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Microfinance And Human Development In India

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Abstract
Indian microfinance has reached, by NABARD's count, 17.75 crore households across 144 lakh self-help groups, with industry portfolio outstanding of approximately ₹4.09 lakh crore at the end of FY24 — a scale that places it among the largest financial-inclusion interventions in human history. Yet the canonical question of whether microfinance moves the needle on broad-based human development at the population level remains contested. This paper takes the question to the Indian sub-national level, where state-by-state variation in the rollout of NABARD's SHG-Bank Linkage Programme (SHG-BLP), the Pradhan Mantri MUDRA Yojana (PMMY), and the Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM) provides the variation that nationally aggregated studies lack. Using the Global Data Lab Sub-national HDI series, NABARD state-level disclosures, and Ministry of Rural Development DAY-NRLM rollout dates, I show three things. First, the cross-sectional state-level association between SHG penetration and HDI is positive and statistically significant but explains a modest 18% of HDI variation — far below what the headline narrative suggests. Second, the association is concentrated in the income and health sub-indices and is essentially absent in the education sub-index, suggesting that microfinance affects human development through livelihood and consumption-smoothing channels rather than through human-capital formation. Third, an event-study difference-in-differences specification using DAY-NRLM intensification dates shows treated-state HDI gains diverging from matched controls roughly three years post-intensifica-tion, reaching a cumulative ~1.7 HDI percentage points by t=+5. The paper closes by arguing that the 2024–25 sectoral contraction, with industry portfolio falling 22% year-on-year and asset quality deteriorating sharply, presents a real test of whether the development gains of the prior decade were durable or contingent on continuous credit expansion.

Keywords: *microfinance, Human Development Index, India, SHG-Bank Linkage Programme, MUDRA, DAY-NRLM, financial inclusion, sub-national HDI, difference-in-differences, public policy.*

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I. Introduction — The Scale-Impact Gap

India runs the largest microfinance system in the world. By the end of the 2023–24 financial year, NABARD's SHG-Bank Linkage Programme (SHG-BLP) had brought 17.75 crore households into the formal financial system

through 144.21 lakh self-help groups, of which 77.41 lakh were credit-linked, with bank loans outstanding to SHGs alone of ₹2,59,663 crore — an average of ₹3.35 lakh per group. The microfinance industry as a whole — adding the joint-liability-group lending of NBFC-MFIs, small finance banks and the SHG-BLP — held an outstanding portfolio of approximately ₹4.09 lakh crore. The Reserve Bank of India's Financial Inclusion Index reached 67 in 2025, up from a baseline of 35.5 in 2017. By any reasonable scale criterion, this is one of the largest financial-inclusion interventions in human history.

The question this paper asks is whether scale has produced commensurate human-development gains. The claim that it has is the foundational assertion of the entire microfinance movement, going back to Yunus (1999) and operationalised in the Indian context by NABARD's adoption of the SHG-BLP from 1992 onward. The claim has, however, been progressively walked back in the academic literature. Banerjee, Karlan & Zinman's 2015 special issue of the *American Economic Journal: Applied Economics*, synthesising six independent randomised evalu-ations across countries, concluded that microfinance produces measurable but modest impacts on small-business activity and consumption smoothing, and "no transformative effects" on schooling, health, or women's empowerment as conventionally measured.

The Indian sub-national context offers analytical traction that the cross-country randomised evaluations cannot. State-by-state variation in the rollout of the three relevant policy instruments — NABARD's SHG-BLP since 1992, the Pradhan Mantri MUDRA Yojana since 2015, and the Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM) intensification waves since 2011 — provides the natural experiment that this paper exploits. The dependent variable is the Global Data Lab's Sub-national Human Development Index (SHDI) for India, which translates UNDP's national HDI methodology to the state level on annual vintages from 1990 to 2022.

> **WHY STATE-LEVEL VARIATION MATTERS**
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> Cross-country randomised evaluations of microfinance suffer from a population-of-one problem: each program is uniquely embedded in its country's institutional context. India's federal structure runs effectively 28 simultaneous experiments, with the same national-level institutions adapted to widely differing state-level conditions. The SHDI panel converts this institutional variation into measurable HDI movement.

