Paper Replication

The Miracle of Microfinance? Evidence from a Randomized Evaluation[†]

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Political Economy of Development

† by Banerjee, Duflo, Glennerster and Kinnan (2015)

Outline

Overview

Evaluates the effects of microcredit access [1]

- RCT in low-income neighborhoods in India
- A microfinance institution opened branches in randomly selected areas
- The authors measure investment, consumption, education, health, and women's empowerment.
- Two post-intervention surveys: 18 months and 3 years after initial implementation.

Background

Context:

- Microcredit has been promoted as a key tool for poverty alleviation.
- By 2010, over 137.5 million microfinance beneficiaries worldwide.
- The 2006 Nobel Peace Prize awarded to Yunus and the Grameen Bank.

Debate: Does it increase over-indebtedness?
Main Objetive:

- To evaluate the impact of a canonical group-lending microcredit model, which target women, on poor urban households.

Objetives

1. Evaluate the effect of the availability of microcredit on **business creation**, profits from these and investment decisions.
2. Explore how microcredit influences **consumption** and the composition of household spending.
3. Study if there are changes in other **social dimensions**, such as education, health and women's empowerment.
4. Analyze the **long-term effect**, comparing two follow-up moments (15-18 months and then 3 years after the introduction of loans).

Spandana Microcredit

Product characteristics

- Borrower groups: 6–10 women; 25–45 groups form a “center”.
- Initial loan: ₹10,000 ($200); annual interest rate 12%.
- No business requirement to qualify for the loan.
- 50 weekly repayments.
- Spandana offers no complementary services (e.g., training, financial literacy).

Spandana Microcredit

Socioeconomic baseline

- Monthly average expenditure: ₹4,888
- 68% of households had at least one loan, 63% from informal lenders.
- 32 businesses per 100 households; 14.5% women-managed.

Experimental Design

- 104 neighborhoods matched into pairs and randomly assigned (52 treatment, 52 control).
- Survey waves: baseline, Endline 1 (Aug.'07–Apr.'08), and Endline 2 (Nov.'09–Jun.'10).
- Endline 1: 15–18 months after introduction.
- Endline 2: both groups had access, but treatment had it longer.

Potential threats to identification and canveats on interpretation

- Attrition
- Selective migration

The baseline regression used is:

$$y_{ia} = \alpha + \beta \cdot \text{Treat}_{ia} + X_a'\gamma + \varepsilon_{ia} \tag{1}$$

- y_{ia}: outcome for household i in area a
- Treat_{ia}: treatment indicator
- X_a: area-level controls (population, literacy, expenditure)
- ε_{ia}: error term
- β: ITT effect

Results

Microcredit Access and Use

- 12.7 percentage point increase in Spandana borrowing at Endline 1.
- Total MFI use: 26.7% in treatment vs. 18.3% in control.
- Informal borrowing declined by 5.2 pp.
- Significant decline in informal borrowing (percentiles 30–60).

