of Statistics and Programme Implementation (MoSPI), Periodic Labour Force Survey (PLFS), Annual Report 2023–24; Supreme Court of India, Association for Democratic Reforms v. Union of India (2024).

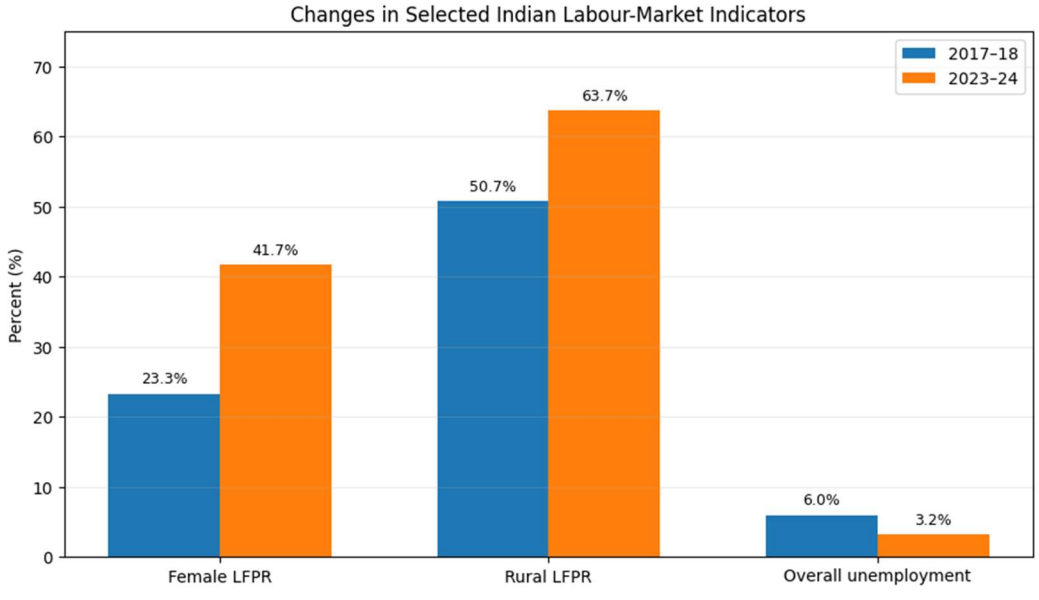
Employment indicators also reveal changing economic conditions. According to the Periodic Labour Force Survey (PLFS), India's unemployment rate declined from 6.0% in 2017–

18 to 3.2% in 2023–24. Female labour force participation increased from 23.3% to 41.7% during the same period. However, these improvements cannot be attributed exclusively to demonetisation, as several economic and institutional factors contributed to employment changes.



Source: Economic Survey 2023–24, Statistical Appendix, Table 3.6 (NPCI).

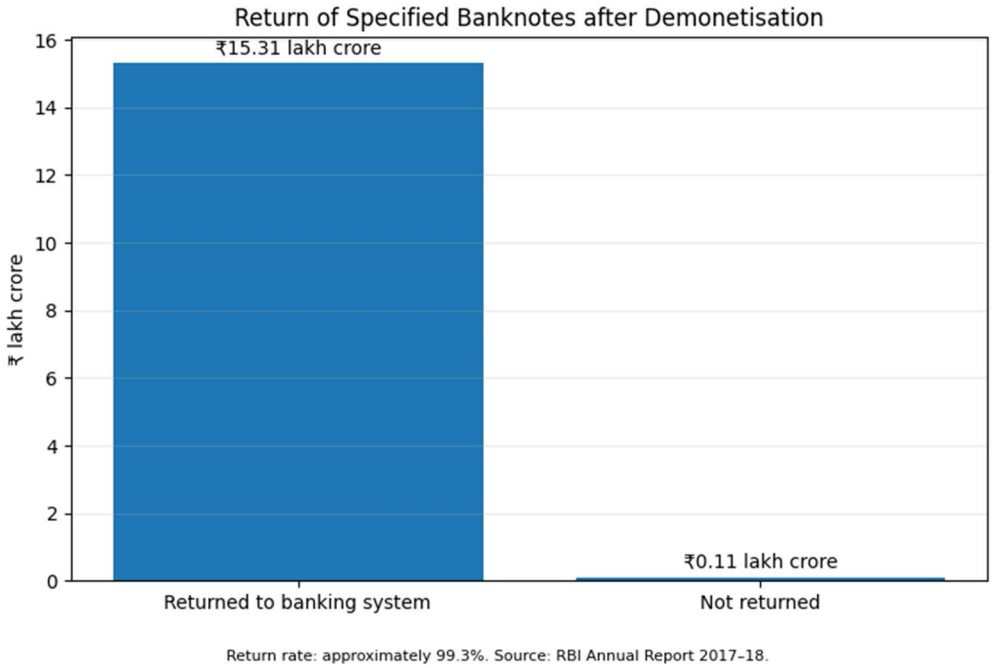
Electoral governance reforms have further strengthened institutional accountability. In February 2024, the Supreme Court declared the Electoral Bond Scheme unconstitutional, emphasising citizens' right to information regarding political funding. This judgment highlighted the importance of transparency, democratic accountability and institutional independence.



Source: MoSPI, Periodic Labour Force Survey (PLFS), Annual Report 2023–24; usual status, age 15+.

Overall, state interventions have encouraged financial formalisation, digital innovation and greater institutional transparency. Nevertheless, their effectiveness in reducing income

inequality, generating sustainable employment and improving socioeconomic conditions among rural households, women, informal workers and economically weaker sections remains uneven. Inclusive policies, effective governance and equitable access to financial resources are essential for achieving sustainable economic development in India.



UPI transactions increased from 18 million in 2016–17 to 131,165 million in 2023–24. This represents an extraordinary expansion of digital payment adoption. The value of transactions also increased from ₹69 billion to ₹199,867 billion (₹199.867 lakh crore). This development indicates the growing importance of digital financial infrastructure, formal banking and transaction transparency..

Social Welfare Interventions, Household Consumption, Child Nutrition and Intergenerational Human Capital Development in India: An Assessment of Food Security and Socioeconomic Inequality

Public welfare interventions and socioeconomic policies have played an important role in improving household consumption, food security, child nutrition and educational opportunities among economically disadvantaged households in India. Programmes such as the National Food Security Act (NFSA), Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Integrated Child Development Services (ICDS), POSHAN Abhiyaan, PM POSHAN and Samagra Shiksha have strengthened social protection and human capital development. These interventions aim to reduce household financial vulnerability, improve nutritional outcomes and expand access to education. According to the Ministry of Statistics and Programme Implementation, the average monthly per capita consumption expenditure (MPCE) in 2023–24 increased to ₹4,247 in rural India and ₹7,078 in urban India, compared with ₹3,860 and ₹6,521, respectively, in 2022–23. Food expenditure accounted for 48.43 per cent of rural consumption and 40.31 per cent of urban

consumption in 2023–24. These figures indicate improvements in household consumption, although inequalities in purchasing power remain. The details of the Social Welfare, Household Consumption, Food Security, Child Nutrition and Human Capital Development in India are stated in table - 17.