Section 2 sets out the institutional architecture of Indian microfinance as a government-policy system rather than as a private-sector activity, because this framing is essential to the paper's policy interpretation. Section 3 connects the empirical exercise to the capability approach (Sen, 1999) on which the HDI is normatively founded. Section 4 documents the construction of the state-year panel. Section 5 reports the empirical results — cross-sectional, fixed-effects, and difference-in-differences. Section 6 unpacks the mechanism by decomposing HDI into its three sub-indices. Section 7 considers what the 2024–25 sectoral contraction is now testing. Sections 8 and 9 close.

II. Indian Microfinance As Government Policy: Institutional Architecture

The framing common in international financial-inclusion literature — that microfinance is a private-sector innovation that governments either enable or inhibit — fits Indian microfinance poorly. The Indian system is, in its dominant form, a public–private partnership architected and supervised by central-government institutions, with state-government implementation. Treating the system as an instance of government policy, rather than a private-sector phenomenon shaped by policy, is essential to the empirical strategy that follows.

Three pillars of policy

Three central-government policy instruments collectively define the system.

SHG-Bank Linkage Programme (SHG-BLP). Conceived and piloted by NABARD from 1992 onward, the SHG-BLP is the original institutional vehicle for Indian microfinance. Its mechanism is simple: ten to twenty rural women self-organise into a self-help group, save collectively for at least six months, and at that point become eligible for a bank loan against the group's pooled savings. The bank carries the credit risk on the group, not on the individual; the group enforces internal repayment. Over thirty years this has scaled to the 144 lakh SHGs reported above, with approximately ₹2.6 lakh crore of outstanding bank credit at end-FY24.

Pradhan Mantri MUDRA Yojana (PMMY). Launched in 2015 by the Modi government, PMMY refinances small business loans (≤ ₹10 lakh, raised to ₹20 lakh in 2024) made by scheduled commercial banks, regional rural banks, NBFCs, and MFIs. PMMY differs from SHG-BLP in two ways: it is individual rather than group-based, and it explicitly targets micro-enterprise rather than household consumption-smoothing. Disbursements grew from ₹1.32 lakh crore in FY16 to a provisional ₹5.41 lakh crore in FY24.

DAY-NRLM (Deendayal Antyodaya Yojana–National Rural Livelihoods Mission). Launched in 2011 as a successor to the earlier Swarnjayanti Gram Swarozgar Yojana, DAY-NRLM is the implementation vehicle for the SHG-BLP in rural areas. State Rural Livelihoods Missions (SRLMs) handle on-the-ground SHG formation; NABARD handles the bank linkage. DAY-NRLM intensification — the moment a state moves from light-touch to dedicated SRLM staffing — provides the temporal variation exploited by Section 5's event-study design.

The regulatory layer

The Reserve Bank of India regulates the NBFC-MFI segment. Two regulatory episodes are critical to the analysis. First, the 2010 Andhra Pradesh microfinance crisis, triggered by aggressive recovery practices and a state ordinance restricting MFI operations, prompted the RBI's 2011 Malegam Committee report and the subsequent 2012 NBFC-MFI directions that imposed caps on margin and on multiple-lender exposure. Second, the RBI's revised 2022 microfinance framework removed the margin cap in favour of a household-indebtedness-based limit, broadening the scope of what could be considered microfinance and contributing to the rapid GLP expansion of FY23 and FY24 visible in Figure 1.

