The Massification Paradox: Why Greater Microcredit Availability May Reduce Entrepreneurial Value Creation — Evidence from the CAPEC Network in Mauritania

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Abstract: *While the post-2015 randomised evaluations have established that microfinance produces modest but heterogeneous impacts on entrepreneurial activity, evidence from Sahelian and Islamic contexts remains scarce. This paper tests the heterogeneity hypothesis in Mauritania, an under-studied case combining low financial inclusion (21 per cent of adults banked in 2021), a hybrid Arab-African cultural setting, and a young microfinance sector dominated by the CAPEC cooperative network. Drawing on a survey of 624 active CAPEC borrowers across the three wilayas of Nouakchott (response rate 83 per cent), we estimate two logistic regression models linking eight microfinance dimensions — grouped under massification of credit and institutional sustainability — to two entrepreneurial outcomes: enterprise creation and value generation. Results reveal a sharp asymmetry: massification variables (geographic proximity, ease of access, communication outreach) significantly drive enterprise creation, while institutional sustainability variables explain value generation only weakly. Most strikingly, the availability of microcredit programmes correlates negatively with value creation, suggesting a saturation or crowding-out effect consistent with cross-country evidence from Andhra Pradesh and Morocco. We interpret these findings through an integrated framework combining agency theory, financial inclusion theory, and institutional theory, and discuss implications for sequencing microfinance policy in fragile institutional environments.*

Highlights

- *First systematic empirical assessment of CAPEC, Mauritania's leading MFI network.*
- *Logit analysis of 624 borrowers links eight microfinance dimensions to entrepreneurship.*
- *Massification of credit drives business creation but not value generation.*
- *Excessive credit availability correlates negatively with entrepreneurial value creation.*

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- *Sahelian-Islamic context calls for a sequenced, institutionally-anchored MFI policy.*

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Introduction

Three decades after the founding of the Grameen Bank and a decade after the six randomised evaluations published in the American Economic Journal: Applied Economics special issue (Banerjee, Karlan and Zinman, 2015), the central question regarding microfinance has shifted from "does it work?" to "under which conditions, and along which dimensions, does it work?". The emerging consensus — modest but real impacts on entrepreneurial activity, distributionally heterogeneous effects, and strong dependence on the institutional environment (Cull and Morduch, 2018; Meager, 2019) — has been built primarily on Asian and Latin American evidence, with growing contributions from East Africa. Sahelian and Islamic contexts remain comparatively under-documented, despite hosting some of the world's lowest financial inclusion rates and most fragile institutional configurations (Demirgüç-Kunt et al., 2022).

Mauritania exemplifies this gap. With only 21 per cent of adults holding a formal financial account in 2021 — against 55 per cent regional average and 76 per cent global average — a 14-percentage-point gender gap, and a microfinance sector dominated by a single cooperative network (CAPEC) supervised by PROCAPEC, the country combines extreme under-banking with a hybrid institutional environment shaped by Islamic finance norms, tribal solidarity structures, and a young regulatory framework codified through the 2003 National Microfinance Strategy and the 2007 Central Bank ordinance. These features make Mauritania both an important case in its own right and an analytically informative limit case for theories of microfinance effectiveness.

This paper addresses three questions. First, to what extent does the CAPEC network produce significant associations with entrepreneurial outcomes among its borrowers, and how do these associations decompose across the dimensions of *massification of credit* (volume, accessibility, geographic reach, communication outreach) and *institutional sustainability* (financial viability, programme availability, durable provision)? Second, do the patterns observed in Mauritania align with or diverge from those documented by the international randomised evidence — and what does this tell us about the external validity of post-2015 findings in Sahelian-Islamic settings? Third, what theoretical framework best accounts for the asymmetries we observe, and what implications does it carry for policy sequencing?

We address these questions by mobilising an original survey of 624 active CAPEC borrowers conducted across the three wilayas (administrative regions) and several moughataas (districts) of Greater Nouakchott. We estimate two logistic regression models, one for the binary outcome of enterprise creation/takeover and one for value generation (proxied by income or salary distribution), with eight microfinance variables organised under the two theoretical constructs noted above. To anchor our analysis theoretically, we develop an integrated framework combining **agency theory** (Jensen and Meckling, 1976; Stiglitz and

Weiss, 1981; Armendáriz and Morduch, 2010), **financial inclusion theory** (Beck, Demirgüç-Kunt and Levine, 2007; Demirgüç-Kunt and Klapper, 2013), and **institutional theory** (North, 1990; Scott, 2008; Ahlin, Lin and Maio, 2011). The three frameworks operate at different levels of analysis — micro-contractual, meso-systemic, and macro-environmental — and yield distinct testable predictions about which microfinance dimensions should affect which entrepreneurial outcomes.

Our central finding is what we term the massification paradox: dimensions of credit massification that ease access (geographic proximity, accessibility, communication outreach) significantly raise the probability of enterprise creation, but the variable measuring the sheer availability of microcredit programmes correlates negatively with value generation, and the ease-of-access variable that drives creation positively reverses sign for value generation. This asymmetry, robust across model specifications, mirrors the saturation effects documented after the 2010 Andhra Pradesh crisis (Mader, 2013) and the 2007-2008 Moroccan microfinance crisis (Reille, 2009; Chen, Rasmussen and Reille, 2010), and aligns with the broader heterogeneity findings of the post-2015 randomised literature.

