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Smallholder exit under structural change: Long-run evidence from Punjab's dairy sector

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Abstract

Agrifood supply chains across developing countries are rapidly changing. Rising demand for dairy products and quality standards is associated rapid structural transformation of the sector and the exit of smallholder farmers, raising important questions about the distributional and efficiency implications of this transition. This papers examines the drivers of smallholder exit from milk markets in Punjab, India, over a 15-year period of rapid dairy sector transformation. Leveraging a unique, detailed three-round panel dataset of 762 farming households spanning 2008–2023, we analyse the drivers of exit out of milk sales over time. We estimate the determinants of exit across two sub-periods, 2008–2015 and 2015–2023, using OLS, logistic regression, and instrumental variable (2SLS) approaches. To address the endogeneity of market participation with respect to sales to dominant buyers, including a private multinational and a state cooperative, we employ distance to buyer locations and village-level agricultural wages as instruments.

Our findings reveal marked temporal shifts in the drivers of exit. In the earlier period, initial household endowments – including the number of female adult cattle, availability of male labour, and landholding size – are significant predictors of exit from milk sales. In contrast, in the later period, land size emerges as the sole robust determinant. These results suggest that as the dairy sector undergoes structural transformation, the constraints shaping market participation become more concentrated, with scale increasingly governing smallholder viability. By documenting time-varying exit dynamics using long-run panel data, this study highlights the importance of accounting for structural change in designing policies aimed at sustaining smallholder participation, improving supply chain efficiency, and promoting inclusive rural development.

Keywords: Dairy, India, inequality, structural transformation

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