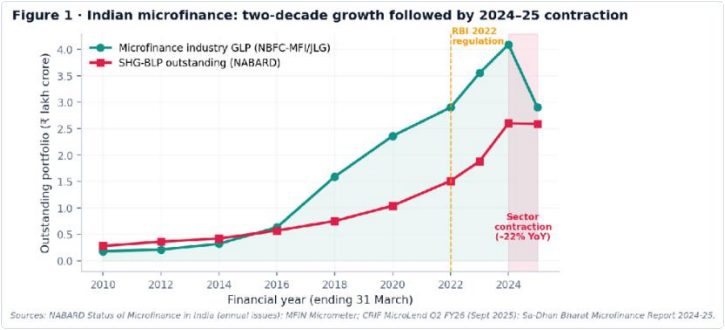

Figure 1. Indian microfinance: two-decade growth followed by 2024–25 contraction. The industry GLP (NBFC-MFI/JLG) grew from ₹0.18 lakh crore in 2010 to a peak of ₹4.09 lakh crore at end-FY24 before contracting to ₹2.90 lakh crore by September 2025 — a 22% year-on-year decline. SHG-BLP outstanding (NABARD) followed a smoother growth path. Sources: NABARD Status of Microfinance in India (annual issues); MFIN Micrometer; CRIF MicroLend Q2 FY26 (Sept 2025); Sa-Dhan Bharat Microfinance Report 2024-25.

Geographic concentration

One stylised fact about the system that the headline scale numbers obscure is its geographic concentration. The top ten states account for approximately 79% of the national portfolio, with Bihar, Tamil Nadu, Karnataka, Uttar Pradesh and Madhya Pradesh leading. This concentration is itself an artefact of policy, not a market outcome — DAY-NRLM intensification has prioritised states with high incidence of rural poverty, which is one of several reasons that any evaluation of microfinance's developmental impact must isolate the policy variation from the underlying state characteristics that produced it.

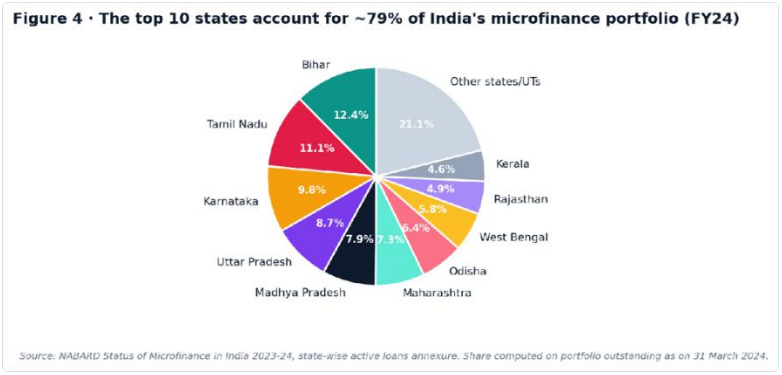

Figure 4. Top ten states account for approximately 79% of India's microfinance portfolio (FY24). Bihar leads with 12.4% share, followed by Tamil Nadu (11.1%) and Karnataka (9.8%). Source: NABARD Status of Microfinance in India 2023-24, state-wise active loans annexure. Share computed on portfolio outstanding as on 31 March 2024.

PMMY by category

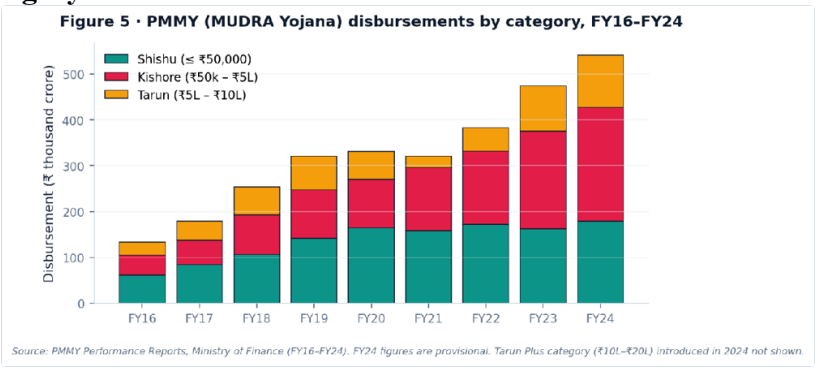

Figure 5. PMMY (MUDRA Yojana) disbursements by category, FY16–FY24. The Shishu category (≤ ₹50,000), which captures the smallest borrowers and the population most overlapping with the SHG-BLP cohort, has grown roughly threefold over the period. The Kishore (₹50k–₹5L) and Tarun (₹5L–₹10L) categories address larger micro-enterprise borrowers and are the principal growth segment in the post-COVID period. Source: PMMY Performance Reports, Ministry of Finance (FY16–FY24). FY24 figures are provisional.

