

HIGH VALUE CROP COMMERCIALIZATION AND WOMEN'S EMPOWERMENT IN SUB-SAHARAN AFRICA

MARCH 2026

Cash-crop commercialization, market entry, and women's agency Evidence from Ethiopia, Malawi, Tanzania, Uganda, and Nigeria

Key messages

- ▶ Across five countries, households that begin selling crops (moving from subsistence to market participation) are more likely to be classified as empowered under an adapted A-WEAI. In matched difference-in-differences estimates, first-time selling is associated with large gains in empowerment in Ethiopia (+0.43), Malawi (+0.29), Tanzania (+0.26), and Nigeria (+0.13), with weaker and negative estimates in Uganda.
- ▶ Among households that already sell crops, introducing cash crops into the sales portfolio is not linked to women's disempowerment. The same quasi-experimental design suggests additional empowerment gains in Malawi (+0.14) and a smaller, marginally significant gain in Ethiopia (+0.17), with null effects elsewhere.
- ▶ Nonlinear results show a consistent pattern: greater commercialization is positively associated with empowerment across all sales-mix groups, including households that sell mostly non-staple (cash) crops. Gains are largest for more diversified producers who sell small to moderate shares of non-staples, and smaller (but still positive) for highly specialized non-staple portfolios.
- ▶ Women's decision-making over how crop-sale income is used is common and rising over time. In households that sell both staples and cash crops, the share where women participate in decisions over cash-crop income rose to 41% in Ethiopia (2018), 77% in Malawi (2019), 58% in Tanzania (2020), and 69% in Uganda (2020).
- ▶ Where intensive-margin correlations weaken, they do so through specialization. Fixed-effects and Double Machine Learning estimates show that the empowerment gains from commercialization tend to shrink as the non-staple share of sales rises in Ethiopia, Malawi, and Tanzania, with near-zero interaction effects in Uganda and Nigeria.
- ▶ These patterns are robust across multiple estimators, but they should be interpreted primarily as associations, not definitive causal effects. Placebo and pre-trend checks highlight that some level effects can still reflect reverse causality or time-varying factors, even after rich controls and household fixed effects.



WHY THIS STUDY MATTERS

A common view in the gender and agriculture literature is that cash-crop commercialization shifts control of production and income toward men, potentially reducing women's agency even if household income rises. Much of the evidence behind this view comes from older qualitative case studies or single value-chain analyses. At the same time, policy and investment strategies across Africa often promote higher-value crops and greater market integration.

This study provides updated, multi-country panel evidence on how commercialization and the composition of crop sales relate to women's empowerment. It focuses on whether selling more, and selling a higher share of non-staples, is linked to disempowerment or to gains in agency over time.

DATA AND APPROACH

Data: LSMS-ISA style national household panels from 2010 to 2020 in Ethiopia, Malawi, Tanzania, Uganda, and Nigeria.

Empowerment measure: an adapted Abbreviated Women's Empowerment in Agriculture Index (A-WEAI, 5DE) built from five indicators across four domains:

- **Production:** input in productive decisions
- **Resources:** asset ownership; access to and decisions on credit
- **Income:** control over use of income
- **Time:** workload (time poverty)

Households are classified as empowered when the weighted 5DE score is at least 0.75.

Commercialization measures:

- **Commercialization Index:** value of crop sales divided by value of crop production (0 to 1).
- **Non-staple share:** share of total sales coming from non-staples (cash crops such as horticulture, oilseeds, and industrial non-food crops).

Methods (all with extensive controls and, where relevant, household and wave fixed effects):

- Two-way fixed-effects linear probability models, including an interaction between commercialization and the non-staple sales share.
- Double Machine Learning (random forests with cross-fitting) to reduce functional-form bias in high-dimensional settings.
- Propensity-score matched difference-in-differences (PSM-DiD) quasi-experiments: (1) entering crop sales (non-seller to seller); (2) adding cash crops among sellers. (Figure 2)
- A nonlinearity test that compares commercialization effects across sales-mix groups (staple-only, low, medium, and high non-staple shares), separately for below- and above-average crop diversification.