The paper is organised as follows. Section 2 develops the integrated theoretical framework. Section 3 proposes a five-dimensional grid for assessing microfinance effectiveness and reviews the international empirical evidence. Section 4 situates the study in the Mauritanian context. Section 5 presents the conceptual model and hypotheses. Section 6 details the methodology, including an explicit discussion of methodological caveats. Section 7 reports results. Section 8 discusses the findings through international comparison. Section 9 concludes with theoretical and policy implications.

Theoretical framework

Existing analyses of microfinance commonly mobilise a single theoretical lens: contractual approaches (welfarist versus institutionalist debate), governance theories (agency, transaction costs, organisational architecture), or, more recently, financial inclusion frameworks. We argue that none of these lenses alone accounts for the asymmetric patterns we document below. We therefore propose an integrated framework that articulates three theoretical bodies operating at three distinct levels of analysis: agency theory at the **micro level** of contractual relations; financial inclusion theory at the **meso level** of services and products; and institutional theory at the **macro level** of regulatory, normative, and cognitive environments.

Agency theory and microfinance

Originating in the work of Jensen and Meckling (1976) and refined by Eisenhardt (1989), agency theory analyses any contractual relation in which a principal delegates a decision to an agent whose interests are not spontaneously aligned with the principal's. Stiglitz and Weiss (1981) demonstrated that information asymmetries in credit markets produce two recurrent pathologies: **adverse selection** (the lender cannot distinguish good from bad borrowers ex ante) and **moral hazard** (the borrower may divert the loan or under-supply effort ex post). These two phenomena explain the credit rationing facing micro-entrepreneurs without collateral in developing countries.

Modern microfinance, as theorised by Ghatak and Guinnane (1999), Armendáriz and Morduch (2010), and Cull, Demirgüç-Kunt and Morduch (2009; 2018), can be read as a form of **contractual engineering** that reduces these asymmetries through five mechanisms: (i) joint liability, which transfers part of the selection risk onto peers; (ii) dynamic incentives, where

access to subsequent and larger loans is conditional on current repayment; (iii) frequent and small repayments, which reveal difficulties early; (iv) intensive monitoring by loan officers; and (v) social collateralisation grounded in community pressure.

At the institutional level, agency theory operates at a second tier: between donors (public, private, international) and MFI managers, as documented by Hartarska (2005), Mersland and Strøm (2009) and Labie and Périlleux (2008). This second-tier governance problem is particularly salient where managerial incentives are weakly aligned with social mission. The *massification of credit* construct in our model operationalises the first tier (lender–borrower), while the *institutional sustainability* construct operationalises the second tier (donor–MFI). The agency framework therefore predicts that monitoring-intensive variables (geographic proximity, borrower support, communication outreach) should drive entrepreneurial outcomes more reliably than volume-oriented variables.

2.2 Financial inclusion theory

Financial inclusion, theorised by Beck, Demirgüç-Kunt and Levine (2007) and Demirgüç-Kunt and Klapper (2013), and systematised through the Global Findex Database (Demirgüç-Kunt et al., 2022), refers to the effective access to and regular use of a range of formal financial services — transaction account, savings, credit, insurance, transfers — by the entire adult population at reasonable cost. The literature distinguishes three operational dimensions: **penetration** (share of adults with a formal account), **accessibility** (geographic density of service points), and **usage** (intensity and diversity of products consumed).

Theoretically, financial inclusion is expected to operate through four impact channels identified by Levine (2005) and refined by Bruhn and Love (2014): a smoothing channel (consumption and investment in the face of shocks), a capitalisation channel (financing of productive assets), an empowerment channel (especially for women, see Duflo, 2012), and an efficiency channel (formalisation, improved capital allocation). The research programme initiated by Banerjee and Duflo, culminating in the six randomised controlled trials of Banerjee, Karlan and Zinman (2015), established an empirical consensus: microfinance produces modest but real effects on borrowers' economic activity (enterprise creation and expansion, income source diversification), without on average transforming household living standards.

This framework predicts that the effectiveness of microfinance is conditional on the joint mobilisation of penetration, accessibility, and usage. An MFI may broaden penetration without deepening usage — producing precisely the paradoxical pattern we observe: positive effects of accessibility variables on enterprise creation, but negative effects of programme availability on value creation, suggesting that the quantity of credit available is not converted into productive intensity of use.

2.3 Institutional theory

Where agency theory focuses on contracts and financial inclusion theory on services, institutional theory — developed by North (1990), DiMaggio and Powell (1983), Scott (2008) and Williamson (2000) — captures the environment in which contracts and services are embedded. Scott distinguishes three institutional pillars: the **regulative** pillar (laws, regulations, formal sanctions), the **normative** pillar (values, professional norms, codes of conduct), and the **cultural-cognitive** pillar (shared beliefs, interpretive schemata, religious identity).

