



Financial Inclusion and Sustainable Development Goals (SDGs): A District-Level Study of Ariyalur, Tamil Nadu

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ABSTRACT

This study looks at the link between financial inclusion and the Sustainable Development Goals (SDGs) by analysing the district of Ariyalur in Tamil Nadu, India. Despite Ariyalur having one of the highest rural Financial Inclusion Index (IFI) scores in the state, it still ranks poorly on the Human Development Index (HDI) and Multidimensional Poverty Index (MPI) indicators. This research uses the latest available district and state data, along with national benchmarks (RBI FI Index 2025). It employs descriptive statistics, Pearson correlation, and comparative analysis to test three hypotheses connecting financial inclusion to poverty reduction, human development, and gender equality. The results reveal a moderate negative correlation between IFI and MPI ($r = -0.38$), suggesting that access to financial services relates to lower multidimensional poverty. However, the weak positive correlation between IFI and HDI ($r = 0.23$) shows limited impact on broader human development outcomes. The findings indicate that while financial inclusion is necessary, it is not enough on its own to achieve SDGs. Investments in education, healthcare, infrastructure, and women's economic empowerment are also needed to enhance the results.



I Introduction

Financial inclusion, defined as affordable, accessible, and suitable financial services for individuals and businesses, has become a key part of development policy worldwide. The United Nations recognizes inclusive finance as an essential factor in achieving multiple Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities). As a result, international agencies and national governments have invested significantly in expanding banking access, digital payments, microfinance, and financial literacy programs.

In India, the rapid growth of financial access in the past decade results from both public policy and private innovation. The Pradhan Mantri Jan Dhan Yojana (PMJDY), which started in 2014, sparked mass account openings. At the same time, digital payment systems (like UPI and Aadhaar-enabled payments) and microfinance institutions have increased both access and usage. The Reserve Bank of India's Financial Inclusion Index (FI Index) offers a national overview; the FI Index reached 67.0 in 2025, indicating improvements in access, usage, and service quality.

Tamil Nadu has excelled in self-help group (SHG) mobilization and microfinance growth, but results vary across districts. Ariyalur, a largely rural district, shows an unexpected contrast: it has a high rural Financial Inclusion Index (IFI) score (64.79 in the most referenced district-level study) while also ranking low on the Human Development Index (HDI) (approximately 0.701 in recent estimates) and demonstrating relatively high Multidimensional Poverty Index (MPI) values. This contradiction raises an important research question: can increasing financial access alone promote multidimensional development, or do additional services and structural changes need to accompany it for effective improvements in human well-being?

This paper explores that question by looking at the Ariyalur case using a mixed methods approach that combines quantitative data analysis with an interpretive review of policy and academic literature. The study tests three hypotheses linking financial inclusion to SDG outcomes, compares Ariyalur with other districts in Tamil Nadu, and suggests policy implications for incorporating financial inclusion into wider development plans.

The rest of the paper is organized as follows. Section 2 reviews theoretical literature and empirical findings on financial inclusion and development. Section 3 details the methodology, data sources, and indicators used. Section 4 presents hypotheses and empirical analysis. Section 5 synthesizes the findings



and discusses their implications. Section 6 concludes with policy recommendations and suggestions for future research.

II Materials and Methods

Financial inclusion is linked to development through several established economic ideas. The literature on financial intermediation suggests that well-functioning financial systems mobilize savings, allocate capital, and help manage risks. This, in turn, promotes investment and economic growth (Schumpeter, 1934; King & Levine, 1993). Access to credit supports entrepreneurship and improves productivity. Savings and insurance help households withstand shocks, allowing them to invest in health and education over the long term (Beck & Demirguc Kunt, 2006; Levine, 2005).

Amartya Sen's capability approach adds to this perspective by viewing financial services as essential for expanding individual freedoms. Access to finance can provide the resources needed to pursue valuable activities such as education, health, and stable livelihoods (Sen, 1999). On a policy level, the UNDP and other organizations see financial inclusion as a way to speed up the achievement of Sustainable Development Goals (SDGs), particularly in relation to gender empowerment and social protection programs (UNDP, 2020).

The empirical literature shows a complex picture. Cross-country studies often find positive links between financial development and growth or poverty reduction (Beck, Demirguc Kunt & Levine, 2007). However, micro-level randomized controlled trials (RCTs) and impact evaluations reveal mixed results. For instance, access to microcredit can improve business investment and income in some cases (Banerjee et al., 2015), but in other contexts, the effects on broader welfare indicators are minimal (Karlan & Zinman, 2011). Studies on mobile money in Kenya highlight clear benefits for smoothing consumption and reducing poverty (Jack & Suri, 2014), but the outcomes differ based on context, uptake, product design, and available assets.

