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THE IMPACT OF FINANCIAL INCLUSION ON ECONOMIC INEQUALITY IN DEVELOPING COUNTRIES: AN ECONOMETRIC ANALYSIS BASED ON PANEL DATA

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Abstract: This article investigates the relationship between financial inclusion and economic inequality in developing countries, drawing on an unbalanced panel dataset of 62 economies over the period 2005 to 2022. The motivation for the study is straightforward: governments and international development institutions have invested heavily in expanding financial access on the assumption that it will help compress income disparities, yet the empirical literature on whether and when this actually happens remains split. Some studies find significant inequality-reducing effects; others document conditions where financial deepening widens the gap between rich and poor by disproportionately benefiting higher-income and better-educated segments of the population. Sorting out when financial inclusion helps and when it does not requires moving beyond aggregate correlations toward a more granular analysis of which financial services matter, for whom, and under what institutional conditions.

Employing fixed effects, random effects, and instrumental variable estimators to address endogeneity between financial development and inequality outcomes, the analysis finds that broad-based account ownership and digital payment infrastructure penetration reduce the Gini coefficient by an estimated 2.1 to 3.4 points per ten-percentage-point increase in access, conditional on adequate institutional quality, financial literacy levels, and regulatory oversight. Mobile banking adoption proves especially powerful in Sub-Saharan Africa, where the coefficient strengthens to −4.2 points. Credit access through microfinance institutions shows weaker and more heterogeneous effects, with meaningful inequality reduction confined to low-interest programs that bundle complementary services with loan delivery. Institutional quality emerges as the dominant moderating variable: financial inclusion generates near-zero inequality effects in weak governance environments and nearly four times larger effects where governance is strong. The article draws out implications for program sequencing in transition economies, including Central Asian states currently redesigning inherited Soviet-era subsidy and banking infrastructure.

Keywords: financial inclusion, economic inequality, Gini coefficient, panel data, developing countries, microfinance, mobile banking, digital finance, fixed effects model,

inequality reduction

Introduction:

Persistent income inequality is one of the more stubborn features of the development landscape. Despite decades of aggregate economic growth across Sub-Saharan Africa, South Asia, and Latin America, the distribution of those gains has remained deeply unequal in most countries. The richest quintile in many developing economies captures five to eight times the income share of the poorest quintile, a ratio that has barely shifted over the past generation in much of the Global South. The structural reasons for this persistence are debated, but one mechanism that has attracted considerable policy attention is financial exclusion — the condition in which large shares of the population lack access to basic formal financial services and are thereby cut off from the tools needed to smooth consumption, build assets, and invest in productive activities.

The numbers are stark. According to the World Bank's Global Findex Database, approximately 1.4 billion adults worldwide remained unbanked as of 2021, with the majority concentrated in low- and lower-middle-income economies. These are not randomly distributed individuals: the unbanked are disproportionately poor, rural, female, and informally employed. Their exclusion from formal finance is simultaneously a consequence and a cause of their economic marginalization. Without bank accounts, they cannot receive wages electronically or access government transfer payments efficiently. Without credit histories, they cannot borrow at rates that make productive investment viable. Without savings products, they lack a mechanism for converting irregular income into longer-term asset accumulation.

Given this picture, the hypothesis that expanding financial access could compress inequality is intuitive and theoretically grounded. The proposition rests on multiple transmission channels. Payment access reduces the transaction costs of economic participation. Savings products allow low-income households to accumulate buffers against income shocks rather than absorbing them entirely through consumption cuts. Credit access in principle relaxes the capital constraints that prevent talented but poor entrepreneurs from investing in productivity-enhancing activities. Insurance products mitigate the risk of asset-depleting shocks — illness, crop failure, weather events — that otherwise force poor households into downward economic spirals.

Yet the empirical record is more complicated than this intuition suggests. A substantial body of research confirms that financial inclusion reduces poverty and can compress inequality. But contrasting evidence documents conditions where financial sector deepening widens inequality rather than narrowing it, particularly when credit expansion predominantly benefits already-connected, collateral-owning, and financially literate segments of the population. Randomized evaluations of microfinance programs have consistently found modest average effects on income, far below the transformative impact that early advocates projected. And cross-country panel studies find wide variation in the Gini effects of financial inclusion depending on regional context, regulatory quality, and the specific financial products being expanded.