Applied to microfinance, this grid has generated a fertile research programme. Ahlin, Lin and Maio (2011), drawing on 373 MFIs across 74 countries, show that institutional performance is conditional on the quality of the macroeconomic and legal framework. Kar

(2016) establishes that the degree of creditor protection and the rule of law moderate the trade-off between social outreach and financial sustainability. Bauchet and Morduch (2013) demonstrate that MFIs flourish more where a pre-existing informal credit infrastructure exists that formal institutions can aggregate, rather than displace. The Mauritanian case presents a hybrid institutional configuration: a partially structured regulative pillar (the 2007 Central Bank ordinance, the 2003 National Microfinance Strategy) but with uneven enforcement; a normative pillar fragmented by a multiplicity of donors and the absence of a strong professional association; and a cultural-cognitive pillar marked by Islamic finance norms (the prohibition of *ribâ*), tribal and lineage solidarities, and pre-existing rotating savings practices (*tontines*).

2.4 An integrated multi-level framework

The three frameworks are not in competition: they describe three nested levels of analysis. Agency theory operates at the contractual level (lender–borrower, donor–MFI). Financial inclusion theory operates at the systemic level of services and their joint deployment. Institutional theory operates at the environmental level of regulatory, normative, and cognitive structures. This articulation translates into our empirical model: the massification of credit construct (FAP, VDM, PGS, SAE) operationalises agency-level and inclusion-level dimensions; the institutional sustainability construct (FDS, DPM, VFT) operationalises agency-level (donor–MFI governance) and institutional-level dimensions; and entrepreneurial outcomes (enterprise creation, value creation) constitute the joint outcome that requires interaction across the three levels.

This articulation generates a non-trivial prediction that motivates the empirical analysis. Enterprise creation primarily depends on lifting the contractual financing constraint (a micro-agency problem), whereas value creation depends on the deployment of complementary services and on a supportive institutional environment (meso and macro). Where the meso and macro layers are under-developed — as in Mauritania — we should expect microfinance to support enterprise creation but to deliver weak or even negative effects on durable value generation. This prediction is consistent with the saturation effects documented in the literature and with the specific results of our analysis.

Assessing microfinance effectiveness: a five-dimensional grid

The international literature on microfinance has long debated the appropriate criteria for assessing effectiveness. We propose to substitute for the binary question — "does microfinance have an impact?" — a graduated question: "under which conditions and along which dimensions is microfinance effective?". This reformulation aligns with the post-2015 state of the literature and is operationalised through a five-dimensional evaluation grid.

3.1 The welfarist-institutionalist debate and its reconciliation

Following the schism identified by Morduch (2000), the international literature has structured the effectiveness debate around two paradigms. The **welfarist** approach (Hulme and Mosley, 1996; Robinson, 2001) evaluates effectiveness through depth of outreach: capacity to reach the poorest, multidimensional poverty reduction, women's empowerment. The **institutionalist** approach (Otero and Rhyne, 1994; CGAP) evaluates effectiveness through breadth of outreach and financial viability: number of beneficiaries, operational self-sufficiency, independence from subsidies. Reconciliation, achieved by Zeller and Meyer (2002) through the *critical triangle* of microfinance — outreach, impact, sustainability — and deepened by Copestake (2007) and Cull, Demirgüç-Kunt and Morduch (2007), has established that neither approach alone exhausts the effectiveness question.

3.2 Three generations of empirical evidence

The question "to what extent is microfinance effective?" has received three generations of answers. The **first generation** (1990-2005) consisted of non-experimental impact studies (Pitt and Khandker, 1998 in Bangladesh; Coleman, 1999 in Thailand) that concluded to substantial impacts but were strongly contested on methodological grounds (selection bias, endogeneity) by Morduch (1998) and later by Roodman and Morduch (2014). The **second generation** (2005-2015) comprised six randomised controlled trials (Banerjee, Karlan and Zinman, 2015) covering Bosnia, Ethiopia, India, Morocco, Mexico and Mongolia. Their convergent verdict: positive effects on entrepreneurial activity (creation and expansion of micro-enterprises, income diversification), but on average null or weak effects on household income, consumption and well-being. The **third generation** (2015-present) has focused on heterogeneity (Meager, 2019; Banerjee et al., 2019), medium-to-long-term effects (Augsburg et al., 2015), spillover effects, and the institutional conditions of effectiveness (Cull and Morduch, 2018). The verdict: microfinance produces marked distributional effects — transformative for a subset of borrowers, neutral for the majority — and these effects depend strongly on institutional environment quality and on product design.

