SOCIAL LEARNING, PEER INFLUENCE AND SMALLHOLDER COMMERCIALIZATION

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Evidence from six Sub-Saharan African countries

Key messages

- Peer behaviour within rural communities strongly shapes whether small-scale producers adopt improved inputs and commercialize their output, but the strength and sign of these peer effects differ sharply across countries.
- In Ghana, Nigeria and Ethiopia, higher peer adoption of seeds, fertilizer and pesticides is associated with large and statistically robust increases in individual input use, while peer effects on input use are weaker, mixed or even negative in Tanzania, Uganda and Malawi.
- Peer influence extends to output markets: in Ghana, Ethiopia and Malawi, higher peer commercialization raises both the probability of selling and the value and share of harvest sold, especially on the intensive margin.
- Peer effects are highly nonlinear: commercialization often responds most strongly when peer participation moves from low to moderate levels, with diminishing or even negative marginal effects once local commercialization becomes very high.
- Social learning is unequal: peer effects tend to be stronger for illiterate farmers, vary by gender, crop specialization and peer group size, and sometimes widen existing gaps between more and less advantaged producers.
- Recognizing commercialization as a socially embedded process opens new policy levers: strategically engaging lead farmers and networks can accelerate, but not automatically broaden, inclusive smallholder commercialization.

Summary of INCATA Working Document “Social Learning and Peer Influence in Smallholder Commercialization” by Fred Dzanku, Saweda Liverpool-Tasie and Thomas Reardon.

WHY THIS STUDY MATTERS

Debates on smallholder commercialization in Sub-Saharan Africa often highlight structural constraints such as prices, infrastructure and agro-ecology, while paying much less attention to how farmers learn from and respond to the behaviour of their peers. Most empirical work on social learning focuses on technology adoption in a single country or subnational area, and rarely covers both input and output markets using comparable data across countries.

This study fills that gap by asking how peer behaviour within rural communities influences small-scale producers' decisions to purchase key agricultural inputs and to sell crop output. It documents the extent, shape and heterogeneity of peer effects on commercialization across six African countries, and treats commercialization as a socially embedded process rather than a purely individual response to prices and infrastructure. The findings speak directly to the design of policies that aim to scale up input use and market participation through lead farmers, producer organisations and informal networks.

DATA AND APPROACH

The analysis relies on nationally representative panel datasets from the LSMS-ISA surveys and the Ghana Living Standards Survey, covering roughly a decade of observations per country. Commercialization is defined on the input side as binary indicators of whether a small-scale producer purchased seeds, fertilizer, or pesticides in a given year. On the output side, the study considers (i) whether any harvest was sold, (ii) the value of sales, and (iii) the share of total harvest value that is marketed.

Peer influence is measured at the community/village (cluster) level, excluding the household itself: for inputs, it is the share of neighboring small-scale producers who purchased a given input; for outputs, it is the average share of harvest sold by other producers in the same community. These peer variables proxy social learning, imitation, and collective behavior. To model market participation and commercialization outcomes, the authors employ correlated random effects (Mundlak–Chamberlin) specifications, which allow for correlation between time-varying covariates and unobserved household characteristics while retaining time-invariant variables such as agro-ecological zone.

Binary outcomes (e.g. input use, any sales) are estimated using CRE probit models, fractional outcomes such as the share of harvest sold are estimated with CRE fractional probit, and corner-solution outcomes for sales values are handled using a Cragg double-hurdle model. The framework distinguishes the extensive margin (whether to participate) from the intensive margin (how much to sell), allowing peer effects to differ at each stage. Nonlinearities are captured using quadratic terms in key peer and infrastructure variables, revealing potential thresholds and saturation points in social learning.