Results

Original

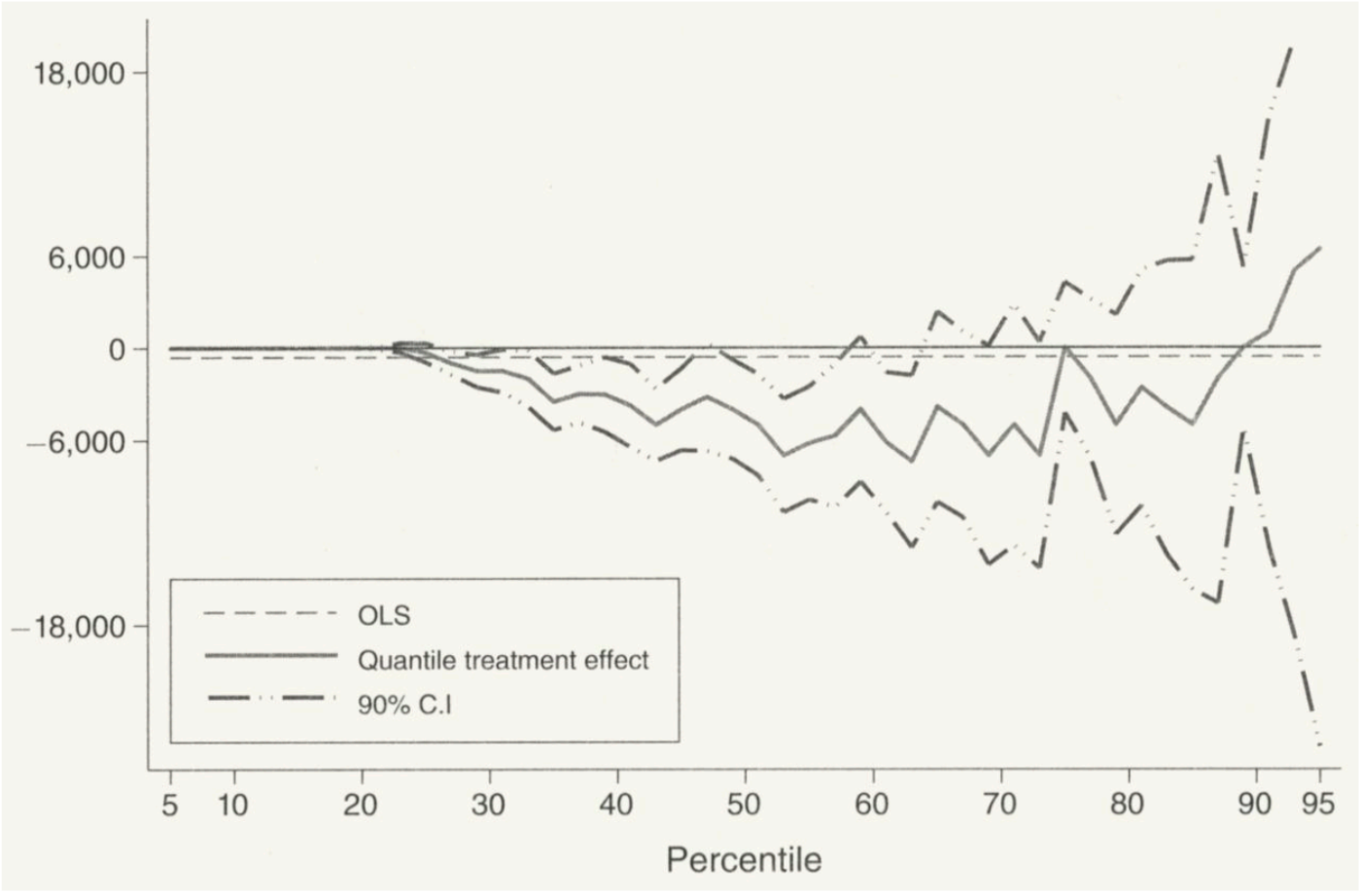
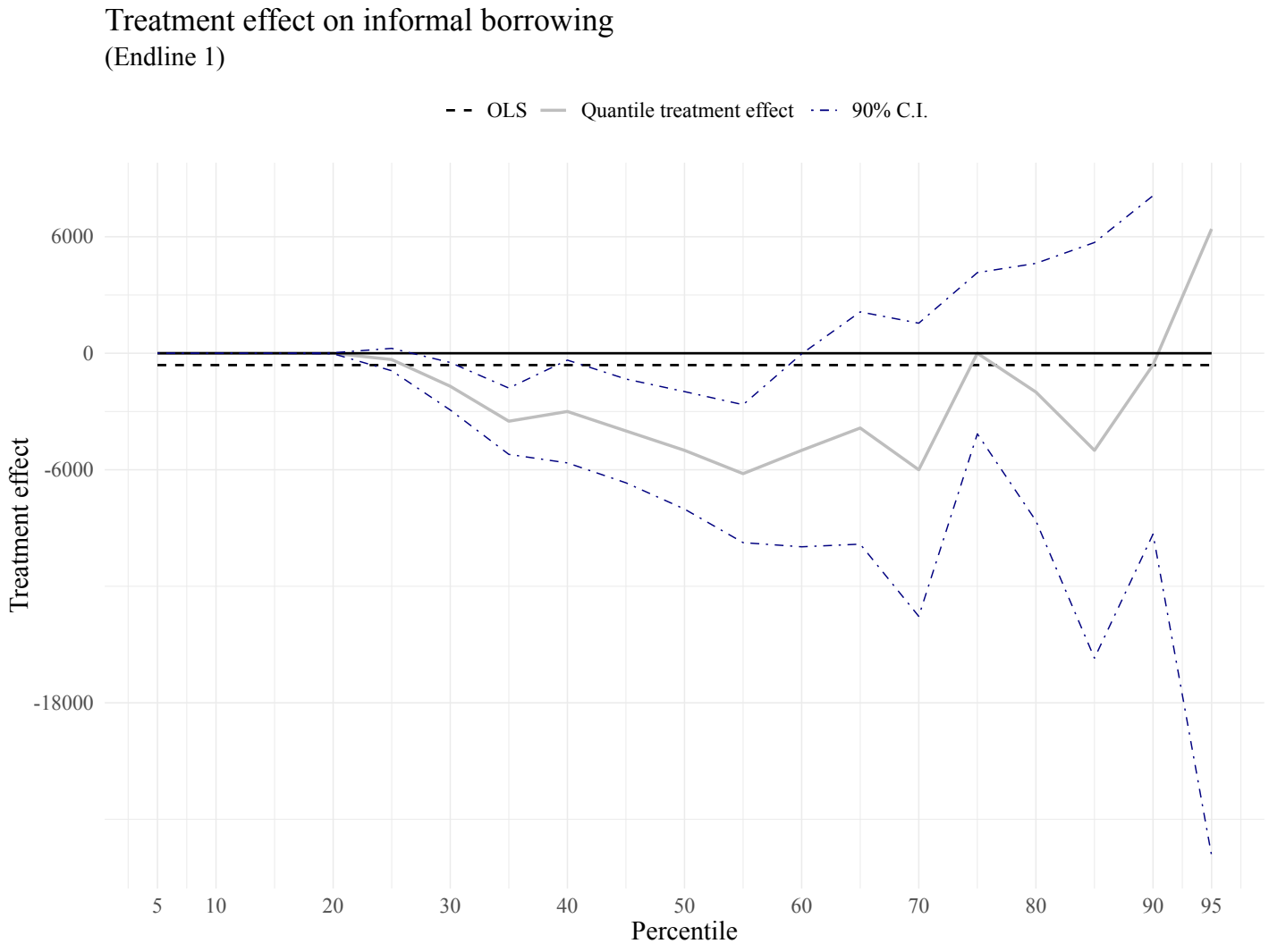