Table – 17

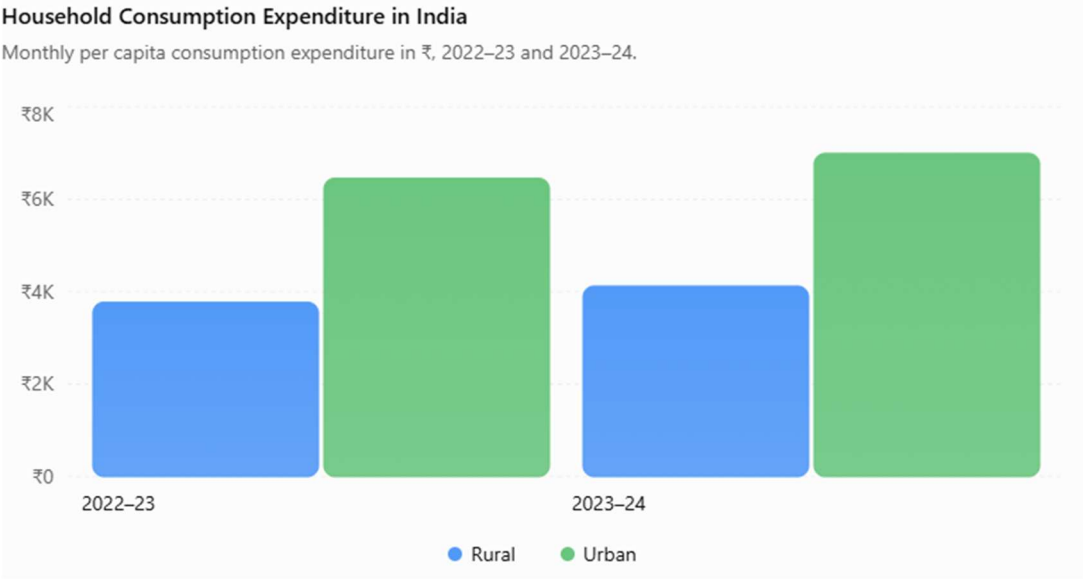
Social Welfare, Household Consumption, Food Security, Child Nutrition and Human Capital Development in India

S. No.	Indicators	Statistical data	Developmental significance
1	**Rural monthly per capita consumption expenditure (2022–23)**	₹3,773	Indicates household consumption capacity.
2	**Rural monthly per capita consumption expenditure (2023–24)**	₹4,122	Shows improvement in rural consumption expenditure.
3	**Urban monthly per capita consumption expenditure (2022–23)**	₹6,459	Reflects urban household purchasing capacity.
4	**Urban monthly per capita consumption expenditure (2023–24)**	₹6,996	Indicates growth in urban consumption.
5	**Rural household food expenditure share (2023–24)**	47.04%	Demonstrates the importance of food security in rural households.
6	**Urban household food expenditure share (2023–24)**	39.68%	Indicates the proportion of consumption allocated to food.
7	**Child stunting (NFHS-4, 2015–16)**	38.4%	Indicates chronic child malnutrition.
8	**Child stunting (NFHS-5, 2019–21)**	35.5%	Shows a reduction in chronic malnutrition.
9	**Child wasting (NFHS-4, 2015–16)**	21.0%	Reflects acute child malnutrition.
10	**Child wasting (NFHS-5, 2019–21)**	19.3%	Indicates improvement in nutritional status.
11	**Underweight children (NFHS-4, 2015–16)**	35.8%	Reflects inadequate child nutrition.
12	**Underweight children (NFHS-5, 2019–21)**	32.1%	Shows improvement in child nutritional outcomes.
13	**Children exclusively breastfed below six months (NFHS-5)**	63.7%	Indicates progress in infant feeding practices.
14	**Children aged 6–23 months receiving an adequate diet (NFHS-5)**	11.3%	Highlights continuing challenges in dietary diversity.

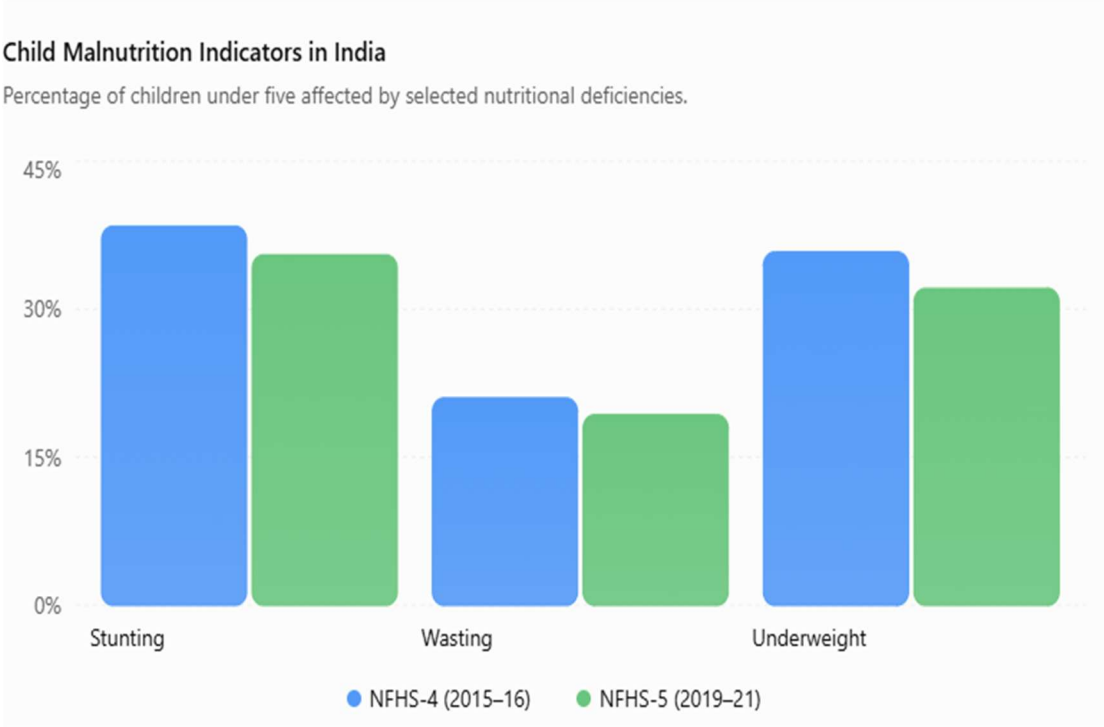
Sources: 1. Ministry of Statistics and Programme Implementation (MoSPI), Government of India, Household Consumption Expenditure Survey (HCES), 2023–24.