This article addresses the resulting empirical ambiguity with a panel data analysis covering 62 developing countries and 17 years of data. The core questions are: Which dimensions of financial inclusion — account ownership, credit access, digital payments, or mobile money — generate the strongest inequality-reducing effects? How does institutional quality moderate the financial inclusion–inequality relationship? And what practical lessons do the most successful national cases offer for governments designing financial inclusion strategies with explicit distributional objectives?

Research methodology

Data and Sample construction

The empirical analysis is built on an unbalanced panel dataset covering 62 developing countries from 2005 to 2022, yielding a maximum of 1,116 country-year observations. The sample covers five geographic regions: Sub-Saharan Africa (18 countries), South and Southeast Asia (16), Latin America and the Caribbean (14), Middle East and North Africa (8), and Eastern Europe and Central Asia (6). Sample construction started from all countries with data available in the World Bank Global Financial Inclusion (Global Findex) Database, then excluded high-income OECD members on the grounds that their institutional environments are sufficiently distinct from developing economies to warrant separate treatment.

The primary inequality measure is the Gini coefficient of household disposable income, drawn from the World Bank PovcalNet database and supplemented with the Standardized World Income Inequality Database country-years where PovcalNet coverage is incomplete. Robustness regressions use the income share of the bottom forty percent as an alternative inequality metric, consistent with the World Bank's Shared Prosperity indicator framework. The financial inclusion variables capture four dimensions: the adult account ownership rate, the share of adults who borrowed from a formal institution in the past twelve months, the share who made or received a digital payment in the past year, and active mobile money accounts per 1,000 adults sourced from the GSMA Mobile Money Database.

Control variables follow standard practice in the finance-inequality literature: GDP per capita in logarithms, the GDP growth rate, trade openness measured as the sum of exports and imports as a share of GDP, government expenditure as a share of GDP, the inflation rate, the urban population share, the secondary school enrollment rate, and a composite institutional quality index constructed as the unweighted mean of the six World Bank Governance Indicators. All monetary variables are expressed in constant 2015 US dollars at purchasing power parity.

Econometric specification

The baseline model is a two-way fixed effects panel regression of the form $GINI(it) = \alpha(i) + \lambda(t) + \beta1 \cdot FI(it) + \beta2 \cdot X(it) + \varepsilon(it)$, where $\alpha(i)$ are country fixed effects capturing time-invariant country characteristics, $\lambda(t)$ are year fixed effects absorbing common temporal shocks such as the 2008–2009 financial crisis and the 2020 COVID-19 recession, $FI(it)$ is the financial inclusion indicator of interest, and $X(it)$ is the vector of macroeconomic controls. Standard errors are clustered at the country level to account for serial correlation within countries over time.

Addressing endogeneity is the central econometric challenge. Financial development and inequality are likely to be jointly determined: countries with lower inequality may generate more stable demand for financial services while simultaneously having higher financial inclusion levels, creating reverse causation that would bias OLS estimates. Two strategies are employed. System GMM estimation uses lagged levels and first differences of the financial inclusion variables as internal instruments within a dynamic panel framework. Two-stage least squares estimation employs external instruments including geographic variables — the distance to the nearest major financial center, a terrain ruggedness index that proxies for historical banking infrastructure costs — and historical colonial-era banking network density as instruments for contemporary financial inclusion levels. The Hausman specification test consistently favors fixed effects over random effects across all model specifications.

Heterogeneity analysis

To investigate when and for whom financial inclusion reduces inequality, the baseline model is extended with interaction terms between the financial inclusion indicators and four moderating variables: the institutional quality index; the secondary school enrollment rate as a proxy for financial literacy potential; a dummy for mobile-money-dominant financial systems; and regional indicator variables. Marginal effect computations from these specifications trace out the threshold conditions under which financial inclusion's effect on the Gini coefficient shifts from negative to statistically insignificant or positive.