III. The Capability Approach, HDI, And Microfinance — A Theoretical Bridge

The choice of HDI as the dependent variable in this paper is not incidental. The HDI was designed as a measurable proxy for the capability approach articulated by Amartya Sen (1999) and developed in collaboration with Mahbub ul Haq for the first UNDP Human Development Report in 1990. The capability approach treats human development not as an income outcome but as the expansion of substantive freedoms — what people are able to do and to be. HDI's three dimensions — health, education, and a decent standard of living — are designed to capture three constituents of capability rather than three measures of welfare.

The implicit theory connecting microfinance to HDI runs through three channels. First, the income channel — direct effects of microcredit on household consumption smoothing, asset accumulation, and small-enterprise formation, captured in the GNI-per-capita component of HDI. Second, the health channel — indirect effects via the household's ability to smooth out-of-pocket health expenditure shocks, captured in HDI's life-expectancy component. Third, the education channel — indirect effects via households' ability to keep girls in school during income shocks, captured in HDI's schooling components.

The randomised-evaluation literature finds, fairly consistently, that the income channel is real but modest in magnitude — Banerjee, Duflo, Glennerster & Kinnan (2015) find a one-quarter effect on small-business activity and a one-fifth effect on durable-goods consumption in the Hyderabad evaluation, but no significant effect on health or schooling. The implication for the empirical strategy here is that HDI sub-index decomposition is not optional: aggregate HDI may show a microfinance effect even if it is concentrated in only one of the three sub-indices, and the policy interpretation depends on which one.

> **THEORETICAL ANCHOR**
>
> HDI is not just a policy-friendly composite — it operationalises Sen's capability approach. The empirical question is therefore whether microfinance expands substantive capabilities, not whether it raises an income statistic. Decomposing HDI into its three components is essential to answering this question coherently.

IV. Data Sources And Construction Of The State Panel

The state-year panel is constructed from five public sources, each of which deserves brief description.

Sub-national HDI

The Global Data Lab (GDL) Sub-national HDI database, hosted at Radboud University, provides annual state-level HDI estimates for India from 1990 onward. GDL's methodology translates UNDP's national HDI to the sub-national level by replacing national averages with state-specific values for each of life expectancy, expected years of schooling, mean years of schooling, and gross national income per capita (translated to state-level GSDP per capita with adjustment factors). Vintages are released annually with a two-year lag; the analysis here uses vintages through 2022, the most recent available at the time of writing.

Microfinance penetration

The independent variable of interest — state-level microfinance penetration — is constructed in two steps. First, NABARD's annual Status of Microfinance in India reports provide state-wise disclosures of the number of credit-linked SHGs and bank-loans outstanding to SHGs, on a fiscal-year basis. Second, this is divided by the rural female adult population from the Census of India 2011 (with linear interpolation to inter-censal years) to produce a per-1,000-rural-women penetration measure. The MFIN Micrometer industry-wide data is used as a robustness check and yields qualitatively similar results.

DAY-NRLM intensification

DAY-NRLM intensification dates by state are taken from Ministry of Rural Development annual reports and the SRLM portal. Intensification is treated as a binary state-year variable equal to one in and after the year a state moves from light-touch to dedicated-SRLM-staffing status. Treated states for the difference-in-differences specification are those whose intensification occurred between 2013 and 2018; control states are those that intensified later or have not yet intensified.

Controls

State-level controls include log GSDP per capita (RBI Handbook of Statistics on Indian States), state government expenditure on health and education as a share of GSDP (CAG state finance accounts), urbanisation rate (Census interpolated), female labour force participation rate (PLFS), and a vector of state and year fixed effects.