2. Ministry of Health and Family Welfare, Government of India, National Family Health Survey (NFHS-4), 2015–16 and NFHS-5, 2019–21.

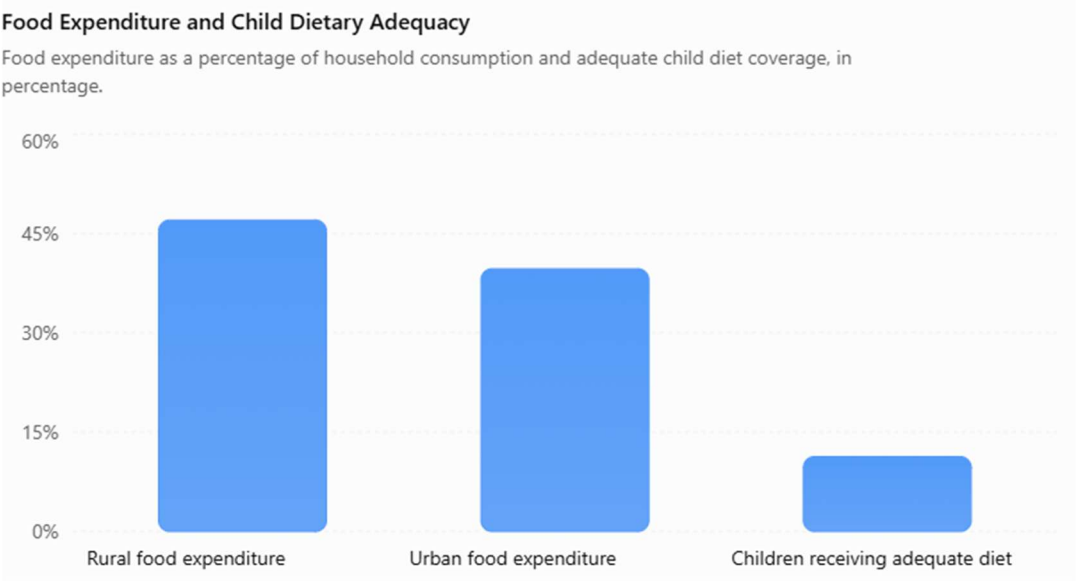
The National Family Health Survey (NFHS-5, 2019–21) reported improvements in child nutrition compared with NFHS-4 (2015–16). Child stunting declined from 38.4 to 35.5 per cent, wasting from 21.0 to 19.3 per cent and underweight prevalence from 35.8 to 32.1 per cent. However, these indicators demonstrate that malnutrition remains a significant development challenge.



Furthermore, school meal programmes, scholarships, free textbooks and educational support schemes have improved access to education, particularly among children from disadvantaged communities. Nevertheless, household poverty, unemployment, unequal educational infrastructure and inadequate nutritional awareness continue to restrict intergenerational mobility.



Overall, welfare interventions have strengthened consumption security and expanded opportunities for human capital development. However, sustained investment in nutrition, healthcare, quality education and employment generation is essential to achieve inclusive growth and reduce socioeconomic inequalities. The effects of these welfare programmes should be distinguished from the independent economic consequences of demonetisation.



The graphical analysis demonstrates improvements in household consumption and selected child nutritional indicators in India. However, persistent rural–urban consumption differences and inadequate dietary diversity indicate that socioeconomic inequalities remain significant. Public welfare interventions such as NFSA, ICDS, POSHAN Abhiyaan and PM POSHAN have an important role in strengthening food security, child development and educational opportunities.

Views, Opinions, Expectations and Aspirations of Common People in India and Tamil Nadu on the Decadal Impact of Demonetisation

The views and opinions of common people provide an important basis for assessing the long-term economic and political consequences of demonetisation in India and Tamil Nadu. The announcement of 8 November 2016 generated considerable public expectations regarding the elimination of black money, reduction of corruption, prevention of counterfeit currency, control of terrorism and promotion of digital payments. Initially, many citizens supported the policy objectives, although they experienced difficulties in exchanging currency, withdrawing money and managing household expenditure. A LocalCircles survey involving more than 9,000 citizens across 200 Indian cities in November 2016 found that 51 per cent considered the implementation good, 25 per cent rated it average and 24 per cent rated it poor. From the perspective of ordinary households, agricultural labourers, small traders, daily-wage workers, women, senior citizens and informal-sector employees, demonetisation created immediate financial uncertainty and livelihood difficulties. In Tamil Nadu, particularly in rural villages, agricultural markets, small businesses and informal employment centres, dependence on cash made the transition challenging. However, the subsequent expansion of digital banking, UPI transactions and financial inclusion created new opportunities for consumers and entrepreneurs. The details of the Public Views, Opinions, Expectations and Aspirations Regarding the Economic and Political Impact of Demonetisation in India and Tamil Nadu are stated in table – 18.

Table – 18

Public Views, Opinions, Expectations and Aspirations Regarding the Economic and Political Impact of Demonetisation in India and Tamil Nadu

S. No.	Indicators	Statistical data	Public opinion and implications
1.	**Citizens rating demonetisation implementation as good (2016)**	51%	Majority considered the implementation satisfactory under the circumstances.
2.	**Citizens rating implementation as average**	25%	Reflected concerns regarding planning and execution.
3.	**Citizens rating implementation as poor**	24%	Indicated dissatisfaction with cash shortages and difficulties in banking services.
4.	**Citizens supporting demonetisation despite inconvenience**	79%	Demonstrated public willingness to accept temporary hardship for expected economic benefits.
5.	**Citizens opposing the demonetisation decision**	3%	Indicated limited opposition in the initial survey.
6.	**Value of currency withdrawn in November 2016**	₹15.4 trillion	Demonstrated the extensive monetary disruption caused by the policy.
7.	**Share of currency value withdrawn from circulation**	86.9%	Highlighted the significant dependence of economic activities on cash.
8.	**Additional Jan Dhan accounts opened by October 2017**	50 million	Indicated expansion of formal banking access.
9.	**UPI transaction volume (2016–17)**	1.78 crore	Reflected the initial stage of digital-payment adoption.
10.	**UPI transaction volume (2025–26)**	24,162 crore	Demonstrated substantial growth in digital-payment usage.
11.	**UPI transaction value (2016–17)**	₹0.07 lakh crore	Indicated the relatively small initial scale of UPI transactions.
12.	**UPI transaction value (2025–26)**	₹314 lakh crore	Reflected the growing importance of digital payments in economic activities.
13.	**UPI share in India's digital payments (2025–26)**	84%	Demonstrated the increasing preference for convenient digital transactions.

