Impact of Cooperative membership on Market Performance of Nepali Goat Farmers

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The basic idea

- Identifies factors associated with market channel choice and price received by smallholder goat farmers in Nepal, with particular emphasis on the role of cooperatives.
- Although it is an empirical contribution, the novel use of two different endogenous switching models means that the paper also makes ample use of theory.
- Main takeaway messages:
  - Cooperative membership significantly influences the choice of marketing channel.
  - Cooperative membership appears to have an important ‘co-benefit’: the ability to achieve a higher price in the local markets.
  - Remote smallholders with fewer goats to sell are particularly price-vulnerable.
  - Within this context (goat cooperatives in Nepal), cooperative membership is associated with a significantly higher output price and zero price risk.
    - Members keep more goats at significantly higher stocking rates, on average, and engage more regularly with extension agents to improve their farming practices.
Placing the paper in the literature

- There is an established empirical literature looking at the impact of cooperative membership on indicators of farm performance and farmer wellbeing.
- Not many studies looking at market channel selection or price as outcome variables in connection with cooperative membership.
- Very little work done (aside from what our author has published) on goat cooperatives.
Observations associated with background information and data (descriptive statistics)

The market for goat meat in Nepal
- Informal domestic market with competition from imports.
- Market structure: lots of isolated smallholders (nearly 3 million) with only 10% having more than 10 goats; relatively fewer collectors (2,000); asymmetric information; strong history of Ag. Co-ops.
- Market channels dominated by collectors and cooperatives, with significant sales to the local market.

Goat Cooperatives
- The sample data indicates that cooperatives pay a much higher price than the other channels, with no price risk.
- Farmers pay a fee to cooperatives to market their goats, but the fee is minimal.
  - No other specific information on additional costs of cooperative membership.
- Despite efforts to encourage engagement with cooperatives, many smallholders do not engage – so cooperatives struggle for membership.
- An objective of this paper was to evaluate the role of cooperatives and their effects on prices received by farmers to assess if cooperatives could serve as a viable marketing channel for goat producers in Nepal.
Technical aspects of the paper – Model 1 (ESP)

Model 1: Endogenous Switching Probit Model

- Selection / Switching Equation
  Binary choice associated with cooperative membership
- Outcome / Response Equation
  Limited dependent variable equation for choice of market channel

Potential for endogeneity in the Selection Equation

- Some of the explanatory variables (score of improved practices; training; extension visits) are potentially endogenous.
- Ma and Abdulai (2016) used an IV approach to account for this kind of endogeneity in their selection equation (albeit a continuous outcome equation), and the present paper appears to use a similar approach in the second model – but I suspect that the case for endogeneity is stronger in the choice of cooperative membership.
- It is unclear why this wasn’t explicitly addressed.
Technical aspects of the paper – Model 1 (ESP)

Model 1: Endogenous Switching Probit Model

- Selection / Switching Equation
  Binary choice associated with cooperative membership

- Outcome / Response Equation
  Limited dependent variable equation for choice of market channel

Model specification

- The dependent variable in the second stage is limited, but not binary.
- The approach taken here and elsewhere in the literature (Hao, et al., 2018) is to estimate a series of binary equations.
- Miranda and Rabe-Hesketh, 2006 discuss other limited dependent variable specifications (ordinal and count) for the response equation when the response is limited.
- Is it possible to estimate a multinominal probit in the second stage so that all of the estimation in the first model can be done simultaneously?
Technical aspects of the paper – Model 2 (ESR)

Model 2: Endogenous Switching Regression Model

- Selection / Switching Equation
  Binary choice associated with market channel
- Outcome / Response Equation
  Price received by farmer for their goat

Interpretation of the covariance terms.
- I believe it is the correlation coefficients of the covariance terms ($\rho_{\mu M}$ and $\rho_{\mu N}$), rather than the covariance terms that have economic interpretation (Lokshin and Sajaia, 2004; Ma and Abdulai, 2016).
- The broad conclusions (existence of endogeneity and positive selection bias associated with the local market) aren’t affected, but the rationale behind the conclusions is.

Selection bias associated with cooperative membership in the outcome equation?
Determinants of Cooperative Membership

- A key policy implication of the paper is the need to promote cooperative membership among Nepali goat farmers.
- I was struck by the fact that farmers receive a higher price from cooperatives, with virtually no price variation (Table 5).
  - Farmers have a reasonable chance of making more money in the local market (35%, assuming that prices in the local market are distributed normally), but their chances of making as much or more from collectors are slim (15%).
- Raises the question as to why smallholders don’t engage.
  1. Driven by cooperative-specific attributes?
     - There is a growing literature that uses choice modelling to try to understand the attributes of various inclusive business models (cooperative; joint venture) or contracts that are most attractive to smallholders.
  2. Are we omitting important individual-specific constructs/variables from our models?
     - Theory of Reasoned Action and it’s variants suggest that behavioural intentions are driven by attitudes, subjective norms and perceived control.
Conclusions

- A really nice paper which furthers our understanding of an important empirical issue.
- The method was solid, and the results indicate that it is important to account for selection bias when thinking about market channel selection and outcomes.
  - Potential sources of bias (endogenous explanatory variables and selection) that were not accounted for.
- Like all good papers, this one raises additional questions that make you eager to read the authors’ next contribution.
Some references on Planned Behaviour / Reasoned Action and Choice Modelling applied to market decisions and co-op membership in developing countries

Theory of Planned Behaviour / Reasoned Action

Use of Choice Modelling to understand how smallholders can connect with modern supply chains

Contract Design


Ola, O., & Menapace, L. (2020). Smallholders’ perceptions and preferences for market attributes promoting sustained participation in modern agricultural value chains. Food Policy, 97, 101962.


Joint Ventures (rather than cooperatives)

Choice of market channel (not choice modelling – used multinominal probit).
Additional References


Thank You