MAIN FINDINGS

1. STRONG BUT UNEVEN PEER EFFECTS IN INPUT MARKETS

Across Ghana, Nigeria, and Ethiopia, peer effects on input adoption are large and statistically robust. A higher share of neighbors purchasing seeds, fertilizer, or pesticides significantly increases an individual household's probability of adopting those inputs (Figure 1). These patterns suggest that information flows, observation of successful practices, and informal endorsement within communities are powerful drivers of technology uptake (Figure 2). By contrast, in Tanzania, Uganda, and Malawi, peer effects on input use are weaker, often insignificant, and occasionally negative, especially for seeds and pesticides. This cross-country heterogeneity indicates that social learning is highly context-specific, depending on network structure, input risk profiles, and trust in local information.

2. PEER INFLUENCE EXTENDS TO OUTPUT COMMERCIALIZATION

Peer behavior also shapes whether and how intensively households sell their harvest. In Ghana, Ethiopia, and Malawi, a higher average share of output sold by peers is strongly associated with greater market participation, higher sales values, and a larger marketed share of total harvest. Peer effects tend to be particularly strong on the intensive margin, meaning that social dynamics influence not just the decision to enter the market but also the scale of engagement once farmers participate. In Tanzania, Uganda, and Nigeria, peer effects on commercialization are more muted and sometimes negative, emphasizing the importance of complementary market institutions and infrastructure in translating social spillovers into actual sales.

3. NONLINEAR AND THRESHOLD EFFECTS

Peer influence is rarely linear. For many countries and outcomes, peer effects follow an inverted U-shape: commercialization rises sharply as peer participation increases from low to moderate levels, but weakens or even reverses when peer commercialization becomes very high. In such cases, early adopters generate strong learning and coordination benefits, but beyond a threshold, congestion, competition for buyers, or local price pressure may offset the gains from imitation. In other settings, notably some Nigerian, Tanzanian, and Ugandan samples, U-shaped relationships emerge, where intermediate peer participation is associated with lower own commercialization but very high peer engagement eventually raises individual sales once a critical mass is reached.

4. UNEQUAL PEER EFFECTS ACROSS FARMERS AND CROPS

The strength and sign of peer effects vary systematically by literacy, gender, crop specialization, peer group size, and time period. Illiterate farmers often benefit more from peer networks, particularly for input adoption, suggesting that social learning can partially compensate for formal education gaps. Gender patterns are mixed: in some countries, peer dynamics reinforce male advantages in input and output markets, while in others, they help female-headed households close commercialization gaps. Peer influence tends to be stronger in larger networks, although very large peer groups can dilute impact in some contexts.

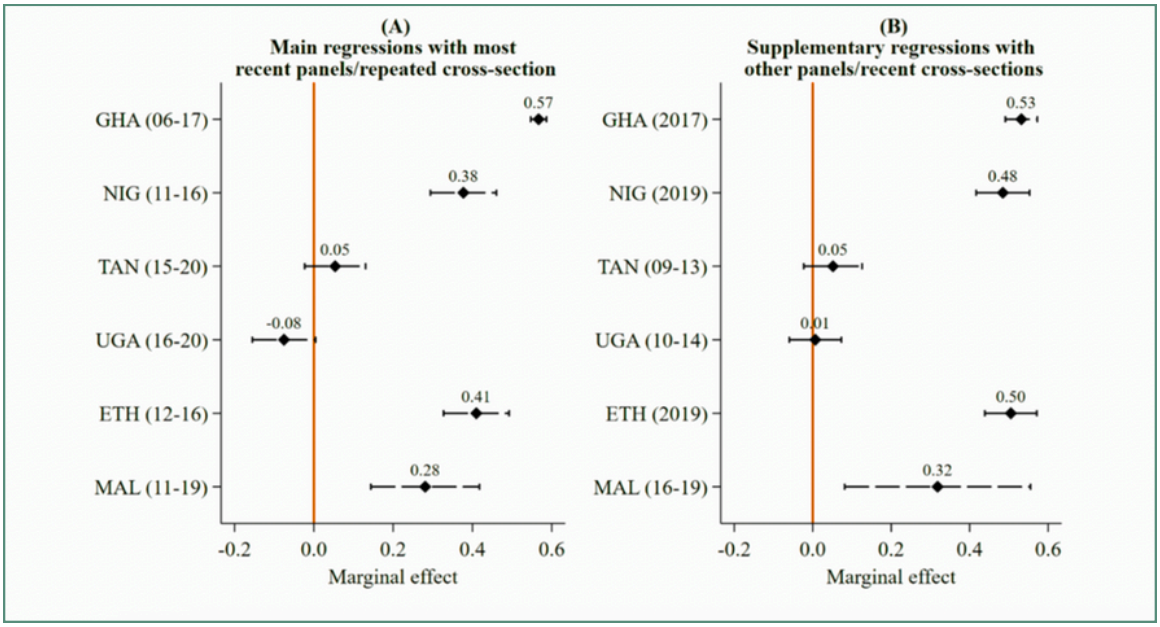
Crop specialization matters as well. Producers of tree crops, industrial crops, and oilseeds often gain more from peer commercialization than producers of fruits and vegetables, who sometimes remain disadvantaged even when peers engage strongly. These variations reflect differences in value chains, aggregation opportunities, and perishability, highlighting that social learning alone is insufficient where structural constraints are severe.