FIGURE 2. TREATMENT EFFECT ON INFORMAL BORROWING (*Endline 1*)

Results

Replication



Results

Business and Self-Employment

Endline 1

- Business creation: modest increase (6.8 vs 5.3 per 100 households), not statistically significant.
- Profits: + ₹354/month (not significant).
- Assets and investment: increased (+ ₹598 in assets; + ₹391* in investment).

Business types:

- Existing businesses: significant profit increase (+ ₹2,105*) only in top 5.
- New businesses: less profitable, fewer employees.
- Lower profits in treatment between the 35th–65th percentiles.

Results

Original

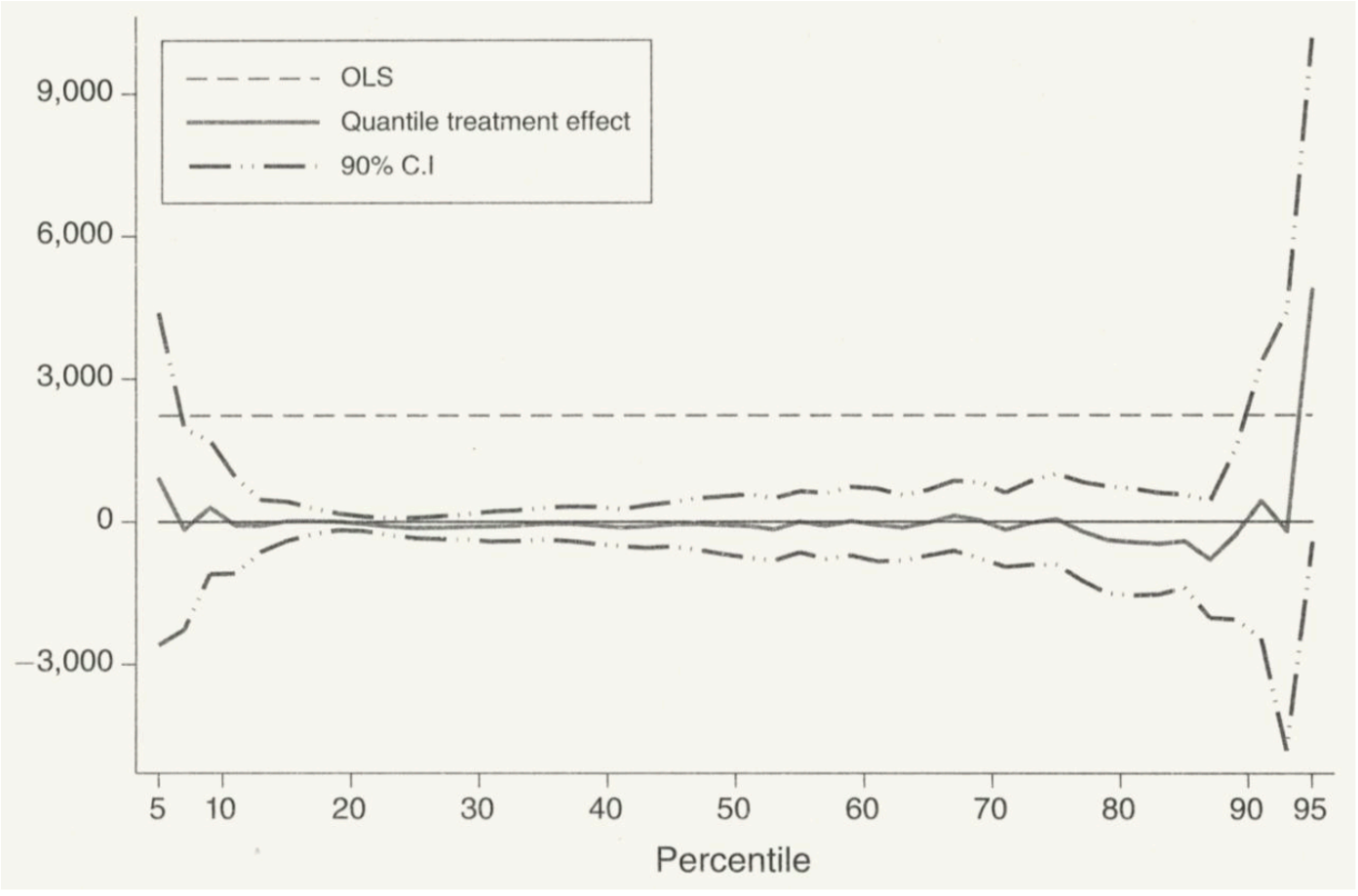
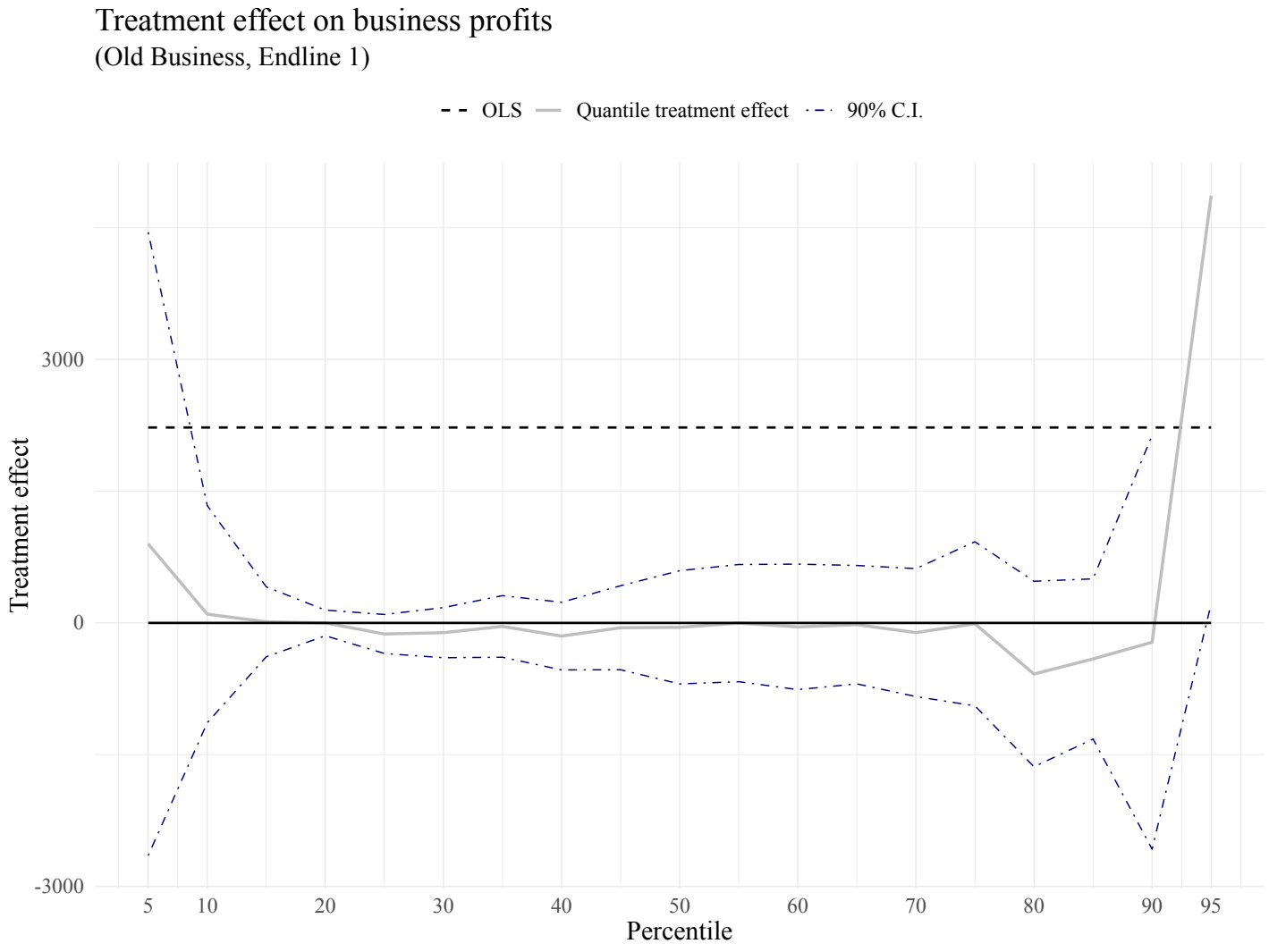


FIGURE 3. TREATMENT EFFECT ON BUSINESS PROFITS
(*HHs who have an old business, endline 1*)