Sources:

1. LocalCircles, Demonetisation Implementation Survey, November 2016 (over 9,000 citizens across 200 cities).

LocalCircles+1

2. Reserve Bank of India (2017), Impact of Demonetisation on the Financial Sector, RBI Bulletin, 8 November 2017.

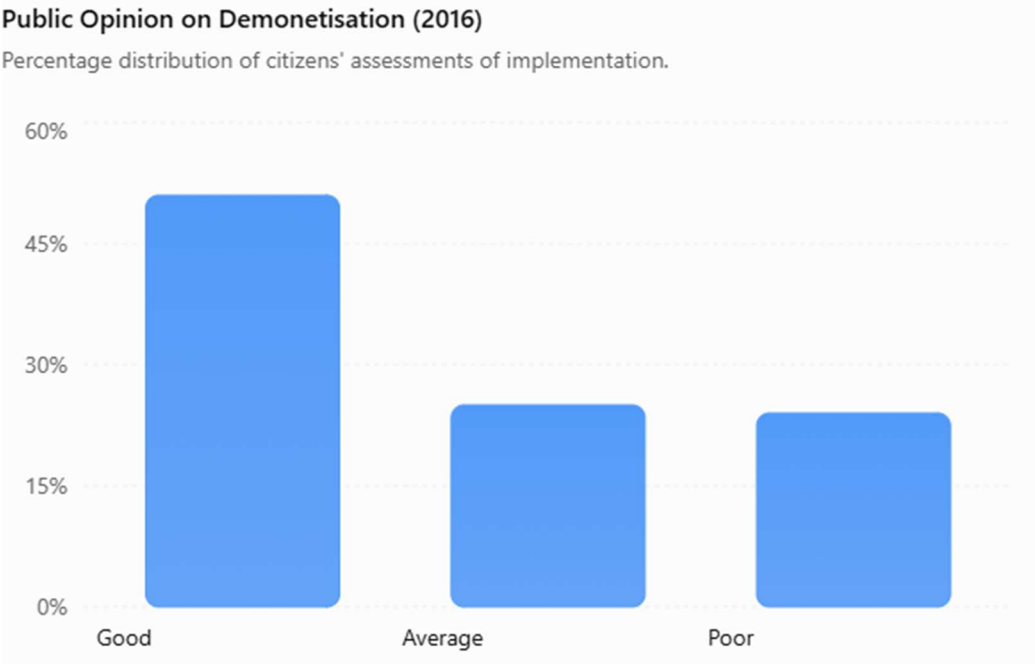
Reserve Bank of India

3. Press Information Bureau, Government of India (2026), UPI Completes 10 Years of Digital Payments Revolution, 24 August 2026.