3.3 A five-dimensional effectiveness grid

Building on this literature, we evaluate microfinance effectiveness across five dimensions, of which the present study addresses primarily the first two:

- **Direct economic effectiveness:** capacity to generate enterprise creation, business growth, and employment. This is the dimension captured by our outcome variables NE and RED.
- **Institutional effectiveness:** financial sustainability, operational self-sufficiency, portfolio quality (PAR > 30 days), governance. Partially captured by the variable VFT.
- **Outreach effectiveness:** depth (share of poor, women, rural areas) and breadth (absolute number of beneficiaries). Not directly measured here — a limitation we acknowledge.
- **Social and empowerment effectiveness:** effects on women's empowerment (Pitt, Khandker and Cartwright, 2006; Duflo, 2012), child schooling, health, social capital. Beyond the scope of this study.
- **Resilience effectiveness:** capacity to protect households from idiosyncratic shocks (health, climate) and systemic shocks (pandemic, food price inflation). Particularly relevant in the Sahelian post-COVID context.

The Mauritanian context

Mauritania occupies a singular position at the crossroads of North and Sub-Saharan Africa. With approximately 4.9 million inhabitants in 2024, the country combines an Arabic-speaking majority (the *Beidane* and Haratine populations) with significant Halpulaar, Soninké and Wolof communities, an economy structured around pastoralism, fisheries, and a growing extractive sector, and a young financial system in which microfinance occupies a central role. Microfinance in Mauritania emerged in 1989 with two pioneering institutions — the Association for Credit and Small and Medium Enterprises (ACMPE) and the Mauritania Development Initiative (IDM) — created to support the economic reintegration of returnees from Senegal.

The sector reached an inflection point in 1997 with the establishment of the first People's Cooperative for Savings and Credit (CAPEC), followed by significant regulatory advances in 1998-1999. The 2003 National Microfinance Strategy (SNMF) and the 2007

Central Bank ordinance (n°005-2007) provided the legal infrastructure for the sector's subsequent expansion. The PROCAPEC umbrella structure currently supervises a network of CAPEC cooperatives operating across the country, making it the dominant microfinance actor and the natural object of empirical analysis.

Three structural features of the Mauritanian context are particularly salient for the analysis. First, the country combines extreme under-banking (21 per cent of adults with a formal financial account in 2021, versus 55 per cent regional average) with rapid mobile penetration (above 100 per cent SIM penetration, but limited mobile money diffusion through Bankily, Masrvi and Sedad). Second, Islamic finance compatibility is a structuring constraint: the prohibition of riba and the role of the Mahadra and the Ulema in legitimising economic practices impose a reflection on Sharia-compliant products (mourabaha, ijara, moudaraba) rather than conventional credit. Third, the Sahelian environment combines climatic shocks (recurrent droughts), food price volatility, and regional security pressures (G5 Sahel context) that amplify the relevance of resilience effectiveness as an evaluation dimension.

Successive policy frameworks — the Strategic Framework for Poverty Reduction (CSLP 2011-2015), the Strategy for Accelerated Growth and Shared Prosperity (SCAPP 2016-2030), and the National Employment Strategy — have integrated microfinance as a vehicle for self-employment, particularly among youth. Despite these efforts, the sector remains weakly articulated with the conventional banking system, suffers from a chronic lack of reliable disaggregated data, and confronts a tension between the regulatory ambitions of the SNMF and the operational fragility of individual MFIs. These features make Mauritania a fertile ground for testing the predictions of the integrated theoretical framework developed in section 2.

Conceptual model and hypotheses

Our analytical model decomposes microfinance into two theoretical constructs and entrepreneurship into two outcome variables. The **massification of credit** construct, drawing on the agency and inclusion frameworks, measures the capacity of MFIs to meet a broad demand for microcredit through four variables: ease and broad accessibility of loans (FAP), borrower support strategies (SAE), geographic proximity of financial services (PGS), and dissemination of microcredits (VDM). The **institutional sustainability** construct, drawing on the agency and institutional frameworks, captures the long-term viability of microfinance programmes through three variables: durable provision of financial services (FDS), availability of microcredit programmes (DPM), and financial and technical viability of the MFI (VFT).

Entrepreneurship is operationalised through two outcome variables grounded in the entrepreneurship literature (Verstraete and Fayolle, 2005; Bruyat and Julien, 2001; Shane and Venkataraman, 2000): **enterprise creation/takeover (NE)**, a binary variable equal to one if the borrower has created or taken over an enterprise; and **value creation (RED)**, a binary variable capturing the generation of incomes or salaries within the enterprise. These two variables operationalise the *organisation creation* and *value creation* paradigms identified by the literature.

The integrated theoretical framework developed in section 2 yields three operational hypotheses:

- **H1 (agency-level prediction):** Variables of credit massification that reduce information asymmetries (PGS, SAE, VDM, FAP) are positively associated with enterprise creation.
- **H2 (inclusion-level prediction):** The asymmetry between the three dimensions of financial inclusion (penetration, accessibility, usage) generates contrasted effects on enterprise

creation versus value creation; specifically, dimensions emphasising accessibility should drive creation, while dimensions emphasising usage should drive value generation.

- **H3 (institutional-level prediction):** Variables of institutional sustainability (FDS, DPM, VFT) condition value creation more than enterprise creation, with VFT — understood as institutional legitimacy in the sense of Suchman (1995) — expected to dominate the other two.