Results

Replication



Results

Original

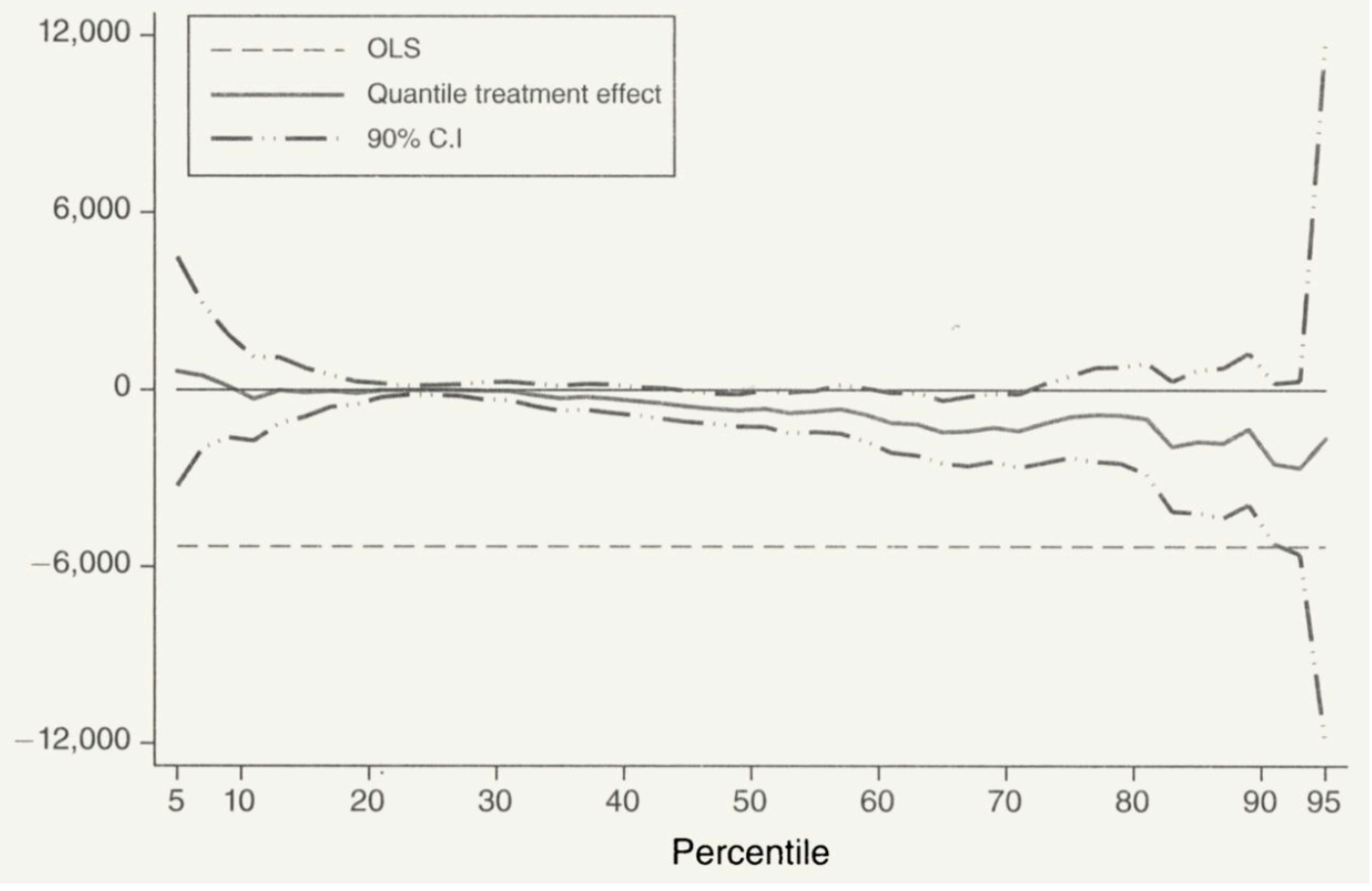
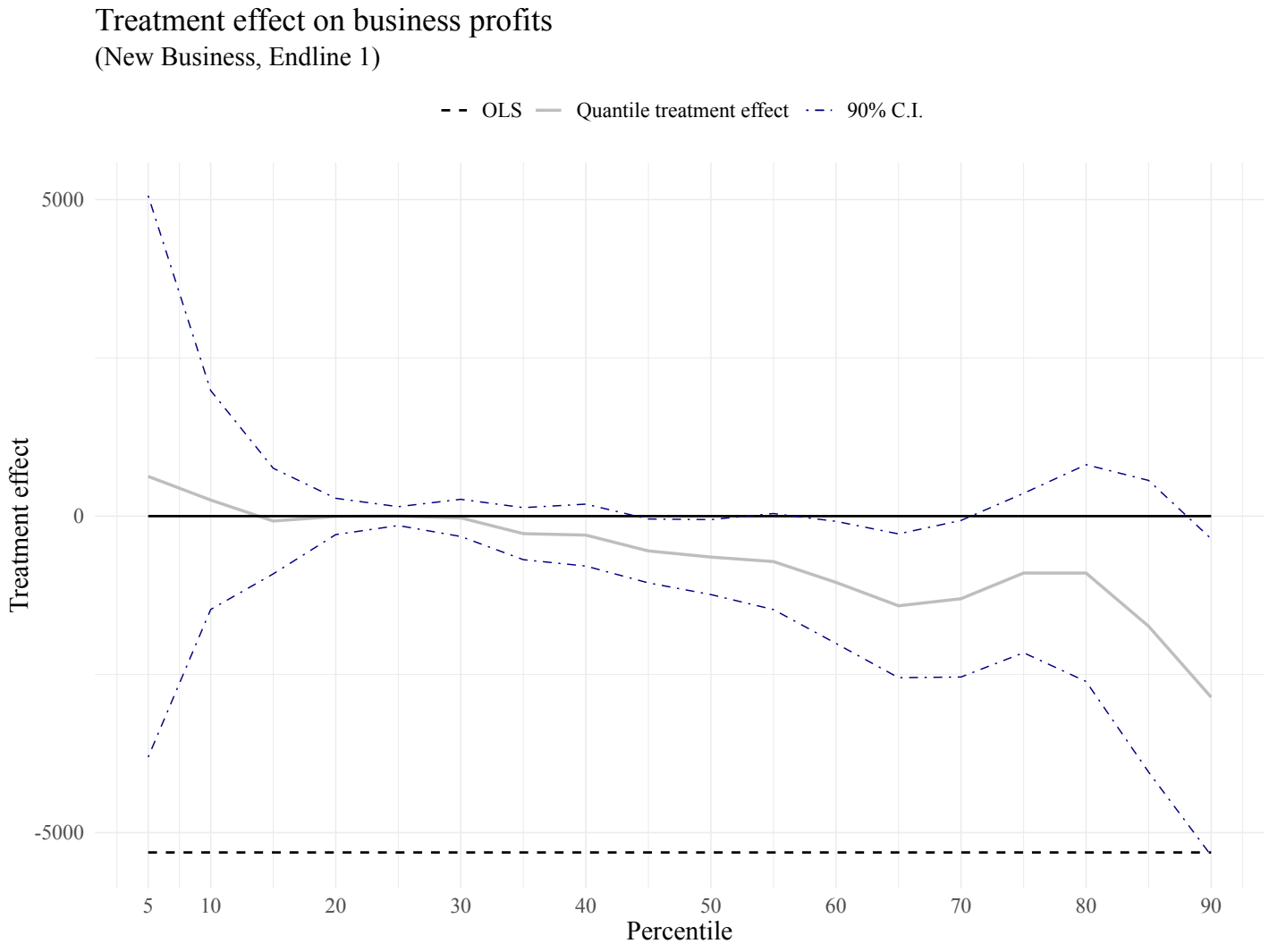


