

**A Study of Selective Handloom Clusters of West Bengal:
Progression and Persistence**

**Thesis synopsis submitted to the Department of Economics,
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SYNOPSIS

1. Background and motivation

The handloom sector is simultaneously an employment provider, cultural repository and a labour-intensive micro-industry. Despite its cultural importance, the sector faces chronic low incomes, fragile institutional supports, fragmented markets, and rising competition from mechanised textiles. West Bengal is a major handloom-producing state with a dominant female workforce and heterogeneous organisational arrangements (independent weavers, subcontracted/tied units under master-weavers, and cooperatives). Existing literature documents the sector's structural problems—input shortages, weak credit, exploitative intermediaries, and cooperative decline—but comparative micro-level evidence on how organisation, gender and finance jointly shape production, revenue and expansion decisions in Bengal's clusters has been limited. This thesis addresses that gap with a focused empirical investigation of three “natural” handloom clusters—Dhaniyakhali (Hooghly), Santipur–Phulia (Nadia), and Samudragarh (East Burdwan)—using a rich primary dataset and applied econometric techniques.

2. Research objectives and hypotheses

The study is organised around three interlinked objectives and hypotheses:

- 1. Organisational performance:** To compare the performance (revenue, cost, profit, and output) of handloom units across organisational forms—*independent, subcontracted/tied, and cooperative*—and to identify firm- and household-level determinants of output and profitability. (Hypothesis 1: Different organisational frameworks are associated with distinct performance levels.)
- 2. Gendered performance:** To measure and decompose the gender gap in annual revenue of handloom entrepreneurs across the revenue distribution and across organisational forms, identifying the contribution of observable endowments (education, loom ownership, occupation, registration) and the unexplained residual. (Hypothesis 2: Organisational structures mediate gender inequality in outcomes.)

- 3. Credit and expansion:** To analyse the role of production credit in shaping expansion intentions and loan uptake, disentangling causal relations where possible using recursive modelling and treatment-effect estimation. (Hypothesis 3: Credit availability influences production plans and expansion motives.)

3. Data and sample design

Primary data were collected during August 2019–March 2020. The sample covers 832 cotton handloom production units across the three clusters. The study used official cluster lists from the Directorate of Textiles and district handloom records to identify villages/cooperatives, classify them as prospering or declining, and build sampling frames through complete enumeration followed by stratified random sampling (loom-holding strata). In Santipur, two prospering villages (Basakpara and 52-Bigha), two declining villages (Malipota and Harinadi), and one municipal ward (Ward No. 2) were surveyed; Santipur’s strata reflected loom distribution (e.g., 36.13% one-loom, 28.57% two-loom weavers). In Samudragarh the planned sample was curtailed by the COVID-19 lockdown—only Samudragarh village was fully surveyed while other planned PSUs remained uncompleted. In Dhaniyakhali, cooperatives dominate; two major cooperatives were enumerated but fieldwork was stopped after surveying 217 cooperative members (despite combined membership >400) because members’ characteristics were highly homogeneous; additionally, 4 independent and 6 subcontracted weavers were sampled to capture non-cooperative behaviour. The instrument was a comprehensive structured questionnaire covering household demographics, unit characteristics, production, product prices and quantities, buyer relationships, input sourcing, asset ownership (detailed loom inventory), labour use, loan histories (rolling loan register), accounts, and subjective plans/constraints.

4. Methodology

The thesis uses a combination of descriptive statistics, distributional techniques, decomposition methods and causal inference models:

- For the performance comparison (Chapter 4), the study computes revenue, cost and profit measures across organisational types and estimates determinants of output using heteroscedasticity-robust quantile regressions (to capture effects across the output distribution).
- For gender analysis (Chapter 5), both unconditional and conditional Blinder–Oaxaca decompositions are employed. Unconditional decomposition uses RIF (recentered influence function) based methods to decompose differences at specific distributional quantiles (first quartile, median, third quartile), enabling the assessment of how endowments and coefficients contribute to the gender gap across the distribution.
- For credit and expansion decisions (Chapter 6), the study estimates a recursive bivariate probit (RBP) model to jointly model binary outcomes—(i) whether the unit plans to expand and (ii) whether the owner has taken a production loan—accounting for endogeneity and correlated unobservables. Additionally, a treatment-effects framework estimates Average Treatment Effects (ATE) and Average Treatment Effects on the Treated (ATET) to quantify the impact of credit access on loan uptake and expansion propensity. Robust standard errors and model diagnostics are reported throughout.

