

Maziwa Zaidi (More Milk) in Tanzania

Reducing risk and uncertainty in milk production by smallholders in Tanzania

Edgar E. Twine, Amos O. Omore and Julius Githinji
International Livestock Research Institute

Key messages

- Risk and uncertainty are persistent problems for farmers, often leading to sub-optimal production and investment decisions
- Risk and uncertainty exists in formal and informal dairy value chains – the latter value chain is considerably riskier than the former
- Youth producing milk in the informal value chain face significantly higher risks
- Tailored risk mitigation measures should be directed towards different categories of milk producers

Opportunities to invest and scale

- Public investment in physical (e.g. roads, electricity) and institutional (e.g. regulations, producer associations) infrastructure to mitigate uncertainty in dairy value chains
- Private investors to produce concentrate feed; private sector use of input supply contracts (perhaps through dairy market hubs)
- Milk producers should invest (be supported to invest) in growing capacity in strategic management that includes ability to exercise flexibility in decision making to enable adaptation to uncertainty
- Public/private investors to provide market information services to dairy farmers to enable them exercise flexibility in decision making (could be achieved through DMHs)

Objectives and approach

Risk and uncertainty in the livestock sector in Tanzania constrain the dairy industry's potential to alleviate poverty and food insecurity

A study was made to quantify the impacts of risk on the enterprises of men, women and young milk producers across value chains, and determine the implications of uncertainty for investment in milk production

Monte Carlo cash flow models and the real options approach to capital budgeting were employed

Key results

- Youths in the informal value chain and men in both value chains face relatively high risk
- Important sources of risk are fluctuations in quantity of feed, price of feed and average daily yield
- Milk production in the informal value chain is substantially riskier than in the formal chain
- The current farm gate price of milk in the informal chain would have to increase six-fold for investment in milk production to be desirable

Table 1: Annual volatility of returns to milk production

	Formal value chain (%)	Informal value chain (%)
Youths	1.60	35.15
Men	10.02	7.90
Women	1.60	4.03
Combined	4.41	15.69

Table 2: Hurdle rates, optimal and Marshallian investment triggers

	Formal value chain	Informal value chain
Hurdle rate	2.47	8.11
Optimal investment trigger (\$/litre)	0.33	2.15
Marshallian investment trigger (\$/litre)	0.02	0.04