Methodology

6.1 Sampling strategy

The target population consists of active borrowers of the CAPEC cooperative network in the three wilayas of Greater Nouakchott. The operational sampling frame was provided by PROCAPEC and contained the population of clients with active loans at the moment of the survey. Three obstacles to probabilistic sampling emerged during the preparatory phase: (i) a substantial share of contact records was obsolete (changed phone numbers, addresses no longer valid); (ii) respondent mistrust, partially associated with perceived fiscal scrutiny linked to the survey, produced systematic non-response on the first contact; and (iii) the sampling frame contained an unknown but non-negligible share of fictitious enterprises, that is, registered borrowers whose declared business activity could not be verified during fieldwork.

In light of these constraints, we adopted a non-probabilistic convenience sampling strategy stratified across the three wilayas (Nouakchott Nord, Nouakchott Ouest, Nouakchott Sud) and balanced across moughataas. From an initial frame screening, 750 borrowers were contacted; 624 valid responses were obtained, yielding a response rate of 83 per cent. The geographic stratification ensures that all major districts of Greater Nouakchott are represented in proportion to their CAPEC borrower base.

6.2 Data collection instrument

The questionnaire was administered face-to-face by trained surveyors during the data collection period. The instrument followed the guidelines for quantitative research design (Thiétart et al., 2003; Lambin, 1990) and was structured around three thematic blocks: massification of credit, institutional sustainability, and entrepreneurial outcomes (creation and value generation). A pilot test was conducted on 150 young borrowers prior to the main fieldwork to verify question comprehension, item ordering, and the cultural appropriateness of formulations. Translation into Hassaniya Arabic and into national languages (Pulaar, Soninké, Wolof) was performed where necessary by bilingual surveyors.

6.3 Variables and analytical approach

All explanatory variables were measured on five-point Likert scales aggregated into composite scores. The two outcome variables are binary: NE equals one if the respondent has created or taken over an enterprise and zero otherwise; RED equals one if the enterprise distributes incomes or salaries and zero otherwise. We estimate two logistic regressions of the form:

$$\text{logit}(NE) = \alpha 0 + \beta 1 \cdot VDM + \beta 2 \cdot FAP + \beta 3 \cdot SAE + \beta 4 \cdot PGS + \beta 5 \cdot FDS + \beta 6 \cdot DPM + \beta 7 \cdot VFT + \varepsilon$$

$$\text{logit}(RED) = \gamma 0 + \delta 1 \cdot VDM + \delta 2 \cdot FAP + \delta 3 \cdot SAE + \delta 4 \cdot PGS + \delta 5 \cdot FDS + \delta 6 \cdot DPM + \delta 7 \cdot VFT + \eta$$

Estimation was conducted in SPSS Statistics. Significance was tested at the 1 per cent, 5 per cent, and 10 per cent thresholds. Goodness-of-fit was assessed through the Hosmer-Lemeshow chi-square statistic, and predictive performance through the classification rate.

6.4 Methodological caveats

We acknowledge two methodological limitations that shape the interpretation of our results. First, the convenience sampling design, motivated by the absence of a usable probabilistic sampling frame, precludes strict population inference. While the geographic stratification and the high response rate (83 per cent) limit the most severe selection biases, residual selection cannot be ruled out: respondents who agreed to participate may differ systematically from refusers, plausibly in the direction of being more economically active and more confident in the legitimacy of CAPEC. If non-respondents include a disproportionate share of borrowers in difficulty, our estimates of microfinance effects on enterprise creation are likely biased upward, and our estimates on value creation are likely biased downward — which would, if anything, reinforce our central finding of a creation-value asymmetry.

Second, the cross-sectional design does not permit causal identification of microfinance effects: our estimates capture conditional associations, not treatment effects. We address this in two complementary ways. We restrict our claims to the language of association rather than impact, and we triangulate our findings against the international randomised evidence (Banerjee et al., 2015; Meager, 2019; Augsburg et al., 2015) to assess whether the patterns we observe are consistent with the established causal literature. Where they are, our findings strengthen the external validity of that literature; where they diverge, they signal context-specific mechanisms warranting further investigation, ideally through a longitudinal or experimental design.

Results

7.1 Sample and descriptive statistics

Of the 624 valid responses, all observations were retained in the analysis (no missing data, no excluded cases). The sample is balanced across the three wilayas of Greater Nouakchott, with a representative spread across the major moughataas. Among CAPEC borrowers in the sample, 89.7 per cent are engaged in the creation of new enterprises, while 10.3 per cent are engaged in extension or takeover of existing activities — indicating a strongly creation-oriented borrower base, consistent with CAPEC's positioning as an entry-level microfinance provider. The classification rate of the logistic models confirms strong predictive performance: 89.7 per cent for enterprise creation (NE) and 85.1 per cent for value generation (RED).

The correlation matrix among the seven explanatory variables (Table 1) shows generally weak linear associations, with only two correlations exceeding 0.15 in absolute value: a positive correlation of 0.164 between VDM and PGS, and a negative correlation of -0.280 between VDM and VFT. The latter is theoretically interesting: it suggests that intensive communication outreach (VDM) is partially substitutive of, rather than complementary to, financial and technical viability (VFT) at the firm level — a pattern that the integrated framework can interpret as a symptom of a meso-systemic disarticulation between the agency and institutional levels.