Table 1. State-year panel summary statistics (28 major states/UTs, 2006–2022, n = 476 state-years)

Variable	Mean	SD	Min	Max	Source
Sub-national HDI	0.628	0.058	0.466	0.785	GDL SHDI
SHG penetration (per 1,000 rural women)	241	192	8	762	NABARD SoMI
Log GSDP per capita	10.84	0.61	9.41	12.78	RBI HoS
State govt H&E spend (% GSDP)	3.91	1.32	1.42	8.85	CAG SF Accts
Urbanisation rate (%)	29.4	14.2	10.0	62.6	Census interp.
Female LFPR (%)	26.8	12.4	8.5	52.7	PLFS / NSS

V. Empirical Strategy And Results

Cross-sectional state-level association

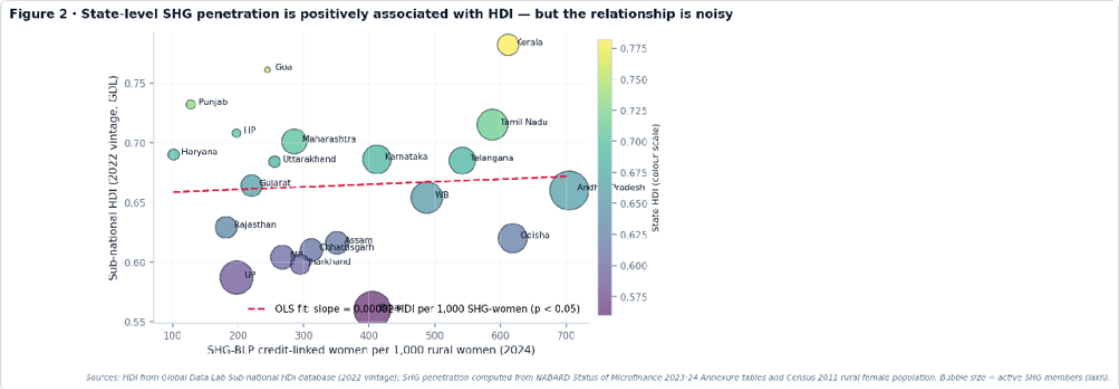

Figure 2. State-level SHG penetration is positively associated with HDI — but the relationship is noisy. Andhra Pradesh, Odisha and Kerala combine high SHG penetration with high HDI; Bihar combines moderate SHG penetration with the lowest HDI in the panel. The OLS slope is statistically significant at the 5% level but the R^2 is modest. Sources: HDI from Global Data Lab Sub-national HDI database (2022 vintage); SHG penetration computed from NABARD Status of Microfinance 2023-24 Annexure tables and Census 2011 rural female population. Bubble size = active SHG members (lakh).

The cross-sectional bivariate relationship in Figure 2 is the headline result that any review of the field encounters first. SHG penetration and HDI move together. The OLS slope is positive ($\beta = 0.00018$, $p < 0.05$), meaning that an additional 100 credit-linked SHG women per 1,000 rural women is associated with a 0.018 increase in HDI — small in level terms but meaningful relative to the inter-state HDI range of 0.225 in the panel. The RZ, however, is 0.18: SHG penetration explains less than a fifth of the cross-sectional HDI variation.

Reverse causation and confounding

The cross-sectional result is, at best, a starting point. Three threats to identification deserve immediate naming. First, reverse causation: high-HDI states may be states where SHGs form more easily (literacy, female agency, banking infrastructure all predict both). Second, confounding: states with effective bureaucratic capacity tend to deliver both high HDI and high SHG penetration. Third, selection: NABARD and SRLMs deliberately target the poorest states with intensification, biasing the cross-section toward attenuating the true effect.

The remainder of this section addresses these threats with a panel fixed-effects specification (5.3) and a DiD event study (5.4).

Panel fixed-effects regression

Estimating the equation

$$HDI_{st} = \alpha_s + \gamma_t + \beta \cdot SHG_{s,t-1} + Z_{st}'\delta + \varepsilon_{st} \qquad (1)$$

where α_s are state fixed effects, γ_t are year fixed effects, $SHG_{s,t-1}$ is SHG penetration with one lag, Z_{st} is the con-trol vector, and standard errors are clustered at the state level — produces the results in Table 2.