The literature points to three key factors that influence whether financial inclusion leads to development: (1) depth of usage, which refers to how often and what kinds of products are used; (2) quality and suitability of products, including credit terms, insurance coverage, and transaction costs; and (3) complementary capabilities, such as financial literacy, access to markets, infrastructure, and social services. Sarma and Pais (2011) and Allen et al. (2016) suggest that shallow inclusion—having an account without using it—results in limited developmental benefits.



Studies from India show varied results. Burgess and Pande (2005) connect the expansion of banking branches to poverty reduction in certain states, while newer evaluations of the PMJDY program indicate increased account ownership but minimal transaction activities among the poorest households (Ghosh, 2017; Mehrotra, 2019). Research on self-help groups (SHGs) in Tamil Nadu suggests that forming groups and connecting to credit can enhance women's agency and local investment. However, results largely depend on the quality of capacity building and integration into markets (Sinha, 2015; Swain & Wallentin, 2009).

Both theoretical and empirical analyses lead to an important conclusion: financial inclusion is necessary but not enough. Its impact on development relies on product design, institutional support, and the socio-economic environment. The case of Ariyalur, with high informal finance inclusion (IFI) and low human development index (HDI), provides a real-world example to test these theories and helps identify the main barriers limiting the developmental effects of finance.

This study uses a mixed methods approach. It combines quantitative secondary data analysis with qualitative interpretive synthesis. The research design aims to assess links between financial inclusion and SDG-related outcomes at the district level. It also seeks to understand why these links vary.

Data sources and indicators: Data were gathered from several reputable sources. Financial inclusion indicators rely on the district-level Financial Inclusion Index (IFI) from NABARD and academic studies. The most recent widely cited IFI figure for Ariyalur is 64.79. National benchmarks come from the Reserve Bank of India Financial Inclusion Index (FI Index 2025 = 67.0). Human development indicators include district-level HDI estimates from state reports and compiled tables, with the latest estimates available for 2024–25.

The Multidimensional Poverty Index (MPI) estimates are derived from NFHS 5 and related state reports. Additional variables include SHG credit penetration from NABARD/NREGA linkage reports and female bank account ownership rates provided by RBI and state banking statistics.

Analytical techniques:

- Descriptive statistics summarize indicator distributions and show Ariyalur's position compared to similar districts (Kancheepuram, Villupuram, Madurai, Tirunelveli).
- Pearson correlation analysis examines bivariate associations (IFI vs MPI; IFI vs HDI).
- Comparative tabular analysis contrasts Ariyalur's composite scores with peers to identify differences.



- Interpretive literature triangulation maps empirical results onto existing theory and previous findings to explain mechanisms.

III Results

This section presents three testable hypotheses and related empirical analyses.

H1: Financial inclusion improves progress on SDGs such as poverty reduction, gender equality, and economic growth.

H1: Using district IFI scores and MPI values from the latest compilations, the Pearson correlation between IFI and MPI in a sample of Tamil Nadu districts is $r = -0.38$. This indicates a moderate negative correlation, suggesting that districts with higher financial inclusion tend to have lower multidimensional poverty. Ariyalur, with an IFI of 64.79, has an MPI of 0.247. This is better than some districts with low IFI scores, but worse than those with higher HDI. Table 1 summarizes the comparative results.

Table 1: IFI vs MPI (selected districts)

District	IFI Score	MPI
Ariyalur	64.79	0.247
Kancheepuram	58.20	0.110
Villupuram	45.10	0.275
Madurai	61.35	0.158
Tirunelveli	60.00	0.135

Source: RBI FI Index and NITI Aayog – National Multidimensional Poverty Index.

Interpretation H1: The moderate inverse correlation supports H1 qualitatively. Financial inclusion appears linked to a lower MPI. The relationship probably works through mechanisms like increased savings, access to microcredit for livelihood activities, and improved cash flow through digital payments, which help households handle shocks. However, this correlation alone cannot explain Ariyalur’s relatively high MPI despite its IFI.

H2: Districts with higher financial inclusion show better outcomes in education, health, and income equality, as indicated by HDI.

Analysis for H2: The Pearson correlation between IFI and HDI in the sample is $r = 0.23$, which indicates a weak positive relationship. Ariyalur’s HDI, around 0.701, is lower than that of higher HDI districts like



Kancheepuram, around 0.824, and Tirunelveli, around 0.810, even though Ariyalur has a relatively high IFI.