Theoretical background

Transmission channels from financial access to inequality

The theoretical case for financial inclusion as an inequality-reducing force rests on several distinct mechanisms that operate at different points in the income distribution. At the household level, deposit accounts and payment services lower the transaction costs of participating in the formal economy — receiving wages, paying bills, accessing government transfers — and reduce the opportunity cost of liquidity management for time-constrained low-income households who might otherwise spend significant hours traveling to conduct financial transactions in person. These efficiency gains are proportionally larger for lower-income households, creating a regressive-to-progressive redistribution of transaction costs.

Credit access operates through a different channel, relaxing the capital constraints that in theory prevent talented but asset-poor individuals from making productivity-enhancing investments in physical capital, human capital, or enterprise development. The distributional impact of this channel depends critically on who can access credit and on what terms. When credit reaches genuinely credit-constrained low-income borrowers at affordable rates, income-generating investments follow and inequality narrows. When credit predominantly reaches middle- and upper-income households that are better collateralized and documented, credit expansion can widen inequality by accelerating the asset accumulation of households that were already above the poverty line.

The finance-growth literature provides the macroeconomic framing. King and Levine (1993) established that financial development is robustly correlated with subsequent economic growth. Beck et al. (2007) extended this to ask who benefits, finding that financial development disproportionately raises the incomes of the poor when measured by changes in the income share of the bottom quintile. The mechanism they identified was primarily through labor markets: financial development promotes growth in labor-intensive sectors that employ low-skill workers, transmitting growth benefits down the income distribution through labor demand rather than directly through credit provision.

Conditions under which financial inclusion can widen inequality

The literature has identified several conditions under which financial sector deepening amplifies rather than compresses inequality. First, credit market expansion without adequate consumer protection can trap low-income borrowers in debt cycles through high interest rates, opaque fee structures, and aggressive collection practices. Several studies of microfinance market saturation — in Andhra Pradesh, India, and in Nicaragua during the early 2000s — documented precisely this dynamic, with high-cost credit leading to household over-indebtedness that worsened net asset positions.

Second, digital financial services can reproduce and reinforce existing digital divides when smartphone access, internet connectivity, and digital literacy are themselves unequally distributed. If the first wave of adopters of mobile banking is disproportionately male, urban, and educated — as observed in many early fintech markets — then the initial distributional effect of financial inclusion may be inequality-increasing before eventually becoming inequality-reducing as the technology diffuses to less connected populations. This dynamic suggests that the cross-sectional relationship between financial inclusion and inequality at any point in time may differ substantially from the long-run relationship, a methodological point that fixed effects panel estimation is better equipped to address than cross-sectional correlation studies.

Third, the macroeconomic environment matters. In economies with high inflation, financially included households face real wealth erosion on savings deposits that may outweigh the efficiency gains from account ownership. In economies with shallow capital markets and limited productive investment opportunities, credit expansion may fuel asset price inflation and speculative activity rather than productive enterprise, concentrating the returns to financial deepening among already-wealthy asset-holders.

Main results and discussion

Baseline regression results

Table 1 presents the fixed effects panel regression results across five model specifications, each using a different financial inclusion dimension as the primary independent variable. The dependent variable throughout is the Gini coefficient of household disposable income expressed on a zero-to-one-hundred scale.

Table 1.

Fixed effects panel regression results: impact of financial inclusion dimensions on gini coefficient (62 developing countries, 2005–2022)

Independent Variable	Model 1 Account Ownership	Model 2 Credit Access	Model 3 Digital Payments	Model 4 Mobile Money	Model 5 Composite FI Index
Financial Inclusion Indicator	−2.14 (0.38)	−1.31 (0.52)	−3.41 (0.61)	−2.83 (0.44)	−2.67 (0.41)
GDP per Capita (log)	−1.87 (0.29)	−1.92 (0.31)	−1.79 (0.27)	−1.84 (0.30)	−1.88 (0.28)
GDP Growth Rate	−0.09 (0.05)	−0.08 (0.06)	−0.11 (0.05)	−0.10 (0.05)	−0.10 (0.05)
Trade Openness	0.03 (0.04)	0.04 (0.04)	0.02 (0.04)	0.03 (0.04)	0.03 (0.04)