MAIN FINDINGS



MARKET ENTRY SHOWS THE STRONGEST EMPOWERMENT GAINS

The most consistent positive results appear at the extensive margin: when households start selling crops at all. In matched DiD estimates, first-time selling is associated with sizable increases in empowerment in Ethiopia, Malawi, Tanzania, and Nigeria. This suggests that lowering the fixed costs of selling can matter not only for income, but also for women's agency inside households.



ADDING CASH CROPS DOES NOT IMPLY WOMEN'S DISEMPOWERMENT

Among crop-selling households, shifting into cash crops is not associated with a loss of empowerment in the quasi-experimental results. Malawi shows a clear positive association when sellers begin selling cash crops (+0.14). Ethiopia shows a smaller, marginally significant gain, while Tanzania, Uganda, and Nigeria show near-zero effects. Taken together, the evidence does not support the idea that cash crops systematically disempower women. (Figure 1)



WOMEN ARE INCREASINGLY INVOLVED IN CASH-CROP INCOME DECISIONS

Descriptive trends highlight a major shift in one core mechanism behind the disempowerment narrative: control over income. In households that sell both staples and cash crops, women's participation in decisions over cash-crop income increased substantially over time in Malawi (+21 percentage points), Uganda (+10 points), and Tanzania (+8 points). By the last wave, women's decision-making over cash-crop income ranges from about 41% (Ethiopia) to 77% (Malawi). These are not causal estimates, but they show that women's involvement in commercialization decisions is neither rare nor stagnant.



SPECIALIZATION CAN REDUCE GAINS, BUT THE NONLINEAR RESULTS STAY POSITIVE

When looking within households over time, fixed-effects and Double Machine Learning estimates show that empowerment gains from commercialization tend to shrink as households become more specialized in non-staples in Ethiopia, Malawi, and Tanzania. This is an intensive-margin pattern: it does not say cash crops reduce empowerment, but that the marginal empowerment gain from selling more can taper as sales tilt heavily toward non-staples.

The nonlinearity analysis provides a clearer picture. Across both diversification groups, commercialization is positively associated with empowerment even for households that sell mostly non-staples. However, the largest coefficients tend to appear for households with above-average diversification that sell small to moderate shares of non-staples. This suggests a gradual diversification pathway where women's empowerment gains are strongest when households diversify and expand market participation without moving quickly into heavy specialization.



WHICH DIMENSION MOVES MOST

Across countries, the income-decision domain shows the clearest and most consistent positive association with commercialization. Other domains are more mixed, and the time domain signals potential workload risks in some settings. This reinforces the need to pair commercialization support with measures that protect women's time and strengthen their role in household financial choices.

ROBUSTNESS CHECKS AND CAUSAL SIGNALS

Results are consistent in direction across fixed-effects and Double Machine Learning estimates. Quasi-experimental PSM-DiD estimates add a stronger causal signal for market entry in several countries, but limits remain. In particular, short panels constrain how strongly we can test parallel trends, and placebo checks suggest that some average level effects may still reflect anticipatory behavior or time-varying unobserved factors. For these reasons, the results should be read as robust associations, with the quasi-experimental estimates providing the most credible evidence where diagnostics support them.