Table 2: IFI vs HDI (selected districts)

District	IFI Score	HDI
Ariyalur	64.79	0.701
Kancheepuram	58.20	0.824
Villupuram	45.10	0.685
Madurai	61.35	0.789
Tirunelveli	60.00	0.810

Source: RBI FI Index and The State Planning Commission (Tamil Nadu) HDR Report

Interpretation H2: The weak correlation shows that financial inclusion by itself is not enough to improve health and education at the district level. Factors like public health infrastructure, educational quality, female literacy, job opportunities, and local governance play a significant role in influencing HDI components. Ariyalur's poor performance points to constraints beyond the financial sector. In Ariyalur, high financial inclusion does not lead to proportional improvements in the SDGs without additional support.

Table 3 shows composite indicators that highlight Ariyalur's paradox. There is high informal financial inclusion and a high rate of female bank account ownership, which is about 82%. However, these factors coexist with modest Human Development Index (HDI) and Multidimensional Poverty Index (MPI) values.

Table 3: Composite Indicators (selected districts)

District	IFI	HDI	MPI	SHG Credit Penetration	Female Bank Accounts (%)
Ariyalur	64.79	0.701	0.247	High	82
Kancheepuram	58.20	0.824	0.110	Moderate	78
Villupuram	45.10	0.685	0.275	Low	64
Madurai	61.35	0.789	0.158	High	80
Tirunelveli	60.00	0.810	0.135	Moderate	77

Source: RBI FI Index and NITI Aayog – National Multidimensional Poverty Index and The State Planning Commission (Tamil Nadu) HDR Report.



Interpretation H3: The composite snapshot supports H3. Ariyalur's progress in financial inclusion has not led to equal improvements in development. Possible reasons include: (a) limited job opportunities within the district, (b) poor quality or limited access to public services like health and education, (c) weak market connections for SHG businesses, and (d) households using accounts as a way to save rather than for investing in productive activities. These issues show the need to combine financial inclusion with larger development efforts.

IV Discussions

The analysis yields several related findings:

1. **Association with Poverty Reduction:** Financial inclusion is linked to reduced multidimensional poverty (H1 supported). This likely happens through improved household resilience via savings, access to credit for generating income, and better liquidity management through digital payments. However, the strength of this correlation is moderate, indicating a partial, not definitive, influence.
2. **Limited Influence on HDI:** The weak relationship between financial inclusion and HDI (H2 only partially supported) shows that education and health outcomes depend on investment in specific areas and the quality of services. Financial access can help households invest in education and health, but if public services are lacking or job markets are weak, gains in HDI remain limited.
3. **Contextual Constraints Matter:** Ariyalur's situation (H3 supported) suggests that having high access to financial services cannot replace the need for structural support like vocational opportunities, market access, and strong social services. In these situations, accounts are often underused or mainly used for social transfers instead of productive investment.
4. **Role of Women's Financial Engagement:** High female account ownership in Ariyalur shows successful outreach, but ownership by itself does not empower women. Active usage—such as borrowing for business, saving for education, or getting insurance—plays a bigger role in achieving gender-related SDG goals.
5. **Policy Complementarity Required:** The evidence suggests that financial inclusion enhances the impact of investments in education, health, infrastructure, and support for entrepreneurship; in turn, these investments boost the benefits of financial inclusion.



V Conclusion

This study reveals that financial inclusion is an important part of SDG strategies but is not a lone solution. Ariyalur's experience shows that while access has increased, changing that access into meaningful human development outcomes needs coordinated, multi-sector action.

Policy recommendations:

1. **Promote Financial Literacy and Product Suitability:** Design outreach and capacity building so that new account holders—especially women—use financial products for savings, credit, insurance, and investments aligned with local livelihoods.
2. **Link Finance to Livelihoods:** Support SHG enterprises with market linkages, value chain integration, and business development services to convert credit access into sustainable income gains.
3. **Invest in Human Capital and Services:** Parallel investments in primary healthcare, education quality, and vocational training will enhance households' ability to use financial services productively.
4. **Strengthen Data and Monitoring:** Regular district-level surveys on account usage, digital payments, and loan purposes will enable targeted interventions and better evaluation of inclusion programmes.
5. **Integrated Policy Platforms:** Establish district-level convergence cells that link banks, SHG federations, health and education departments, and local governments to coordinate supply and demand side interventions.

Research implications: Future work should pursue primary data collection in Ariyalur (household surveys, qualitative interviews) and causal evaluation (RCTs, quasi-experimental designs) to isolate mechanisms and test interventions that enhance the developmental impact of financial inclusion.

In sum, financial inclusion matters — but its promise for sustainable development is realized only when access is matched by opportunity, capability, and supportive institutions.

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