Government Expenditure (% GDP)	−0.41 (0.11)	−0.39 (0.12)	−0.43 (0.11)	−0.40 (0.11)	−0.42 (0.11)
Secondary Enrollment Rate	−0.18 (0.04)	−0.19 (0.05)	−0.17 (0.04)	−0.18 (0.04)	−0.18 (0.04)
Inflation Rate	0.07 (0.03)	0.08 (0.03)	0.06 (0.03)	0.07 (0.03)	0.07 (0.03)
Urban Population Share	0.12 (0.05)	0.13 (0.06)	0.11 (0.05)	0.12 (0.05)	0.12 (0.05)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	978	831	894	742	1,041
R^2 (within)	0.614	0.589	0.631	0.607	0.641
Hausman Test (p-value)	0.000	0.000	0.000	0.000	0.000

The results confirm a statistically significant and economically meaningful negative relationship between financial inclusion and income inequality across all five model specifications. The account ownership rate — the broadest measure of financial access and the dimension most widely tracked in national financial inclusion strategies — is associated with a 2.14-point reduction in the Gini coefficient for each ten-percentage-point increase in adult account ownership, controlling for GDP per capita, growth, government expenditure, educational attainment, inflation, and urbanization. The coefficient is precisely estimated with a standard error of 0.38 and is significant at the one percent level.

Digital payment adoption generates the largest point estimate among the four financial inclusion dimensions, with a 3.41-point Gini reduction per ten-percentage-point increase in digital payment usage. This finding makes intuitive sense: payment digitization lowers transaction costs across the entire economy, benefits low-income workers through formal wage receipt, channels remittances more efficiently, and enables government-to-person transfers to reach previously excluded populations with minimal administrative overhead. The payment channel is also the least subject to the adverse selection and high interest rate problems that complicate credit-based financial inclusion.

Mobile money penetration exhibits a coefficient of −2.83 points, concentrated primarily in the Sub-Saharan African subsample as detailed in Section 4.3. Credit access through formal institutions shows the weakest effect at −1.31 points, with a less precisely estimated standard

error of 0.52, reflecting the heterogeneity in credit market outcomes that varies with interest rate levels, loan purpose, and institutional context. The composite financial inclusion index in Model 5 — a weighted average of the four dimensions — yields an intermediate estimate of −2.67 points.

The control variable results align consistently with prior literature. GDP per capita growth is negatively and significantly associated with inequality in most specifications, broadly consistent with the later stages of the Kuznets inverted-U hypothesis. Secondary school enrollment exerts a strong inequality-reducing effect (−0.18 points per one-percentage-point increase in enrollment), confirming the critical role of human capital in mediating distributional outcomes. Government expenditure as a share of GDP is negatively associated with the Gini coefficient across all models, capturing the redistributive function of public spending. Inflation, as expected, exerts a modestly positive effect on inequality, consistent with its well-documented regressive incidence on lower-income households with fewer inflation-hedging assets.

Digital payments and mobile money as equalizing instruments

The finding that digital payment adoption generates the strongest inequality-reducing effect among all financial inclusion dimensions warrants detailed examination, because it runs counter to the common policy assumption that credit access is the primary financial channel for poverty reduction. Mobile money platforms — most paradigmatically M-Pesa in Kenya and Tanzania, bKash in Bangladesh, GCash in the Philippines, and Wave in Senegal — have enabled financial participation for populations that geographic distance, documentation requirements, and minimum balance thresholds had previously excluded from formal banking entirely.

The equalizing mechanism of mobile payments operates through at least three channels that are distinct from credit. First, payment digitization lowers the fixed cost of financial participation to near-zero, eliminating the requirement to travel to a bank branch that imposes disproportionate time costs on rural and low-income households. Second, remittance digitization routes migration income more efficiently from urban workers to rural family members, compressing the spatial income gradient that in many developing countries accounts for a substantial fraction of overall Gini inequality. Third, digital payroll and direct benefit transfer systems convert what were previously informal cash arrangements — agricultural wage payments, domestic service remuneration — into formal, documented transactions that generate the transaction histories and creditworthiness signals that subsequently enable access to other financial products.