Table 1. Correlation matrix among explanatory variables (n = 624)

	VDM	FAP	SAE	PGS	FDS	DPM	VFT
VDM	1.000						
FAP	0.029	1.000					
SAE	–0.081	–0.173	1.000				
PGS	0.164	0.013	–0.023	1.000			
FDS	–0.026	–0.001	0.005	–0.021	1.000		
DPM	0.035	0.034	–0.036	–0.016	–0.018	1.000	
VFT	–0.280	0.027	–0.107	–0.011	0.022	0.051	1.000

Notes: Authors' calculations from CAPEC borrower survey (n = 624). All correlations Pearson.

7.2 Logistic regression for enterprise creation (NE)

Table 2 reports the estimates for the logistic regression of enterprise creation. Four variables are statistically significant: VFT ($\beta = 1.4264$, $p < 0.01$), PGS ($\beta = 0.6760$, $p < 0.05$), FAP ($\beta = 0.8204$, $p < 0.01$) and VDM ($\beta = 0.8932$, $p < 0.01$). All four coefficients are positive, indicating that ease of access to loans, geographic proximity, communication outreach, and financial-technical viability of the MFI are jointly associated with a higher probability of enterprise creation. SAE, FDS and DPM are not statistically significant at conventional thresholds. The Hosmer-Lemeshow goodness-of-fit chi-square (15.679, df = 8, $p = 0.047$) confirms acceptable fit, and the model correctly classifies 89.7 per cent of cases.

Table 2. Logistic regression — enterprise creation (NE)

Variable	Coefficient	Std. Error	z-statistic	p-value
Constant	–1.2708	0.9927	–1.280	0.2005
VFT (financial-technical viability)	1.4264***	0.4150	3.437	0.0006
DPM (programme availability)	–0.1921	0.2742	–0.701	0.4836
FDS (durable provision)	0.1052	0.1759	0.598	0.5498
PGS (geographic proximity)	0.6760**	0.3432	1.970	0.0489
SAE (borrower support)	0.1941	0.3063	0.634	0.5263
FAP (ease of access)	0.8204***	0.2803	2.927	0.0034

Variable	Coefficient	Std. Error	z-statistic	p-value
VDM (communication outreach)	0.8932***	0.3231	2.764	0.0057

*Notes: n = 624. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10. Classification rate: 89.7 per cent. Hosmer-Lemeshow χ^2 = 15.679 (df = 8, p = 0.047). Likelihood ratio χ^2 = 14.359 (df = 7, p = 0.045).*

7.3 Logistic regression for value creation (RED)

Table 3 reports the estimates for the logistic regression of value creation. The pattern is sharply different from that of enterprise creation. Two variables are statistically significant, both with negative signs: DPM (β = -0.5925, p < 0.01) and FAP (β = -0.6175, p < 0.01). The five other variables (FDS, PGS, SAE, VDM, VFT) are not statistically significant. The model correctly classifies 85.1 per cent of cases, with a Hosmer-Lemeshow chi-square of 21.419 (df = 8, p = 0.006), indicating strong overall fit despite the small number of significant variables.

Table 3. Logistic regression — value creation (RED)

Variable	Coefficient	Std. Error	z-statistic	p-value
Constant	–1.4982*	0.8330	–1.799	0.0721
DPM (programme availability)	–0.5925***	0.1703	–3.480	0.0005
FAP (ease of access)	–0.6175***	0.2001	–3.087	0.0020
FDS (durable provision)	0.1335	0.1563	0.854	0.3931
PGS (geographic proximity)	0.0987	0.3043	0.324	0.7457
SAE (borrower support)	0.0690	0.1434	0.481	0.6302
VDM (communication outreach)	0.0690	0.2118	0.326	0.7447
VFT (financial-technical viability)	–0.2678	0.2682	–0.999	0.3180

*Notes: n = 624. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10. Classification rate: 85.1 per cent. Hosmer-Lemeshow χ^2 = 21.419 (df = 8, p = 0.006). Likelihood ratio χ^2 = 24.008 (df = 7, p = 0.001).*

7.4 The massification paradox: hypothesis testing

Comparing Tables 2 and 3 reveals what we term the massification paradox: variables of credit massification produce divergent effects on the two entrepreneurial outcomes. FAP, in particular, switches sign — strongly positive on enterprise creation but strongly negative on value creation. VDM is significantly positive on creation but null on value. PGS is significantly positive on creation but null on value. Only one variable, VFT, displays a coherent positive sign across both outcomes (significant on NE, non-significant but positive on RED before sign reversal in the unrestricted specification). The two variables of programme availability and provision durability (DPM, FDS) are either non-significant or negative.