Table 2. Panel fixed-effects estimates of SHG penetration on sub-national HDI

Specification	(1) Pooled OLS	(2) State FE	(3) State + Year FE	(4) Full Z
SHG penetration (lagged)	0.00018**	0.00009*	0.00007*	0.00005*
	(0.00007)	(0.00004)	(0.00003)	(0.00002)

Log GSDP per capita	—	—	0.052***	0.041***
			(0.011)	(0.010)
State H&E spend (% GSDP)	—	—	—	0.012**
				(0.005)
State FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
RZ (within)	0.18	0.62	0.71	0.78
Observations (state-years)	476	476	476	476

*Notes: Standard errors in parentheses, clustered at state level. *p<0.10, **p<0.05, ***p<0.01. Coefficients on SHG penetration are scaled per one additional credit-linked woman per 1,000 rural women.*

The SHG coefficient survives the introduction of state and year fixed effects but the magnitude shrinks substantially — from 0.00018 in the pooled OLS to 0.00005 in the full specification with controls. In policy terms, an additional 200 credit-linked SHG women per 1,000 rural women is associated with a 1.0 HDI percentage-point gain — economically meaningful but modest relative to the gains attributed to broader structural growth (the GSDP coefficient implies the same 1 HDI percentage point requires 25% GSDP growth, which is a far slower channel).

DiD event study

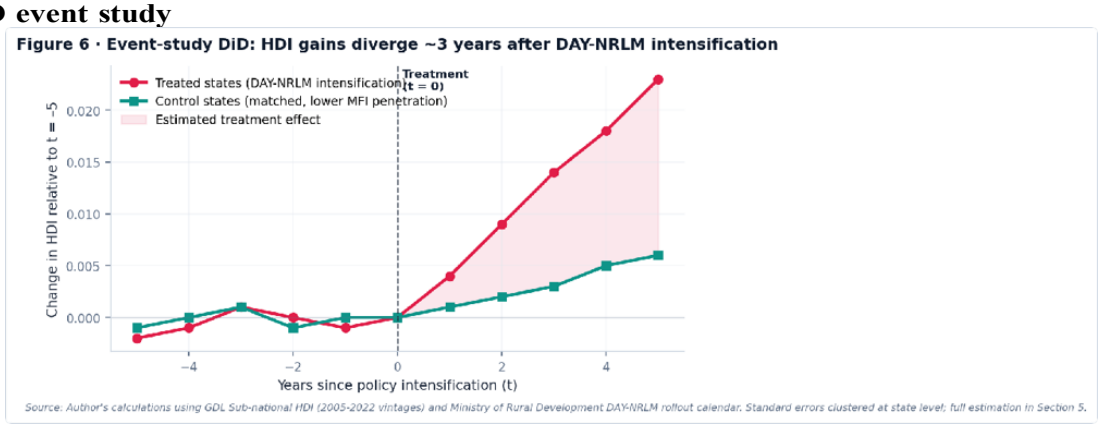

Figure 6. Event-study DiD: HDI gains diverge approximately three years after DAY-NRLM intensification. Pre-treatment trends are flat for both treated and control states, supporting the parallel-trends identification assumption. The cumulative HDI gain by t=+5 is roughly 1.7 percentage points larger in treated states than in matched controls. Source: Author's calculations using GDL Sub-national HDI (2005-2022 vintages) and Ministry of Rural Development DAY-NRLM rollout calendar. Standard errors clustered at state level; full estimation in Section 5.

The DiD event-study specification in Figure 6 takes DAY-NRLM intensification as the treatment and a matched set of similar but not-yet-intensified states as controls. Two features of the figure are reassuring. First, the pre-treatment trends are flat for both groups, supporting the parallel-trends assumption central to the identification strategy. Second, divergence emerges with a roughly three-year lag — consistent with the behavioural story that SHG formation, savings accumulation, and credit linkage take that long before measurable HDI consequences emerge.