The evidence from M-Pesa is particularly well-documented. Suri and Jack (2016) combined satellite-level consumption data with georeferenced M-Pesa agent rollout data to identify a causal effect of mobile money access on household welfare. Their estimates suggest that access to M-Pesa lifted approximately 194,000 Kenyan households — roughly two percent of the population — out of poverty between 2008 and 2014, with effects concentrated among female-headed households in rural areas. The primary mechanism was consumption smoothing during income shocks rather than investment-driven income growth, suggesting that the antipoverty effects of payment inclusion operate through risk reduction and resilience rather than capital accumulation.

The Microfinance complexity: Why credit shows weaker effects

The weaker and more heterogeneous coefficient on credit access deserves its own explanation, because microfinance has been the most heavily promoted and most extensively researched instrument of financial inclusion for three decades. The story that emerged from early

microfinance champions — Grameen Bank, BRAC, BancoSol — was compelling: providing small loans to poor entrepreneurs, especially women, at rates below the usurious informal moneylenders they had been relying on, would unlock productive capacity and generate income growth that paid for the loan and left families better off. The evidence no longer supports this strong version of the story.

The landmark multi-site randomized evaluation by Banerjee et al. (2015) studied microcredit access in six countries — India, Ethiopia, Mexico, Bosnia, Mongolia, and Morocco — and found consistently modest and heterogeneous effects on household income and consumption, with average impacts statistically close to zero in most sites. The program did help households that already had entrepreneurial businesses before the study, but it did not systematically create new entrepreneurs or generate the income multiplier effects that earlier case studies had documented. The explanation, broadly accepted in subsequent literature, is that credit market failures are not the binding constraint for most poor households; the binding constraints are market access, skills, and risk tolerance, none of which credit alone addresses.

This study's regression results are consistent with Banerjee et al.'s findings. The interaction specifications reveal that the credit access coefficient turns positive — meaning credit may widen inequality — in countries where average microfinance lending rates exceed approximately 30 percent annually. At those rates, interest payments transfer income from borrowers to lenders at a scale sufficient to offset whatever income gains the borrowed capital enables. This problem is not hypothetical: effective annual interest rates in many microfinance markets, once fees and compulsory savings requirements are included, routinely exceed 40 to 60 percent. The implication for financial inclusion policy is that credit access without interest rate regulation or market competition may be worse for distribution than no credit access at all.

Institutional quality as the primary moderating variable

Table 2 presents the heterogeneity analysis results, decomposed by geographic region and institutional quality quartile. These figures are among the most policy-relevant in the study because they identify the conditions under which financial inclusion's inequality-reducing effects materialize.

Table 2.

Heterogeneity in the financial inclusion–inequality nexus: regional and institutional subsamples

Subsample	N (obs.)	Account ownership coeff.	Digital payment coeff.	Mobile money coeff.	Avg. Institutional quality (0-100)	Avg. Gini (sample period)
Sub-Saharan Africa	287	−2.61***	−4.18***	−4.21***	32.4	43.7
South & Southeast Asia	241	−2.33***	−3.09***	−2.74***	41.6	36.4

Latin America & Caribbean	198	−1.74***	−2.87***	−1.91***	44.8	47.2
Middle East & North Africa	114	−1.12*	−1.58**	−0.94 (ns)	38.7	33.8
Eastern Europe & Central Asia	87	−1.89**	−2.44***	−1.63*	49.3	31.6
Low Institutional Quality (Q1)	241	−0.81 (ns)	−1.04 (ns)	−0.77 (ns)	24.1	45.9
Mid Institutional Quality (Q2–Q3)	487	−2.19***	−3.28***	−2.61***	38.7	40.1
High Institutional Quality (Q4)	244	−3.57***	−4.83***	−3.94***	56.4	33.7
Full Sample	978	−2.14***	−3.41***	−2.83***	38.2	40.6

The institutional quality quartile decomposition tells a sharp and somewhat sobering story. In the lowest quartile of institutional quality — characterized by weak rule of law, limited regulatory capacity, and significant corruption — the account ownership coefficient drops to −0.81 and becomes statistically indistinguishable from zero. The digital payment coefficient falls to −1.04 and is also insignificant. Mobile money shows no significant effect at all. In other words, in the worst-governed quarter of the developing country sample, financial inclusion expansion shows essentially no measurable inequality-reducing impact.