5. Key empirical findings

5.1 Organisational performance

- Independent (large) weavers exhibit the highest revenue and profit profiles among the organisational types studied. They show evidence of scale and profitability that allow reinvestment and market orientation. Predicted revenue–cost–profit graphs and tabulations show a consistent advantage for independent units relative to subcontracted and cooperative units (see Chapter 4: Tables 4.4.1–4.4.4; Figures 4.4.1–4.4.3).
- Subcontracted/tied weavers (those working under mahajans/master-weavers) are operationally more active than cooperatives and achieve higher output and revenue than cooperative

members, though they typically operate under exploitative intermediation (advance credit, forced buyer relationships) that constrains surplus retention.

- Cooperative weavers largely operate at a small scale with thin profits; many supplement income through non-weaving activities. Cooperatives provide social benefits and insulation but have, in many cases, fostered low production incentives and weak market responsiveness—confirming earlier observations about cooperative decline and governance problems (Srinivasulu, 1994; Maiti, 2008; Bhagavatula et al., 2010; Prajapati & Biswas, 2011).
- Determinants of output analyses (quantile regressions) identify loom ownership (number of looms) and education as important positive correlates of higher output; organisational status (independent vs cooperative vs subcontracted) remains a strong predictor when controlling for endowments.

5.2 Gender gaps in revenue (distributional & decomposition results)

- The unconditional quantile revenue distributions (in Chapter 5, Figures 5.5.1 for cooperatives and 5.5.2 for subcontracted units) reveal that female entrepreneurs' revenue distribution consistently lies below that of males across all quantiles. While lower quartiles show near parity (especially within subcontracted settings), the gap becomes apparent at the median and widens markedly in the upper quartile. There is a pronounced spike in total annual revenue for males at the top quantile—indicating a concentration of high earnings among top-performing male entrepreneurs, especially in or around cooperative settings.
- Unconditional Blinder–Oaxaca decomposition (Table 5.5.1) attributes 43.61%, 61.59%, and 79.24% of the gender revenue gap at the first quartile, median, and third quartile, respectively, to observable endowments and characteristics. Key contributors to the explained portion include:

- **Occupation (weaving as main occupation):** 87% of male respondents treat weaving as the main occupation vs 55.3% of female respondents. Because main-occupation weavers systematically earn more, this variable inflates the gender gap.
 - **Years of schooling:** Significant at the median—males have higher schooling on average, which raises male revenue at the median.
 - **Number of looms:** A major positive contributor to the gap at all quantiles—males typically own more looms, driving higher revenue.
 - **Registration status:** Surprisingly, registration reduces the gender gap because registered weavers earn less on average than unregistered ones, producing a narrowing mechanically when registration is controlled for. This reflects the gendered composition of registrations and cooperatives in the sample.
- A residual unexplained gap persists across quantiles, consistent with possible discrimination, omitted skill measures, or unobserved network advantages enjoyed by men. Cross-checks with conditional decompositions and standard Oaxaca-Blinder at the mean (Table 5.5.2) produce qualitatively similar conclusions and confirm robustness.
 - Notably, the sample contains no female independent weavers—a structural absence that signals the strongest scale/entrepreneurship barrier for women in this sector.

5.3 Credit, production loan, and expansion decisions

- The recursive bivariate probit estimation (in Chapter 6, Table 6.4.1) indicates that female owners are significantly less likely to plan expansion, while loan recipients (production loan taken) are significantly more likely to plan expansion. Older production units are less likely to plan expansion, possibly due to sunk costs and technological obsolescence.
- The second equation (loan uptake) finds that female owners are more likely to have taken a loan—a notable asymmetry given females' lower expansion propensity. Scheduled

Castes/Tribes and OBC owners are more likely to take loans (reflecting targeted inclusion), while registered units are less likely to take loans, suggesting that formalisation may be associated with different capital access patterns.

- The estimated correlation between unobservables of the two decisions is $\rho \approx -0.641$ (statistically significant at 1%), indicating that unobserved factors increasing loan uptake are negatively associated with expansion planning—consistent with loans often being used for distress consumption rather than planned productive investment (cf. Nag, 2015; Khalily, 2004).
- Treatment-effect results: ATE ≈ 0.388 (i.e., universal treatment would increase the probability of taking a production loan by ≈ 38.8 percentage points), while ATET ≈ 0.194 (treated subpopulation sees ≈ 19.4 percentage point increase). The larger ATE than ATET implies heterogeneous treatment responses—those currently untreated would respond more strongly to credit availability than some self-selected treated units.
- Overall, credit is a binding constraint for expansion in aggregate terms, but many current borrowers use loans as safety nets; to translate credit into growth, design and complementary supports are needed.