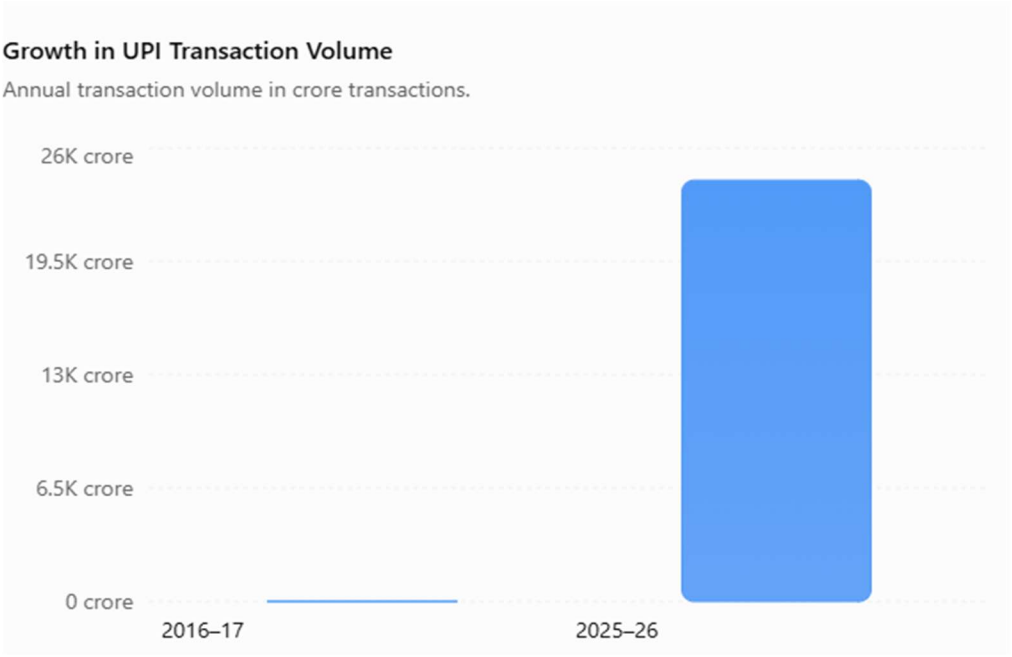
Press Information Bureau

4. National Payments Corporation of India (NPCI), UPI Transaction Statistics.

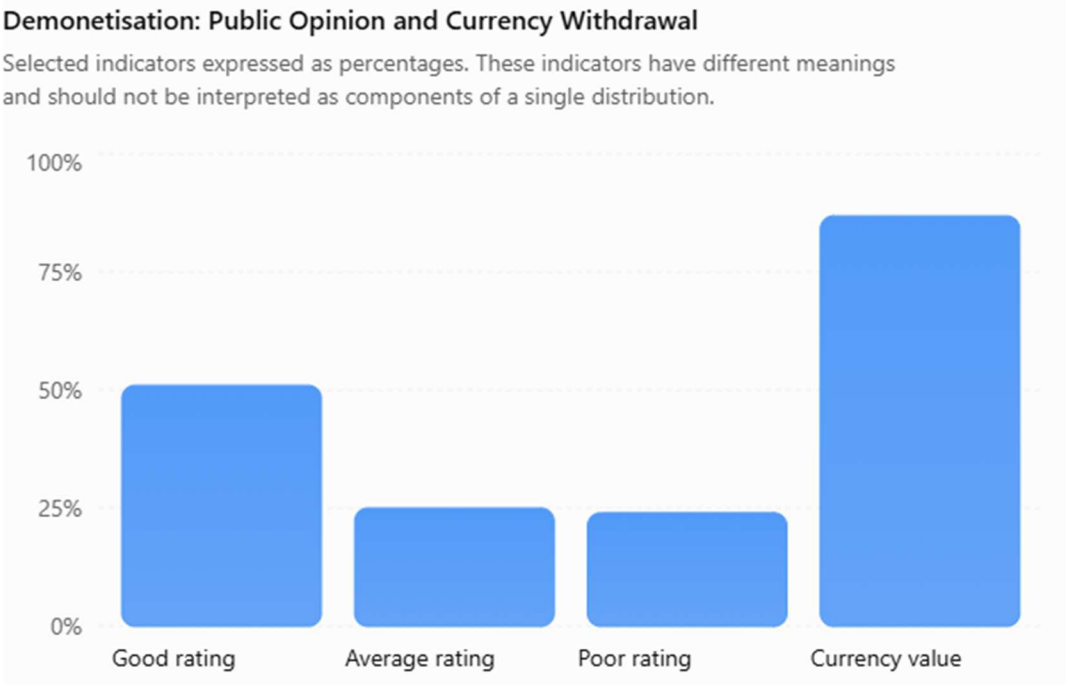
Nevertheless, the return of approximately 99.3 per cent of demonetised currency to the banking system raised public questions about the actual achievement of black-money elimination. By 2026, common people's aspirations increasingly centre on stable employment, affordable prices, transparent governance, accessible banking, digital-payment security, improved rural infrastructure and inclusive economic development.



Overall, public opinion reflects both appreciation of technological and financial transformation and dissatisfaction with the immediate economic hardships. Policymakers should therefore prioritise people's welfare, public consultation, institutional accountability and evidence-based monetary reforms. A representative household survey covering different income groups and rural, semi-urban and urban regions of India and Tamil Nadu is essential to measure these expectations accurately over the decade.



UPI transaction volume increased from 1.78 crore transactions in 2016–17 to approximately 24,162 crore in 2025–26. This represents a substantial expansion of digital payment adoption. The growth reflects changes in consumer behaviour, banking accessibility and digital financial infrastructure. However, it should not be interpreted as evidence that demonetisation alone caused the expansion.



The withdrawal of 86.9% of the currency value in circulation illustrates the magnitude of the monetary intervention. In comparison, the public-opinion indicators reveal different levels of satisfaction and dissatisfaction. The comparison highlights the importance of examining both the scale of monetary disruption and its social consequences.

Views, Opinions, Expectations, Thoughts and Aspirations of Educated People, Government Employees, and Banking and Financial Experts in India and Tamil Nadu

The views and opinions of educated people, government employees, and banking and financial experts are important for assessing the economic, social and political consequences of demonetisation in India and Tamil Nadu during 2016–2026. These groups generally evaluate demonetisation in terms of monetary stability, transparency, employment generation, digital financial inclusion, tax compliance, administrative efficiency and economic justice. Educated people are likely to recognise the long-term benefits of digital payments, financial awareness and formal banking transactions. However, concerns remain regarding employment insecurity, rising living costs, unequal digital access and the difficulties experienced by small traders and informal workers. Government employees may appreciate improvements in financial transparency, tax reporting and digital governance, while also recognising the administrative burden associated with currency replacement and cash management. Banking and financial experts may consider demonetisation an important policy intervention but are likely to assess its effectiveness against its actual contribution to reducing black money, counterfeit currency and unaccounted transactions. The details of the Assessment of the Views, Opinions, Expectations and Aspirations of Educated People, Government Employees, and Banking and Financial Experts in India and Tamil Nadu are given in table – 19.

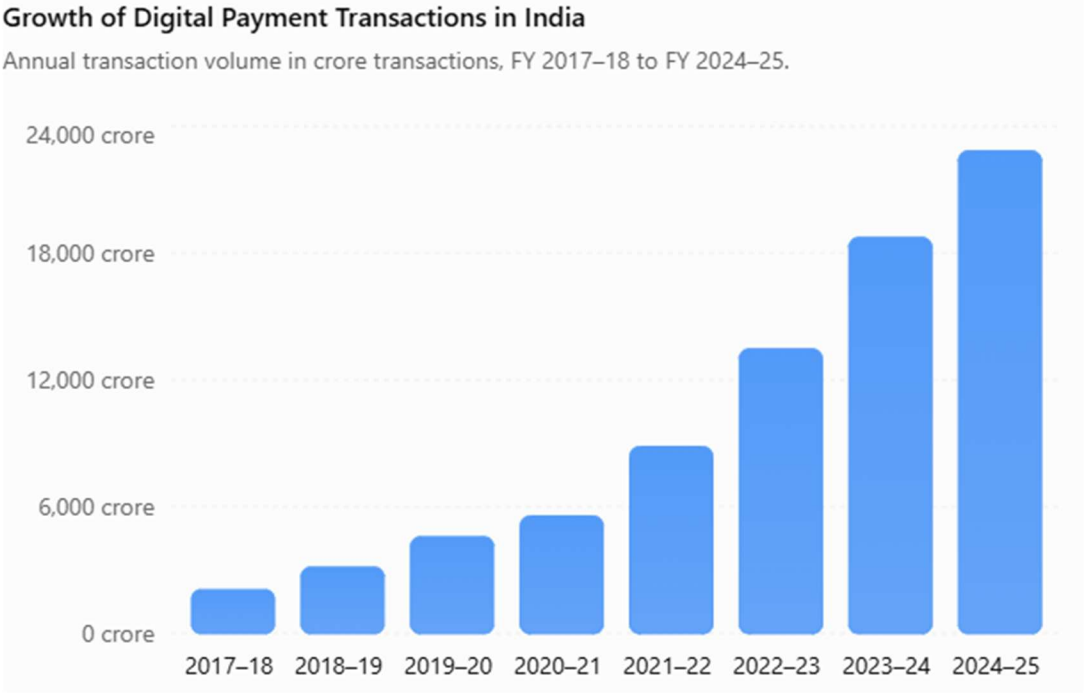
Table – 19

Assessment of the Views, Opinions, Expectations and Aspirations of Educated People, Government Employees, and Banking and Financial Experts in India and Tamil Nadu