Table 4. Hypothesis verification

H	Formulation	Result	Conclusion
H1a	VDM → enterprise creation	+ (1%)	*Supported*
H1b	VDM → value creation	Non-significant	*Not supported*
H2a	FAP → enterprise creation	+ (1%)	*Supported*
H2b	FAP → value creation	– (1%)	*Reversed*
H3a	PGS → enterprise creation	+ (5%)	*Supported*
H3b	PGS → value creation	Non-significant	*Not supported*
H4a	SAE → enterprise creation	Non-significant	*Not supported*
H4b	SAE → value creation	Non-significant	*Not supported*
H5a	FDS → enterprise creation	Non-significant	*Not supported*
H5b	FDS → value creation	Non-significant	*Not supported*
H6a	DPM → enterprise creation	Non-significant	*Not supported*
H6b	DPM → value creation	– (1%)	*Reversed*
H7a	VFT → enterprise creation	+ (1%)	*Supported*
H7b	VFT → value creation	Non-significant	*Not supported*

Notes: Significance thresholds in parentheses. "Reversed" indicates a statistically significant coefficient with the opposite sign from the hypothesised direction.

Of the fourteen sub-hypotheses tested, four are supported (H1a, H2a, H3a, H7a, all on enterprise creation), two are reversed (H2b, H6b, both on value creation), and eight are not supported. The pattern is unambiguous: massification of credit drives enterprise creation but not value creation; institutional sustainability variables drive value creation only weakly; and

the specific dimensions of credit availability and access ease produce significantly negative associations with value creation. We turn to the interpretation of this pattern in the discussion.

Discussion

8.1 Reading the results through the integrated framework

The integrated theoretical framework developed in section 2 provides a parsimonious account of the asymmetric pattern documented above. At the **agency level** (micro), enterprise creation is essentially a problem of lifting the contractual financing constraint: the four variables that significantly drive NE — PGS, FAP, VDM, VFT — are precisely those that reduce the cost of accessing the loan (proximity, ease, awareness) or signal the credibility of the lending institution (viability). Once the contractual constraint is lifted, enterprise creation occurs.

At the **inclusion level** (meso), value creation requires not just access (penetration), but intensity and diversity of usage — which in turn requires complementary services (training, business development support, payment infrastructure, savings, insurance) that go beyond a single microcredit transaction. Our SAE variable, intended to capture borrower support, fails to register a significant effect on either outcome — suggesting that, in the CAPEC network as currently configured, accompaniment is either insufficiently developed in practice or insufficiently differentiated from the lending function.

At the **institutional level** (macro), value creation depends on a broader environment that converts micro-enterprise activity into durable economic value: market access, contract enforcement, infrastructure, education and skills, demand-side conditions. Where the macro environment is fragile — as in Mauritania — a saturation effect emerges: increasing the volume and ease of credit beyond a certain threshold does not generate proportional value because the bottlenecks lie elsewhere. This is precisely what the negative coefficients on DPM and FAP for the RED outcome capture: the marginal microcredit, in a constrained institutional environment, encourages weakly profitable activity, intensifies competition among similar micro-enterprises, and may displace effort from value-generating to credit-seeking behaviour.

This reading reconciles three features of the results that would otherwise appear contradictory: the strong significance of access variables on creation, their non-significance or negative significance on value, and the modest performance of institutional sustainability variables. The asymmetry is not an empirical anomaly but a predicted implication of the integrated framework when meso and macro layers are weakly developed.

8.2 International comparative perspective

Asian and Latin American reference models

Our findings sit within a well-documented international literature on heterogeneous microfinance impacts. The **Bangladeshi model** (Grameen Bank, BRAC) achieves microfinance penetration above 30 per cent of the adult population, with documented modest positive effects on consumption (5 to 10 per cent per loan cycle) and stronger effects on women's empowerment (Pitt and Khandker, 1998; Roodman and Morduch, 2014). The **Bolivian model** (BancoSol, transformed from PRODEM in 1992) illustrates the institutionalist trajectory and the pursuit of financial sustainability through commercial transformation. Both models have produced cautionary lessons documented by Bateman (2010) and others, particularly around the risks of mission drift in commercialised microfinance.

Crisis evidence: Andhra Pradesh and Morocco

Two crises provide the strongest empirical analogue to our central finding. The **Andhra Pradesh crisis** of 2010 (Mader, 2013) was triggered by the unregulated proliferation of MFIs, household over-indebtedness, coercive recovery practices, and a wave of borrower suicides; it culminated in government intervention that effectively halted the sector. The **Moroccan microfinance crisis** of 2007-2008 (Reille, 2009; Chen, Rasmussen and Reille, 2010) resulted from rapid growth, poor information sharing across MFIs, and urban concentration without proportional rural saturation. Both crises confirm empirically the troubling result of our analysis: a negative coefficient on programme availability for value creation. Beyond a certain threshold, the availability of credit can effectively undermine entrepreneurial value generation. Mauritania is still far from this threshold, but the warning is theoretically meaningful and policy-relevant.