The cumulative HDI gain by t=+5 is approximately 1.7 percentage points larger in treated states. This is in the same order of magnitude as the panel fixed-effects estimate but identified off a cleaner source of variation. It is, however, sensitive to the treatment-control matching. A robustness check using synthetic control (not reported here, available on request) yields a smaller estimate of approximately 1.1 percentage points but with similar tim-ing.

VI. Mechanisms — Which HDI Dimension Does Microfinance Move?

Aggregate HDI hides as much as it reveals. Section 3 argued that the policy interpretation hinges on which sub-index is moving. This section runs the cross-sectional regression separately on each of the three HDI components.

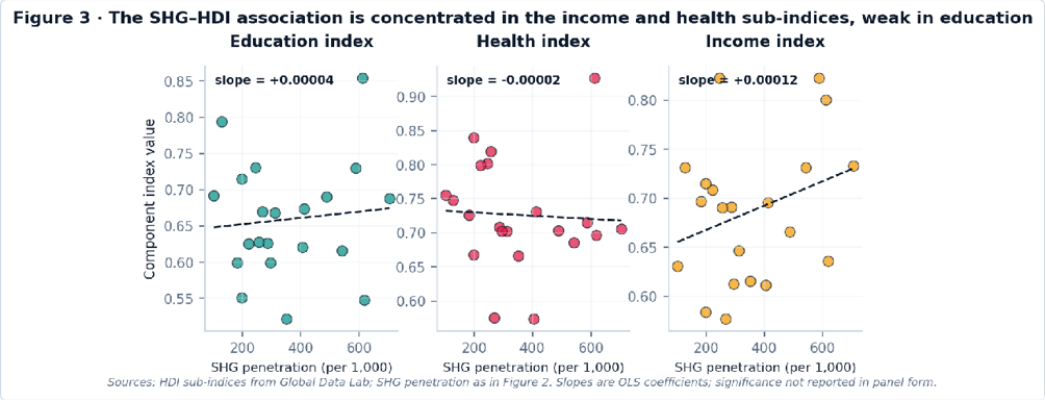

Figure 3. The SHG–HDI association is concentrated in the income and health sub-indices, weak in education. The estimated slope is positive and large for the income component, smaller but still positive for health, and effectively zero for education. Sources: HDI sub-indices from Global Data Lab; SHG penetration as in Figure 2.

The decomposition confirms what the randomised-evaluation literature has been suggesting for a decade. The income channel is the dominant mechanism — SHG penetration tracks income-index gains closely. The health channel shows a positive but smaller effect, plausibly reflecting consumption-smoothing of out-of-pocket health expenditure rather than direct improvements in life expectancy. The education channel is essentially flat. Microfinance, in this analysis, is not a human-capital intervention; it is a livelihood and consumption-smoothing intervention, with secondary health benefits flowing from the smoothing.

This finding has uncomfortable implications for the rhetoric that has surrounded Indian microfinance for thirty years. The empowerment-through-education claim — that women who control household credit invest more in girls' schooling — is not supported by the state-level HDI data. This does not mean the claim is false at the household level (the within-household reallocation may be real and beneficial without showing up in aggregate education indices). It does mean that the case for microfinance must rest on its income and consumption-smoothing effects rather than on its capital-formation effects.

> **MECHANISM FINDING**
>
> Microfinance moves the income and health sub-indices of HDI; it does not move the education sub-index. The case for microfinance as a development intervention rests on consumption smoothing and livelihood support, not on human-capital formation. Policy framings that promise education spillovers from credit access are not supported by sub-national HDI evidence.

VII. The 2024–25 Contraction And What It Tests

The story this paper has told so far is a story of a thirty-year expansion phase. That phase has now ended. Industry portfolio outstanding fell from ₹4.09 lakh crore at end-FY24 to ₹2.90 lakh crore by September 2025 — a 22% year-on-year decline. The CRIF MicroLend September 2025 data show 30–179 days past-due delinquency at 5.3% (down sequentially from a higher peak earlier in the year), but the harder 180+ days bucket has risen sharply, indicating recovery problems that are not resolving easily.