LIMITATIONS AND RESEARCH GAPS

The estimates in this study are best interpreted as robust conditional associations rather than fully causal peer effects. Despite rich controls and the use of panel data, the models cannot completely rule out correlated shocks, such as common weather, prices, or policy changes that simultaneously influence peers and individuals. Moreover, peer groups are defined at the community level, which captures broad social exposure but not finer network structures such as kinship or friendship ties. Future work using experimental or quasi-experimental designs, as well as detailed social network data, could provide sharper causal identification and help disentangle learning, norms, and coordination effects.

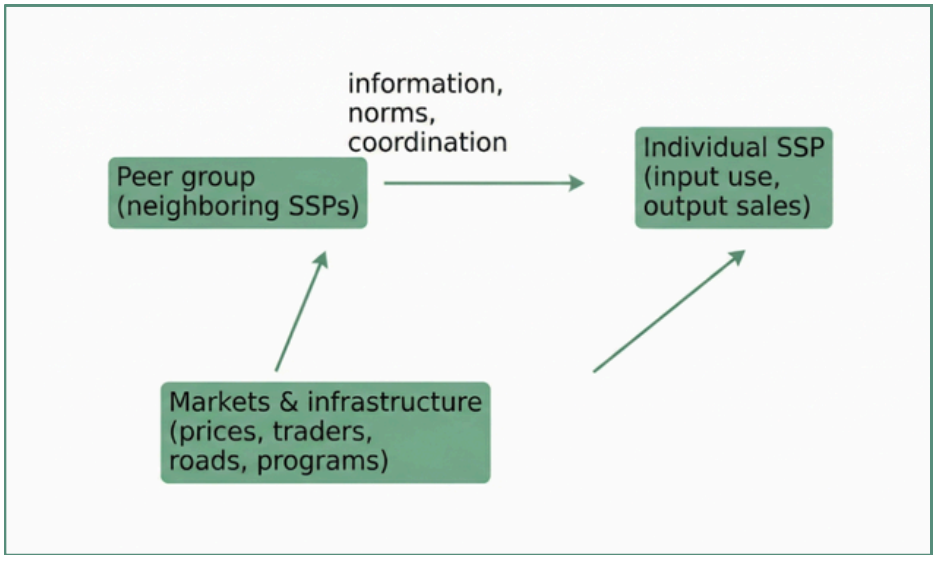
Nonetheless, the findings clearly demonstrate that commercialization in rural Africa is socially embedded. Understanding who observes whom, when peer influence is strongest, and how it interacts with market institutions is essential for designing interventions that both accelerate and broaden smallholder engagement in markets.

FIGURE 1. CRE PROBIT REGRESSION RESULTS OF THE EFFECT OF PEER INFLUENCE ON FERTILIZER MARKET PARTICIPATION.



Note: Bars show marginal effects of a one-unit increase in the share of peers buying fertilizer on the probability of own fertilizer use, by country.

FIGURE 2. CONCEPTUAL PATHWAYS OF PEER INFLUENCE



Note: Peer effects operate through information diffusion, social norms, and coordination, interacting with market conditions.