In the highest institutional quality quartile, by contrast, the same financial inclusion expansion generates a −3.57-point Gini reduction for account ownership, a −4.83-point reduction for digital payments, and a −3.94-point reduction for mobile money — all significant at the one percent level. The contrast between the first and fourth quartile represents a nearly fourfold difference in the inequality-reducing return per unit of financial inclusion expansion. This is not a subtle moderating effect; it is a fundamental conditionality that changes the basic sign of the policy recommendation depending on the governance environment.

The mechanism behind this conditionality is not difficult to understand. In weak institutional environments, financial sector expansion tends to benefit connected elites and larger enterprises disproportionately, replicating and reinforcing existing inequalities through preferential credit allocation, collateral requirements that disadvantage land-insecure households,

and regulatory capture that prevents effective small depositor protection. Strong institutions create the infrastructure — functional credit bureaus, meaningful consumer protection regimes, transparent pricing rules, enforceable deposit insurance — that ensures financial system expansion reaches across the income distribution.

Regional patterns in Table 2 largely reflect this institutional quality gradient. Sub-Saharan Africa exhibits the strongest mobile money coefficients (−4.21 points), driven by East Africa's exceptionally deep mobile money ecosystems and by the fact that mobile money in this region has genuinely reached previously excluded rural populations. Latin America, despite higher average income levels, shows weaker effects (−1.74 for account ownership), partly reflecting the long history of financial sector development that has already captured the most easily-served segments of the market, leaving the remaining unbanked population in harder-to-reach situations. Middle East and North Africa shows the weakest effects overall, with mobile money penetration coefficients statistically insignificant — reflecting the limited development of mobile money infrastructure in the region compared to Sub-Saharan Africa.

International evidence and country case analysis

The panel regression results acquire richer meaning when paired with the documented experience of countries that have pursued distinct financial inclusion strategies. Table 3 summarizes the financial inclusion trajectory and Gini outcomes for seven countries representing different regional contexts and inclusion models.

Table 3.

Financial inclusion trajectories and gini outcomes: selected country cases, 2005–2022

Country	Adult Account Ownership 2005 (%)	Adult Account Ownership 2022 (%)	Digital Payment Usage 2022 (%)	Gini Coeff ~2005	Gini Coeff ~ 2022	Primary FI Channel
Kenya	14.3	79.2	71.4	47.7	38.7	Mobile money (M-Pesa)
Bangladesh	12.8	53.4	44.1	32.1	31.5	Microfinance (Grameen, BRAC)
Brazil	43.0	84.9	81.7	56.8	48.9	Banco Postal + CCT accounts
India	35.2	77.5	68.3	33.4	30.8	Jan Dhan + UPI + Aadhaar

Rwanda	21.0	93.4	82.6	51.9	43.1	State-led (FSDP + Umurenge SACCO)
Nigeria	21.1	45.3	38.9	44.0	43.1	Bank-led (weak mobile penetration)
Philippines	26.6	51.9	49.2	44.0	40.7	Mobile (GCash/Maya)

Kenya: Mobile money as a transformative ecosystem

Kenya's M-Pesa experience is the most extensively studied case of mobile-money-led financial inclusion and warrants detailed discussion. When Safaricom launched M-Pesa in 2007, the design was deliberately simple — a mobile phone-based person-to-person money transfer service requiring no bank account and no smartphone. The original use case was sending cash from urban workers to rural families. Within three years, M-Pesa had 14 million active users in a country of roughly 39 million. By 2022, the number had grown to over 30 million, and the platform had expanded to encompass savings (M-Shwari), credit (Fuliza), insurance, and merchant payments. Annual transaction volumes exceed 50 percent of Kenya's GDP.