6. Policy implications

The thesis draws tightly linked policy prescriptions; below, I summarise them in relation to the findings (full text and elaboration appear in Chapter 7). The recommendations are deliberately pragmatic and directly map to empirical results:

- **Cooperative reform:** Because cooperatives in the sample are associated with low output and revenue (and with a disproportionate share of registered units), reforms should move cooperatives toward market orientation: democratise governance, institute performance-based incentives linked to productivity and design innovation, build marketing capacities (showrooms, exhibitions, e-commerce) and institute training in CAD/design tools tailored to Bengal saree traditions.

- **Gender-centric measures:** Given that occupation status, education and loom ownership explain much of the gender gap, policies should enable women to treat weaving as a primary occupation (through targeted income supports and incentives), expand adult education and design/ bookkeeping training, and prioritise women in loom subsidy/financing schemes (e.g., Hathkargha Samvardhan Sahayata). Increase women’s cooperative membership and leadership to improve access to collective resources.
- **Credit redesign and facilitation:** Since credit access raises expansion propensity but is often distress-driven, credit must be linked to capacity building and monitoring. Simplify access to existing schemes (MUDRA, CGTMSE, PMMY) via cluster-level facilitation desks; use phased disbursement tied to verifiable production plans to discourage diversion to consumption; and combine loans with technical training and market access supports so that credit becomes an enabler of productive investment. Outreach should prioritise excluded weavers (women and marginalised castes) given the larger ATE among the untreated.
- **Scale and asset support:** Loom ownership is a strong predictor of revenue—therefore, subsidised loom acquisition and accessory grants should be expanded and prioritized based on gender and poverty status. Regulated wholesale markets (haats) and direct marketing platforms can reduce dependence on exploitative intermediaries.

These policy measures are designed to be complementary: cooperative reform without women’s inclusion or credit-linked capacity building risks perpetuating current inefficiencies; credit without training risks fueling indebtedness rather than growth.

7. Contributions to literature and policy relevance

This thesis makes several contributions:

1. It provides **comparative micro-level evidence** across coexisting organisational forms within the same sub-regional context, documenting how independent, subcontracted and cooperative arrangements systematically differ in performance.

2. It advances **distributional gender analysis** by applying unconditional and conditional decomposition methods across quantiles—revealing how endowments and unobservables jointly shape the gender gap, and making clear policy-relevant variables (occupation, education, looms).
3. It combines joint modelling (RBP) with treatment-effect estimation to produce robust evidence on the role of credit in expansion decisions, distinguishing productive uptake from distress-driven borrowing. These methodological combinations strengthen causal interpretation of finance-related policy levers.
4. By integrating field-collected, detailed loan registers, asset inventories and product-level sales, the thesis constructs an analytically rich dataset that is directly actionable for cluster-level policymaking.

8. Limitations and avenues for future research

The thesis acknowledges limitations and points toward future work:

- The fieldwork ended as COVID-19 emerged, curtailing full sample completion in Samudragarh and potentially biasing short-run measures. A follow-up (panel) survey would establish dynamics of pandemic-era adjustments and recovery.
- Survey measurement issues (recall bias, under/over-reporting) are managed via instrument design (short recall windows for monthly sales; cross-checks) but remain a concern inherent to household surveys.
- The unexplained component of the gender gap calls for mixed-methods investigation—qualitative interviews, network analyses, or experimental interventions (randomised mentoring and credit+mentoring rollouts) could isolate discrimination, norms, or behavioral constraints.
- The analysis is cross-sectional; causal identification beyond treatment effects for credit would benefit from longitudinal interventions or randomized designs.

9. Conclusion

This thesis demonstrates that organisational form, gendered endowments, and finance interact to shape the sustainability and progress of handloom production in West Bengal. Independent weavers exhibit comparatively better outcomes; cooperative weavers, on the other hand, often remain stagnant and gendered in their composition, and credit serves as both a potential enabler and a mechanism for distress coping. Policy responses must be integrated, cooperative governance reform, gender-targeted asset and skill support, and credit redesign linked to capacity building, to make the handloom sector equitable and viable into the future. The thesis provides a concrete, data-driven blueprint for such targeted interventions.

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