S. No.	Indicators	Statistical data	Economic implications
1.	**Value of demonetised currency (2016)**	₹15.44 lakh crore	Major disruption to cash-based economic activities.
2.	**Share of demonetised currency in total currency value**	86.9%	Significant impact on household savings and business transactions.
3.	**Demonetised currency returned to RBI**	98.96%	Raises questions about the recovery of unaccounted money.
4.	**Counterfeit notes detected during 2016–17**	7,62,072 notes	Highlights the continuing challenge of counterfeit currency.
5.	**New PMJDY accounts opened after demonetisation by October 2017**	5 crore	Indicates increased participation in the formal banking system.
6.	**Digital payment transactions (2017–18)**	2,070.89 crore	Establishes the initial scale of digital financial transactions.
7.	**Digital payment transactions (2023–24)**	18,736.50 crore	Indicates substantial growth in digital payment adoption.
8.	**UPI transactions (2016–17)**	1.78 crore	Reflects the early stage of UPI adoption.
9.	**UPI transactions (2025–26)**	24,161.69 crore	Demonstrates the expansion of India's digital payment ecosystem.
10.	**UPI transaction value (2025–26)**	₹314.23 lakh crore	Indicates the growing importance of digital financial services.
11.	**Tamil Nadu's UPI transaction volume (August 2025)**	799.24 million	Reflects substantial participation in digital payment activities.
12.	**Tamil Nadu's share of national UPI transaction volume (August 2025)**	3.99%	Demonstrates the state's contribution to India's digital payment system.

Sources: Reserve Bank of India (RBI), Annual Report 2016–17; RBI Bulletin (8 November 2017), Impact of Demonetisation on the Financial Sector; Press Information Bureau (30 August 2017), Status of Return of Specified Bank Notes; Department of Financial Services, Annual Report 2024–25; National Payments Corporation of India (NPCI), UPI Product Statistics and State-wise UPI Statistics; Ministry of Finance, Government of India (2026), UPI Decadal Performance Report.

The statistical evidence highlights the significant transformation of India's financial system. In November 2016, approximately ₹15.4 lakh crore worth of ₹500 and ₹1,000 notes, representing 86.9% of the value of currency in circulation, were withdrawn. Subsequently, approximately 98.96% of the demonetised currency returned to the RBI. Digital payment transactions increased from 2,070.89 crore in 2017–18 to 18,736.50 crore in 2023–24. During 2025–26, UPI recorded approximately 24,161.69 crore transactions worth ₹314 lakh crore. In Tamil Nadu, these developments provide an important basis for examining public expectations concerning accessible banking facilities, employment security, transparent financial administration and inclusive economic development. The major aspirations of these groups include stronger monetary stability, protection of household savings, reduction of counterfeit currency, improved financial literacy, affordable digital services and effective environmental management of currency production and disposal.



Overall, the study should examine whether educated people, government employees and financial experts consider demonetisation a successful long-term economic reform or a policy intervention involving substantial social and economic costs. Their opinions should be collected through a structured primary survey across selected regions of India and Tamil Nadu.

Policy Measures to Control Corruption, Inflation, Rising Prices and Financial Scams in India and Tamil Nadu

Effective economic governance requires a combination of transparent administration, monetary stability, strict financial regulation and consumer protection. The experience of demonetisation (2016–2026) demonstrates that withdrawing high-denomination currency alone cannot eliminate corruption, black money, counterfeit currency or financial irregularities. Therefore, India and Tamil Nadu should adopt comprehensive and sustainable policy measures. According to the RBI Annual Report 2025–26, 2,29,746 counterfeit banknotes were detected in the banking system, compared with 2,17,396 in 2024–25. Counterfeit ₹500 notes increased from 1,17,722 to 1,41,907, indicating the continuing need for stronger currency surveillance. Furthermore, India's retail inflation reached 5.54 per cent in September 2026, while food inflation stood at 7.74 per cent, highlighting the importance of controlling essential commodity prices. For India, the Central Government should strengthen the independence of anti-corruption agencies, enforce strict action against money laundering, tax evasion, bribery and Ponzi schemes, and introduce transparent public procurement through digital platforms. The RBI, SEBI, CBI, CVC and Enforcement Directorate should improve coordination, financial surveillance and cybercrime investigation. The details of the Statistical Indicators and Essential Policy Measures to Control Corruption, Inflation, Rising Prices and Financial Scams in India and Tamil Nadu are stated in table – 20.

Table – 20

Statistical Indicators and Essential Policy Measures to Control Corruption, Inflation, Rising Prices and Financial Scams in India and Tamil Nadu

S. No.	Economic indicators / policy areas	Statistical data (2024–25 to 2025–26)	Essential policy measures
1	**India's general retail inflation**	5.54% (September 2026)	Strengthen monetary policy and control excessive price increases.
2	**India's food inflation**	7.74% (September 2026)	Improve food supply, agricultural storage and distribution systems.
3	**Tamil Nadu general retail inflation**	6.81% (September 2026)	Strengthen State-level price monitoring and essential commodity distribution.
4	**Tamil Nadu rural inflation**	7.17% (September 2026)	Improve rural markets, agricultural supply chains and fair-price shops.
5	**Tamil Nadu urban inflation**	6.53% (September 2026)	Monitor transport, housing, food and essential service costs.
6	**Counterfeit currency detected in India**	2,17,396 notes (2024–25); 2,29,746 notes (2025–26)	Improve currency security, banking surveillance and counterfeit detection.
7	**Counterfeit ₹500 notes detected**	1,17,722 (2024–25); 1,41,907 (2025–26)	Introduce stronger security features and strict action against counterfeit currency networks.
8	**₹2,000 notes returned to the banking system**	98.45% of ₹3.56 lakh crore (as of 31 March 2026)	Strengthen currency monitoring, financial transparency and suspicious transaction reporting.
9	**Corruption and bribery**	No single comparable national or Tamil Nadu annual monetary estimate established by the above sources.	Strengthen anti-corruption agencies, independent audits, e-procurement and whistle-blower protection.
10	**Financial and digital payment scams**	No single comparable figure included in the above RBI currency statistics.	Improve cybercrime investigation, digital payment security, consumer awareness and speedy recovery mechanisms.
11	**Black marketing and artificial price increases**	Requires separate commodity-wise market investigation.	Enforce anti-hoarding laws, market inspections and penalties for illegal trade practices.
12	**Income inequality and distributional burden**	Requires household-level income and expenditure survey evidence.	Expand targeted welfare programmes, employment opportunities and social security for vulnerable households.