LIMITATIONS AND RESEARCH GAPS

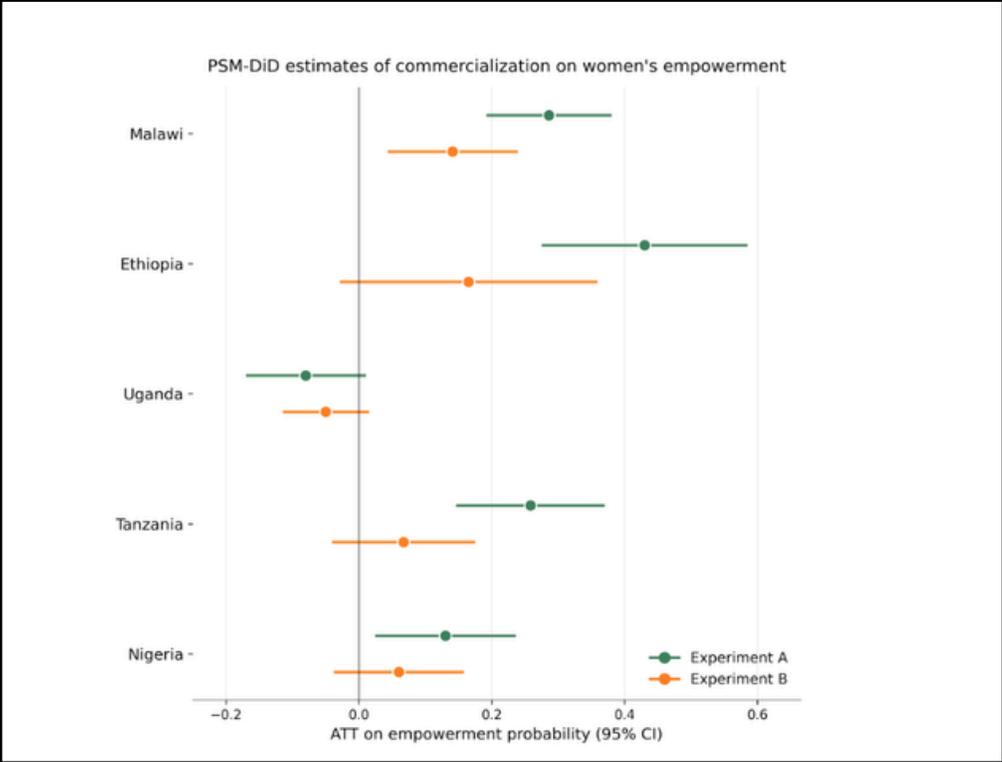
- ▶ **Measurement:** empowerment indicators had to be adapted to what LSMS-ISA surveys contain, and some components vary across countries and waves.
- ▶ **Identification:** even with fixed effects, rich controls, and matching, unobserved time-varying factors and reverse causality can remain.
- ▶ **Short panels:** limited pre-treatment periods reduce power for pre-trend tests, especially in Ethiopia with only two waves for some analyses.

Future work could use designs tied to clear shocks or program rollouts (infrastructure, market hubs, payment systems), test mechanisms more directly, and examine who within the household gains most by age and gender.