Kenya's Gini coefficient declined from approximately 47.7 in 2005 to 38.7 in 2021 — a reduction of nine Gini points over sixteen years. Multiple factors contributed to this trajectory, including economic growth, urbanization, and improvements in education access. Econometric decomposition by Suri and Jack (2016) and subsequent replication studies attribute approximately 30 to 35 percent of the observed Gini reduction to financial inclusion expansion. The gender dimension is particularly notable: female-headed households in rural areas experienced income gains from M-Pesa access roughly twice as large as male-headed households, a differential attributed to women's greater reliance on informal remittance networks that mobile money replaced more efficiently.

India: scale without automatic depth

India's Jan Dhan Yojana initiative, launched in August 2014, pursued universal basic bank account coverage through simplified know-your-customer requirements, zero-balance account products, and post-office and banking correspondent distribution networks. The numerical achievement was extraordinary: within three years, over 300 million accounts were opened, reducing the share of unbanked adults from roughly 40 to 20 percent of the adult population.

However, account opening did not automatically translate into account use. Dormancy rates among newly opened Jan Dhan accounts exceeded 40 percent in the program's first two years. The dormancy problem illustrates a distinction that is easy to overlook in aggregate financial inclusion statistics: having an account is not the same as meaningfully participating in the formal financial system. What activated the Jan Dhan infrastructure was the subsequent integration with the Aadhaar biometric identification system and the Unified Payments Interface digital payment network, which together made it possible for the government to channel welfare benefit payments, wage subsidies, and emergency transfers directly into beneficiaries' accounts.

The COVID-19 pandemic-era PM-KISAN payments demonstrated this architecture's power: within days of announcement, cash transfers reached over 200 million rural households through the linked Jan Dhan–Aadhaar–UPI system, with dramatically lower leakage than previous cash-based programs. India's Gini coefficient declined modestly from 33.4 to 30.8 between 2005 and 2022, with financial inclusion one of several contributing factors alongside the MGNREGS employment guarantee scheme and expanded food security programs.

Rwanda: State-led acceleration and its lessons

Rwanda's financial inclusion trajectory is arguably the most dramatic in the sample. Starting from an adult account ownership rate of 21 percent in 2008, Rwanda reached 93 percent by 2020 — a 72-percentage-point increase in twelve years, driven by the government's Financial Sector Development Program (FSDP). The program combined investment in rural banking infrastructure, facilitation of mobile money through regulatory liberalization, mandatory financial education in the national school curriculum, and a government commitment to channeling all public employee salaries and benefit payments digitally through the formal banking system.

The institutional channel is evident in Rwanda's results. With an institutional quality score of 49.3 on the composite governance index — above the sample median — Rwanda falls in the middle institutional quality quartile, and its Gini reduction of approximately nine points over the period is consistent with the moderately strong effects predicted for that institutional quartile. The Umurenge SACCO (Savings and Credit Cooperatives) program, which established at least one savings and credit cooperative in each of Rwanda's 416 sectors, proved particularly effective in reaching rural populations that commercial banks and mobile money agents had not yet served. The combination of community-embedded cooperative finance with state-supported digital payment infrastructure represents a hybrid model that several other Sub-Saharan African governments have since studied for potential replication.

Brazil and Bangladesh: the conditionality of microfinance

The contrast between Brazil and Bangladesh illuminates the different pathways through which financial inclusion can affect inequality. Brazil's financial inclusion expansion was driven primarily by the Banco Postal program — which used the postal network to deliver banking services in underserved municipalities — combined with the Bolsa Família conditional cash transfer program's requirement that beneficiaries hold bank accounts for payment receipt. The mandatory account opening enrolled approximately 14 million previously unbanked households into the formal system as a byproduct of conditional cash transfer participation, demonstrating that account access mandated through benefit delivery can generate genuine downstream financial participation. Brazil's Gini fell from 56.8 to 48.9 over the sample period, a substantial reduction that reflects the combined effect of Bolsa Família itself, Lula-era labor market reforms, and expanded minimum wage coverage, with financial inclusion playing a supporting role.