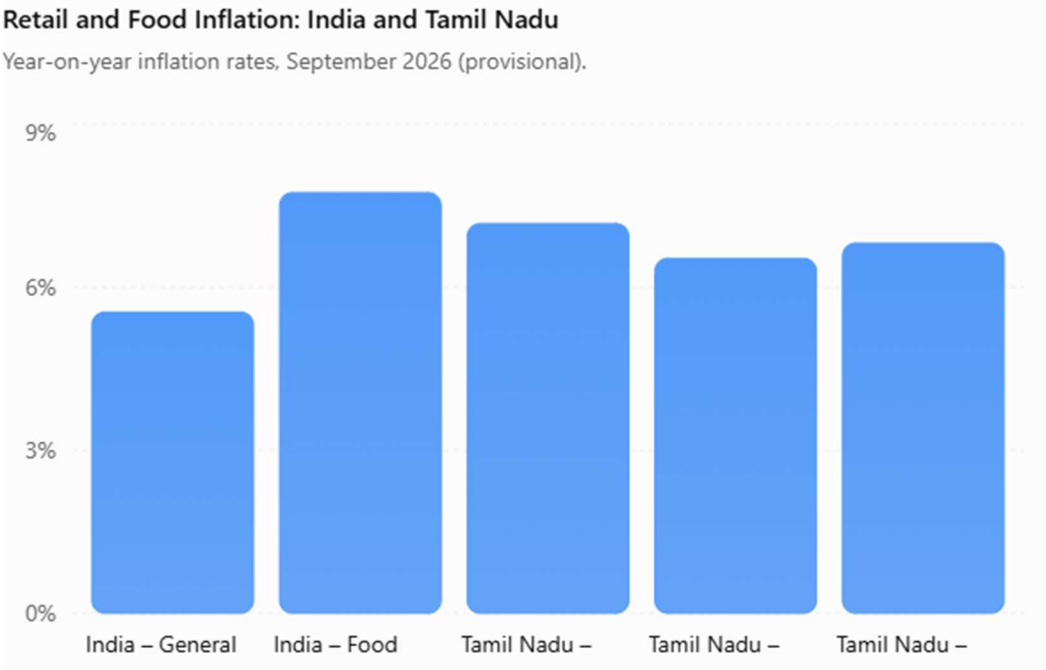
Source:

1. Reserve Bank of India, Annual Report 2025–26, Chapter VIII: Currency Management, Tables VIII.7 and VIII.8. RBI Annual Report 2025–26.

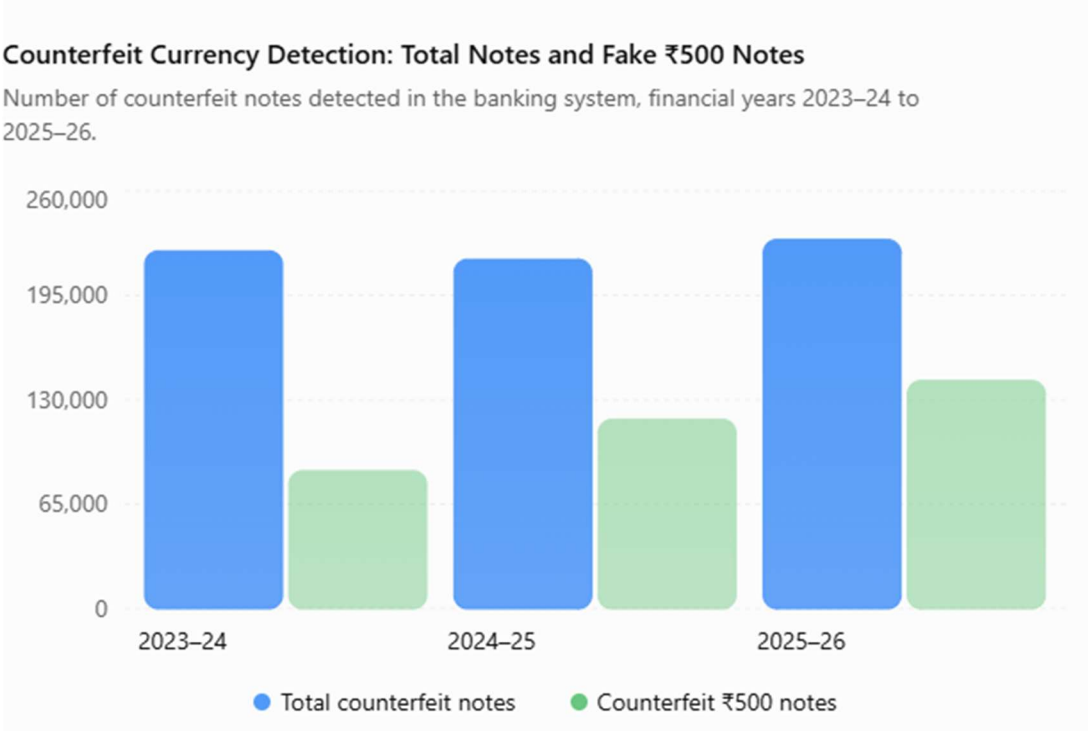
2. Ministry of Statistics and Programme Implementation (MoSPI), Consumer Price Index, September 2026, Press Release dated 12 October 2026. Official CPI release.

3. Tamil Nadu Data, Consumer Price Index, September 2026, based on official MoSPI statistics. Tamil Nadu CPI statistics

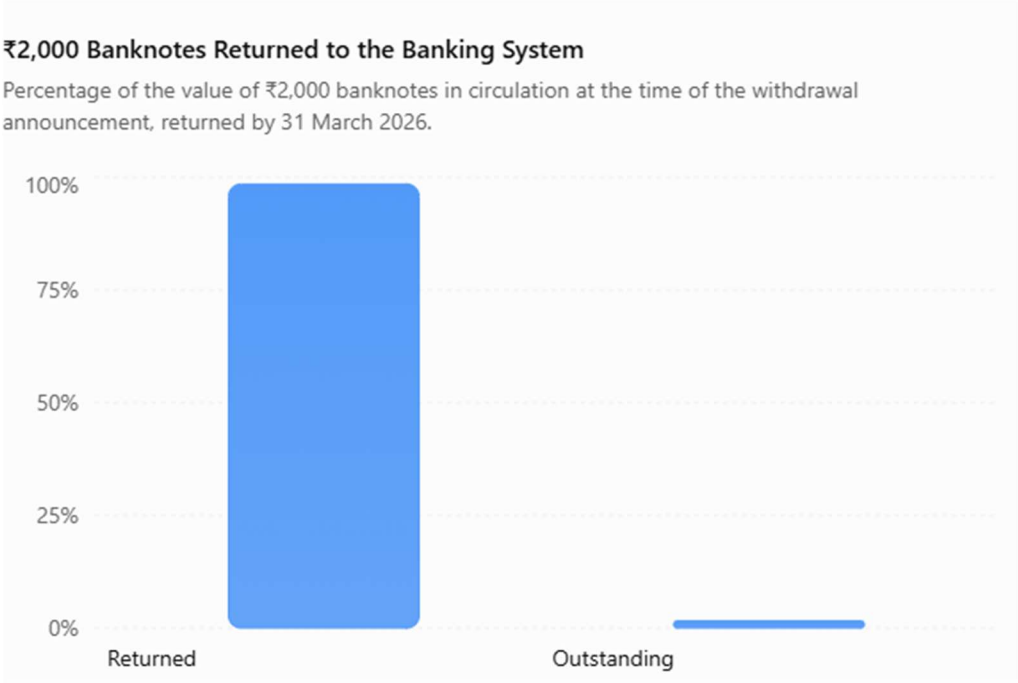
For Tamil Nadu, the State Government should strengthen the Vigilance and Anti-Corruption Department, monitor government contracts, local-body expenditure and welfare schemes, and establish district-level price-monitoring committees. Essential commodities should be supplied through cooperative societies, fair-price shops and direct farmer-to-consumer markets. Hoarding, black marketing and artificial price increases must attract strict penalties.