FIGURE 4. TREATMENT EFFECT ON BUSINESS PROFITS
(*HHs who have new business, endline 1*)

Results

Replication



Results

Business and Self-Employment

Endline 2:

- Assets ↑ (+ ₹1,261**), but average profits not significantly different.
- Profit gains concentrated again in the top tail.

Results

Original

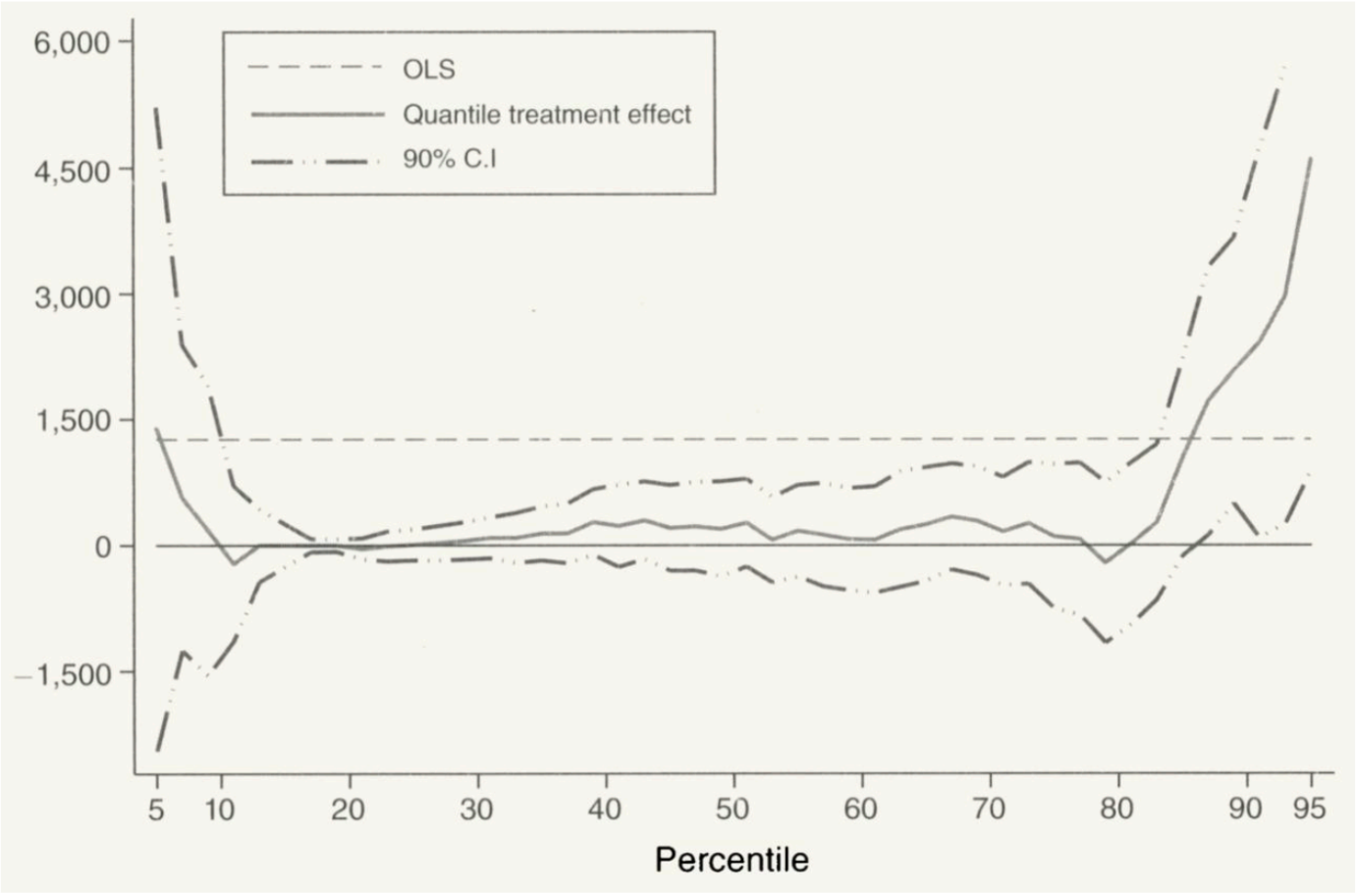
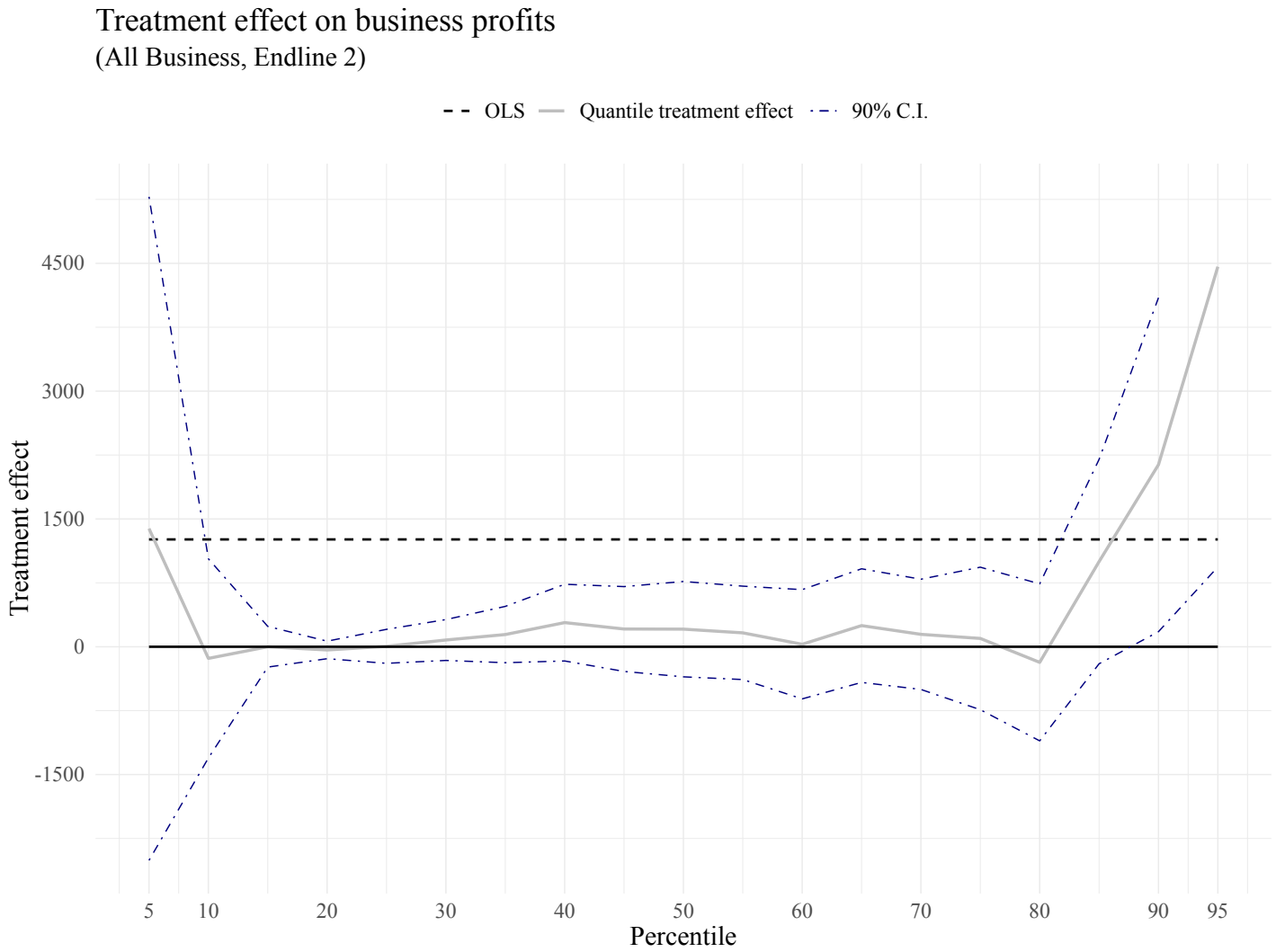