RECOMMENDATIONS

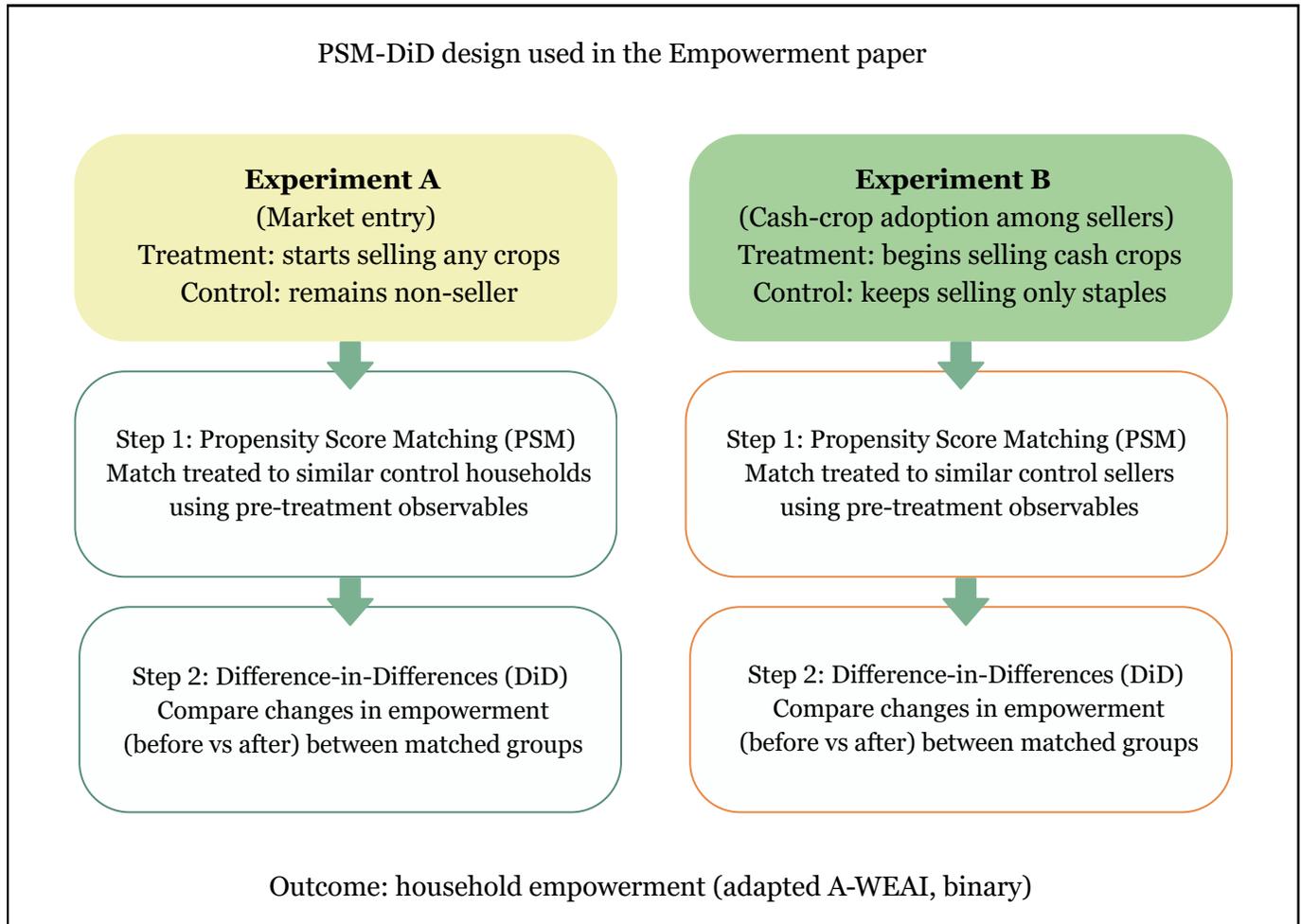
- ▶ **Prioritize first-sale entry by investing in the Hidden Middle.** The largest empowerment gains are linked to starting to sell. Investments in local buying points, wholesale markets, storage, and third-party logistics can reduce the fixed costs of market entry for smallholders and help translate commercialization into inclusive gains.
- ▶ **Promote gradual diversification, not premature specialization.** Target support based on production breadth. Less-diversified households may benefit from staple-oriented sales with modest cash-crop shares, while more-diversified households can expand non-staple sales with monitoring to avoid moving quickly into mostly non-staples portfolios where marginal empowerment gains are smaller.
- ▶ **Institutionalize women's role in income flows.** Because empowerment gains concentrate in income decisions, commercialization programs should include practical features that lock in women's agency, such as joint payment options, joint or women-titled accounts, and facilitated household financial planning.
- ▶ **Monitor gender outcomes alongside commercialization metrics.** Track sales-mix bands and time-use indicators, not just sales volumes. Use these diagnostics to trigger guardrails such as labor-saving support, childcare solutions, and household-level dialogues when commercialization risks increasing women's workload or weakening their voice.

FIGURE 1. COEFFICIENT PLOT FOR PSM-DID ESTIMATES. CROP COMMERCIALIZATION ON WOMEN’S EMPOWERMENT STATUS (BINARY)



Note: Points show ATT estimates with 95% confidence intervals for two quasi-experiments: (A) entering crop markets (start selling any crops) and (B) adopting cash-crop sales among sellers. Results are presented as associations from a quasi-experimental design and should not be interpreted as definitive causality.

FIGURE 2. TWO QUASI-EXPERIMENTS (PSM-DID) USED TO STUDY COMMERCIALIZATION AND EMPOWERMENT.



Notes: Experiment A compares households that start selling crops after baseline to matched households that remain non-sellers. Experiment B compares matched crop-selling households that start selling cash crops to those that keep selling only staples. The design strengthens causal interpretation but results should still be treated cautiously.