Furthermore, financial literacy, secure digital payments, whistle-blower protection, independent audits and speedy judicial proceedings are essential to prevent financial scams. Special attention should be given to small traders, agricultural labourers, informal workers, low-income households and economically weaker sections. These measures can improve public confidence, economic stability, social justice and institutional accountability. Overall, sustainable economic reform must focus not merely on currency replacement but also on transparent governance, price stability, financial security and equitable distribution of economic benefits.



Total counterfeit currency detections declined from 2,22,639 in 2023–24 to 2,17,396 in 2024–25. They subsequently increased to 2,29,746 in 2025–26, representing a 5.68% increase over the previous year. Counterfeit ₹500 notes increased from 85,711 to 1,41,907 between 2023–24 and 2025–26. The ₹500 denomination accounted for approximately 61.8% of all counterfeit notes detected in 2025–26. The RBI and commercial banks should strengthen currency authentication systems, improve banking surveillance and introduce continuous public awareness programmes.



The RBI reported that 98.45% of the ₹3.56 lakh crore value of ₹2,000 banknotes in circulation at the time of the May 2023 announcement had returned by 31 March 2026. The remaining 1.55% had not returned to the banking system. This indicates substantial completion of the withdrawal process, but it does not independently establish the elimination of black money or corruption. India and Tamil Nadu require integrated monetary, fiscal and administrative reforms to control corruption, inflation, black marketing, counterfeit currency and financial scams. Transparent governance, effective enforcement, consumer protection and inclusive economic development should form the foundation of sustainable economic policy.

Conclusion

India's 2016 demonetisation was an unusually large monetary intervention, withdrawing ₹500 and ₹1,000 notes that represented most of the value of currency in circulation. This assessment of the period 2016–2026 finds a sharp contrast between its immediate disruption and the financial changes that followed. The sudden cash shortage affected consumption, wages, agricultural activity and small businesses, with informal workers, rural households and micro-enterprises especially exposed. Cash-dependent groups had fewer ways to absorb the shock or shift quickly to alternative payment methods. Almost all specified banknotes returned to the

banking system. Counterfeit currency also continued to be detected after the replacement of notes. These findings qualify claims that demonetisation, by itself, eliminated unaccounted cash or permanently resolved counterfeiting. The subsequent expansion of digital payments, banking access and tax reporting is significant, but it cannot be attributed to demonetisation alone. Technology, government initiatives, financial-sector development and later changes in consumer behaviour also contributed. Likewise, trends in growth, employment and revenue reflect multiple influences and should not be treated as direct measures of demonetisation's independent effect.

The evidence reviewed points to uneven costs and outcomes: users with banking access and digital infrastructure were generally better placed to adapt, while cash-dependent households and enterprises faced greater immediate constraints. Currency production, distribution and replacement also involved resource and administrative costs; the available evidence does not quantify all environmental effects attributable specifically to demonetisation. Overall, the decade-long record suggests that a large-scale currency withdrawal is not a substitute for sustained tax administration, targeted financial investigation, secure payment systems or inclusive banking. This study is based on secondary sources and descriptive comparisons, some of which measure different periods or use different definitions. Its findings should therefore be interpreted cautiously: correlations and before-and-after trends do not establish causality. Future evaluation requires consistent data, credible counterfactuals and transparent assessment of both benefits and costs. Monetary reforms should be judged not only by their stated objectives but also by their effectiveness, distributional consequences, implementation readiness and impact on public trust.

Suggestions

Before introducing a disruptive monetary measure, policymakers should publish a clear rationale, defined and measurable objectives, an implementation plan and a cost–benefit assessment. The Reserve Bank of India, relevant ministries and affected institutions should coordinate operational planning, including adequate currency availability, banking capacity, accessible exchange facilities and contingency arrangements for rural and remote areas. Public communication should be timely, consistent and available in regional languages and accessible formats. Measures to address unaccounted wealth, tax evasion and counterfeit currency should rely on sustained, targeted enforcement rather than currency withdrawal alone. This includes stronger financial intelligence, effective investigation, transparent public procurement, appropriate audit systems and proportionate action against verified offences. Any evaluation should distinguish demonetisation's effects from those of GST, digital infrastructure, the pandemic and other economic developments.

Governments should protect cash-dependent households and enterprises during financial disruptions through accessible banking, temporary support where justified, affordable credit and

reliable wage-payment arrangements. Digital-payment expansion should be accompanied by dependable connectivity, digital-literacy programmes, fraud prevention, consumer redress and protection for older people and users with limited access to technology. Cash should remain available as a practical payment option. Finally, future currency or payment reforms should account for resource use, secure note disposal, energy consumption and electronic waste. Independent evaluation using consistent data, regional comparisons and credible counterfactual methods should assess outcomes across income groups and sectors. Findings should be reported transparently, including limitations and unintended effects, so that public trust and institutional accountability remain central to monetary policymaking.

Future Research

Future research should estimate demonetisation's effects using methods that can better separate the policy shock from concurrent reforms and later economic events. Researchers could combine administrative records, household surveys, enterprise data and state- or district-level indicators in difference-in-differences or other quasi-experimental designs, provided the comparison groups and identifying assumptions are clearly justified. Longitudinal studies would help track employment, earnings, consumption, credit access and business survival beyond the immediate cash shortage.

Primary surveys in Tamil Nadu and other states could examine differences by occupation, gender, age, income, rural–urban location and access to banking or digital payments. Research should also investigate whether digital-payment use improved financial inclusion and resilience, while accounting for fraud exposure, connectivity gaps and continued cash use. Better data are needed to measure currency printing, transportation, disposal and digital infrastructure's environmental impacts on a comparable basis. Studies should publish data definitions, sampling methods, statistical tests and uncertainty estimates. Such evidence would support more reliable conclusions about distributional effects and the long-term costs and benefits of monetary reform.

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