African comparators

Within the African continent, our findings dialogue with three sets of comparators. In the **UEMOA-Sahel space**, Senegal shares with Mauritania a partial migration history (the 1989 returnees) and a maturing SFD sector regulated through the UEMOA framework. The study by Anas and Diop (2023) finds, on a comparable methodological design, coefficients of similar sign for enterprise creation but significant positive effects on borrower support variables that are non-significant in our Mauritanian estimates — a difference plausibly explained by the maturity of the Senegalese sector and the institutionalisation of accompaniment programmes. In the **Maghreb**, the work of Touzani (2024) on Morocco finds patterns broadly compatible with ours regarding the ambiguous role of accompaniment. In **East Africa**, the digital transformation of Kenya around M-Pesa and M-Shwari (Suri and Jack, 2016) suggests an alternative trajectory through which the meso-systemic layer can be strengthened by digital infrastructure rather than physical proximity — a trajectory of growing relevance for Mauritania given its high SIM penetration but low mobile money use.

8.3 Mauritanian specificities

Five specificities of the Mauritanian context shape the interpretation of our findings and merit explicit theorisation. First, **market size**: with approximately 1.5 million bankable adults, Mauritania faces structural limits to economies of scale that are absent in larger markets such as Bangladesh or Morocco. Second, **Islamic finance compatibility**: the prohibition of riba and the role of religious authorities impose Sharia-compliant product design that the present study does not measure but that future research should incorporate. Third, **cultural and linguistic duality**: the language barrier we encountered as a methodological obstacle is also a substantive feature of the Mauritanian market that conditions equity of outreach and that future work should investigate. Fourth, the **Sahelian environment**: climatic and security shocks make the resilience dimension of effectiveness particularly salient. Fifth, the **pastoral and informal economic structure**: unlike rural Bangladesh or peri-urban Morocco, Mauritania combines a significant nomadic pastoral component and an urban informal sector dominant in Nouakchott. Microfinance products adapted to transhumance remain largely to be invented.

These specificities locate Mauritania in an analytically distinctive position: not on the Bangladeshi welfarist-rural trajectory, not on the Bolivian-Moroccan institutionalist-commercial trajectory, and not yet on the Kenyan digital trajectory. The country occupies a Sahelian-Islamic space whose theoretical foundations remain to be developed and to which our findings contribute a first systematic empirical foundation.

Conclusion

9.1 Summary of contributions

This paper has examined the impact of the CAPEC microfinance network on entrepreneurial outcomes in Mauritania, using a survey of 624 active borrowers in Nouakchott. Three contributions emerge. Empirically, we provide the first systematic econometric assessment of Mauritania's leading MFI network, addressing a gap in the geographic coverage of the international microfinance literature. Theoretically, we develop an integrated multi-level framework combining agency, financial inclusion, and institutional theories, and show how it accounts parsimoniously for the asymmetric pattern observed in the data. Substantively, we identify what we term the massification paradox: dimensions of credit massification that drive enterprise creation produce null or negative associations with value creation, suggesting saturation and crowding-out effects consistent with cross-country crisis evidence.

9.2 Theoretical implications

Our findings sit comfortably within the post-2015 consensus on heterogeneous microfinance impacts (Banerjee, Karlan and Zinman, 2015; Meager, 2019) and extend that consensus to a Sahelian-Islamic context not previously documented. The asymmetry between creation and value generation is, we argue, a generic prediction of the integrated framework when meso and macro institutional layers are weakly developed, rather than a Mauritania-specific anomaly. The framework therefore generates testable predictions for other fragile-state contexts, including the Sahel, the Horn of Africa, and post-conflict Sub-Saharan Africa.

9.3 Policy implications

Three levels of policy implications follow. At the micro level (product design): the non-significance of borrower support (SAE) on either outcome signals an under-developed accompaniment function in CAPEC; investment in business development services, financial literacy, and post-disbursement monitoring is the first-order priority. At the meso level (sector architecture): the negative coefficients on programme availability and access ease for value creation suggest that further expansion of the volume of microcredit, in the absence of complementary services and information sharing across MFIs, may produce diminishing or negative returns; a credit information bureau, a tighter articulation between MFIs and conventional banks, and an integration of digital payment infrastructure are second-order priorities. At the macro level (regulatory environment): the National Microfinance Strategy (SNMF) merits revision in light of the saturation risk highlighted here, and the integration of Islamic finance products and the development of an SME segment through the recently established Mauritanian financial market would address structural gaps that no microfinance product can address alone.

9.4 Limitations and research agenda

Three limitations qualify our findings and shape the research agenda. The cross-sectional design precludes causal identification; a longitudinal study tracking 2020-2025 CAPEC borrower cohorts would substantially strengthen the inferential basis. The convenience sampling strategy, while justified by the absence of a usable probabilistic frame, leaves residual selection bias that a future study could address through reweighting against verified administrative margins. The set of measured outcomes covers only direct economic effectiveness; future work should incorporate outreach, empowerment, and resilience dimensions as identified in our five-dimensional grid. We see particular promise in a randomised evaluation of the SAE dimension — the variable that fails to register a significant effect in the present study — which would clarify whether the null result reflects a true absence of effect or an under-implementation of accompaniment in the current CAPEC configuration.

Such an evaluation would, simultaneously, contribute to the third generation of microfinance impact research and provide actionable evidence for Mauritanian policy reform.

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