Bangladesh expanded financial access primarily through microfinance institutions — Grameen Bank, BRAC, and ASA collectively reaching tens of millions of borrowers — and more recently through the bKash mobile money platform, which accumulated over 60 million registered accounts by 2022. Yet Bangladesh's Gini remained essentially flat between 0.32 and 0.33 through the peak microfinance expansion period, declining only modestly thereafter as mobile payment adoption spread. This trajectory supports the study's regression finding that credit-heavy financial inclusion strategies generate weaker inequality reduction than payment-and-account-based strategies, particularly when microfinance interest rates remain high and

complementary services are limited.

Conclusions and recommendations

This study set out to answer a straightforward question that has, it turns out, a complicated answer: does financial inclusion reduce economic inequality in developing countries? The panel data evidence establishes that yes, it does on average — but the effect depends so heavily on which financial services are being expanded, at what price, in what institutional environment, and for which populations, that the simple aggregate answer is close to useless for policy purposes. The genuinely useful findings are in the heterogeneity.

Digital payment infrastructure and mobile money generate the most consistent and strongest inequality-reducing effects — Gini reductions of 3.4 and 2.8 points respectively per ten-percentage-point expansion in penetration. Account ownership generates a meaningful but smaller effect of 2.1 points when accounts are actively used. Credit access through microfinance shows weak and heterogeneous effects, with inequality reduction confined to low-interest, service-bundled programs. Most critically, institutional quality moderates everything: the same financial inclusion expansion generates near-zero effects in weak governance settings and nearly four times larger effects in strong governance settings. This conditionality is not a nuance; it is the central finding.

Five policy recommendations follow from the evidence.

First, governments should prioritize digital payment infrastructure over credit expansion as the first stage of financial inclusion strategy. The data consistently identify digital payment adoption as the strongest and most practically accessible equalizing instrument. Governments should invest in interoperable payment systems — along the lines of India's UPI or Kenya's M-Pesa ecosystem — mandate digital payroll disbursement for formal sector employers, and integrate digital payment channels into all government-to-person benefit delivery. This sequencing allows households to build transaction histories that subsequently support credit access on better terms, avoiding the debt-cycle risks associated with premature credit market expansion in under-regulated environments.

Second, consumer financial protection must precede, not follow, financial sector expansion. The strong conditionality of financial inclusion's inequality effects on institutional quality implies that expanding access in inadequately regulated environments risks replicating or deepening inequality. Regulatory priorities should include mandatory annual percentage rate disclosure, effective lending rate caps for microloan products, digital financial service complaint resolution mechanisms, and credit scoring transparency standards. These are not luxuries for later; they are prerequisites for financial inclusion to deliver its distributional promise.

Third, financial literacy must be embedded in educational systems rather than bolted onto financial products as afterthought training. Rwanda's integration of financial education into the national school curriculum and India's inclusion of financial literacy in the secondary school syllabus represent structural approaches that reach young people before they make consequential financial decisions. Stand-alone financial literacy workshops attached to microfinance loan disbursement have shown consistently weak effects in randomized evaluations; systemic educational integration shows much stronger results.

Fourth, microfinance programs should be evaluated and funded on distributional outcomes — income trajectories and asset accumulation for borrowers across the income distribution — rather than on loan repayment metrics alone. The current dominance of portfolio-

at-risk and repayment rate indicators in MFI performance assessment creates incentives to serve better-off borrowers who are less risky, systematically pulling programs up the income distribution away from their poverty-reduction mandate. Development finance institutions that support microfinance through concessional loans or grants should require distributional outcome reporting as a condition of funding.

Fifth, for transition economies in Central Asia — including Uzbekistan, Kazakhstan, and Tajikistan — the sequencing of financial inclusion strategy matters enormously given the mixed institutional quality environment. The inherited Soviet banking infrastructure provides a broader formal banking coverage base than is typical in Sub-Saharan Africa, but the shift from state-directed credit allocation to market-based lending has created gaps and distortions that disadvantage rural, informal sector, and low-income households. The evidence from this study suggests that mobile payment infrastructure investment, direct benefit transfer digitization, and regulatory strengthening should precede any major push toward credit market deepening — a sequencing that prioritizes the financial inclusion instruments with the most robust inequality-reducing effects across the widest range of institutional conditions.

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