FIGURE 5. TREATMENT EFFECT ON BUSINESS PROFITS
(*Full sample of business owners, endline 2*)

Results

Replication



Results

Income and Labor supply

Total Income:

- No effect on total household income from self-employment or wage labor.

Labor Supply:

- At EL1: adult labor supply ↑ by 3.2 hours/week, mainly in own business.
- Teenage girls' labor ↓ by 2.1 hours/week**.
- No significant difference at EL2.

Results

Consumption and Social Impacts

Consumption:

- Total and non-durable consumption: unchanged.
- Durables expenditure: ↑ ₹19.73* per capita/month.
- Temptation goods and festivals: ↓ ₹8.8* and ↓ ₹14.16* respectively.

Social Impacts: Education and Empowerment:

- Schooling: no effect on enrollment or spending.
- Women's empowerment: no changes in household decision-making.
- No effect on composite social outcomes index.

Conclusion

Microcredit is not a transformative panacea

- It allows some households to adjust intertemporal spending and invest in businesses or durables.
- **No increase in average consumption or business profitability**.
- Helps mainly the already profitable businesses (top 5%).
- Demand is low: only 33% borrow even when eligible.
- Results consistent with other studies in Morocco, Mexico, Bosnia, Mongolia, and Ethiopia.
- Microcredit is a useful tool—but limited in scope.

What's next?

Option 1

1. Heterogeneity of effects

Does the impact of microcredit vary according to the type of household (education, assets, credit history) or the type of business (turnover, initial size)?

Empirical Strategy

- **Key Moderators:**

  $Z_i \in \{\text{Old business}, \text{Business type}, \text{Asset ownership}, \text{Education}, \text{Informal borrowing}\}$

- **Interaction model:**

  $$Y_{ia} = \alpha + \beta_1 \cdot \text{Treat}_{ia} + \beta_2 \cdot Z_{ia} + \beta_3 \cdot (\text{Treat}_{ia} \times Z_{ia}) + X_a' \gamma + \varepsilon_{ia}$$

- β_3 captures whether treatment effects differ based on characteristic Z_i.
- **Expected findings:**
  - $\beta_3 > 0$ for households with prior businesses, high assets, or education.
  - $\beta_3 < 0$ for financially constrained or low-skill households.

What's next?

Option 2

2. Group vs. Individual lending

Does the individual credit model generate different impacts than the group credit?

Empirical Strategy

As individual lending was not randomly assigned, causal estimation requires adjusting for selection.

Approach 1: Propensity Score Matching (PSM)

- Estimate likelihood of being offered/taking an individual loan using:
  - Number of MFI cycles (`mfi_loan_cycles`)
  - Repayment history (`everlate`)
  - Business ownership, female empowerment, etc.
- Match individual borrowers to similar group-only clients.

Approach 2: Difference-in-Differences (DID)

- Identify households that switched to individual lending by Endline 2.
- Compare outcomes before/after within that group vs. stable group borrowers:

$$Y_{it} = \alpha_i + \lambda_t + \delta \cdot \text{IndividualLoan}_{it} + \varepsilon_{it}$$

Expected results:

- Higher investment/profit among individual borrowers, but possibly higher default without peer discipline.

References

[1] Abhijit Banerjee et al. “The Miracle of Microfinance? Evidence from a Randomized Evaluation”. In: *American Economic Journal: Applied Economics* 7.1 (2015), pp. 22–53. DOI: 10.1257/app.20130533. URL: https://www.aeaweb.org/articles?id=10.1257/app.20130533.