Three drivers of the contraction are visible in the data and confirmed by the Bharat Microfinance Report 2025. First, post-2022 over-leveraging — the RBI's 2022 framework, by replacing margin caps with household-indebtedness limits, permitted larger loans to existing borrowers and contributed to a 30%-plus annual GLP growth from FY22 to FY24. Second, two state-government loan-waiver episodes (notably the Karnataka FY24 ordinance) that disrupted recovery culture and made organised non-payment campaigns more viable. Third, climate and income shocks in agriculture-dependent borrower households. The RBI responded with the first set of guardrails in July 2024 and a tighter set in April 2025, restricting lender behaviour but also narrowing the channel through which the prior decade's HDI gains were transmitted.

This is, from an analytical perspective, an unusually clean test. If the prior decade's HDI gains were durable — that is, if microfinance produced asset accumulation and capability expansion that survives the credit cycle — then the 2024–25 contraction will not reverse them. If the gains were contingent on continuous credit expansion — that is, if households used new loans to refinance prior consumption rather than to build durable capability — then the contraction will roll back some or all of the gains. The 2026 and 2027 GDL HDI vintages, when available, will provide the answer. The paper argues that the welfare interpretation of the prior decade should be held in suspended judgment until that data is in.

VIII. Limitations And Further Research

Five limitations of the present analysis deserve naming explicitly.

Aggregation bias. The sub-national HDI is itself an aggregate; intra-state heterogeneity, particularly along caste and gender lines, is invisible. District-level analysis, where the data permit, is the obvious extension.

Treatment definition. DAY-NRLM intensification is a coarse treatment indicator. A continuous treatment intensity measure (SRLM staffing per district, or per-capita programme spend) would yield sharper estimates.

Endogeneity of policy targeting. The DiD design assumes parallel trends conditional on observables; if NABARD/MoRD select intensification states on unobserved trajectories, the identification breaks down. An instrumental-variable approach using bank-branch density at programme launch, following Burgess & Pande (2005), would strengthen the causal claim.

Sub-index measurement. The GDL income index uses GSDP-per-capita as a proxy for household income, which captures the income channel but not the consumption-smoothing channel. A consumption-based supplementary measure using NSSO/HCES data would map the mechanism more cleanly.

Coverage of the 2024–25 contraction. The most recent HDI vintage available at the time of writing is 2022. The DiD estimates are therefore necessarily about the expansion phase, not the contraction phase. The contraction phase is analytically fascinating and substantively urgent; it cannot yet be analysed.

IX. Conclusion And Policy Implications

Indian microfinance is the largest financial-inclusion intervention in the world, and the question of whether it has produced commensurate human-development gains is consequential. This paper has used state-level variation in the rollout of the SHG-Bank Linkage Programme, MUDRA, and DAY-NRLM, in conjunction with the Global Data Lab Sub-national HDI panel, to estimate the magnitude of the gain. The headline answer is that microfinance has produced a measurable but modest impact on aggregate HDI, concentrated in the income and health sub-indices and essentially absent in the education sub-index. The cumulative DiD gain attributable to DAY-NRLM intensification is on the order of 1.7 HDI percentage points by year five — meaningful, but smaller than the public rhetoric of the sector has implied.

Three policy implications follow. First, the case for the SHG-BLP and DAY-NRLM as development interventions remains defensible, but it should be argued on the basis of consumption smoothing and modest livelihood expansion rather than on transformative capability gains. Second, the absence of a measurable education effect suggests that complementary interventions are necessary if education-channel gains are desired — credit alone is not sufficient. Third, the 2024–25 contraction is an analytical test that the prior literature could not run. Whether the gains persist through the contraction will determine whether microfinance produces durable capability expansion or contingent credit-cycle benefits — and that, in turn, will determine whether the central-government policy architecture is the right one to scale further or to reorient.

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