

Structural transformation in Punjab's dairy sector: Farm exit, persistence, and growth under changing market structures

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Introduction

- Well-documented structural transformation & disappearance of smallholder farms
- Yet, limited evidence
 - At micro-level
 - Including rise of commercial farms
 - Documenting the transformation over longer time periods
 - On transformation of marketing channels
- This study
 - Micro-level evidence of production & marketing structures covering 15 years
 - For dairy sector in Punjab, India

Study Context

- Punjab, India
 - Highly productive dairy producing region
 - Traditional importance of milk & dairy in Punjabi diets and livelihoods
- Strong cooperative structure, dominant multinational operations & informal marketing channels co-exist
- Rapid growth of income & dairy consumption in India
- Supply response
 - Initially from smallholder-based milk collection centers
 - Investments in technology & vertical contractual interactions with dairy processors
 - Shifting increasingly to large commercial farms

Research Question: Who persists, exits, or upgrades as dairy supply & demand structures transform in Punjab?

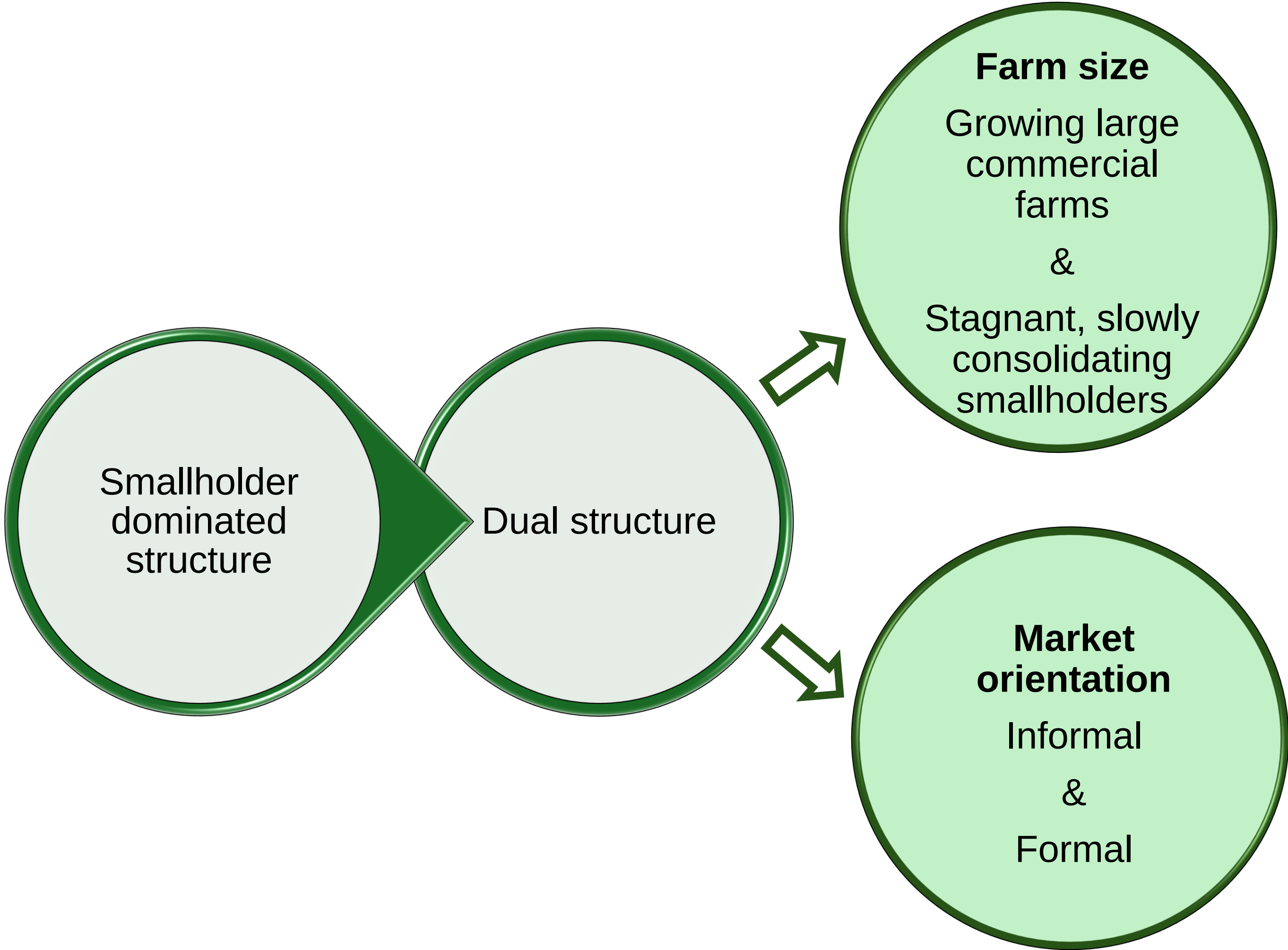
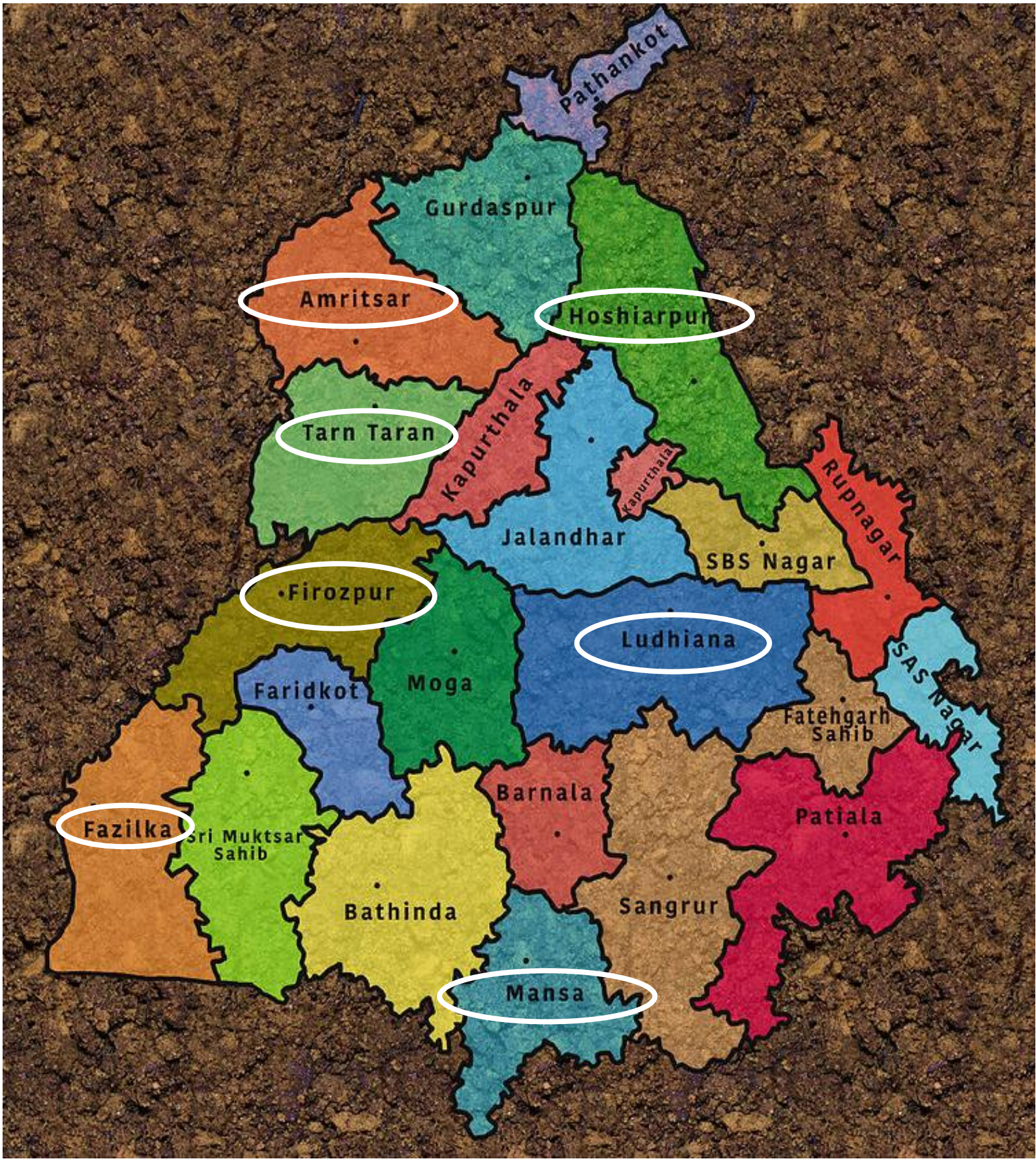


Figure 1: Structural transformation mechanism in the dairy sector of Punjab, India.



Data

- 762 **smallholder farmers** from 50 villages in 2008, 2015 & 2023-24
- 150 **buyers** (milk collection centers, private dairies, local milk traders, sweet shops, etc.) in 2023-24 (& recall data for 2008, 2015)
- 159 **commercial farmers** in 2024 (& recall data for 2008, 2015)

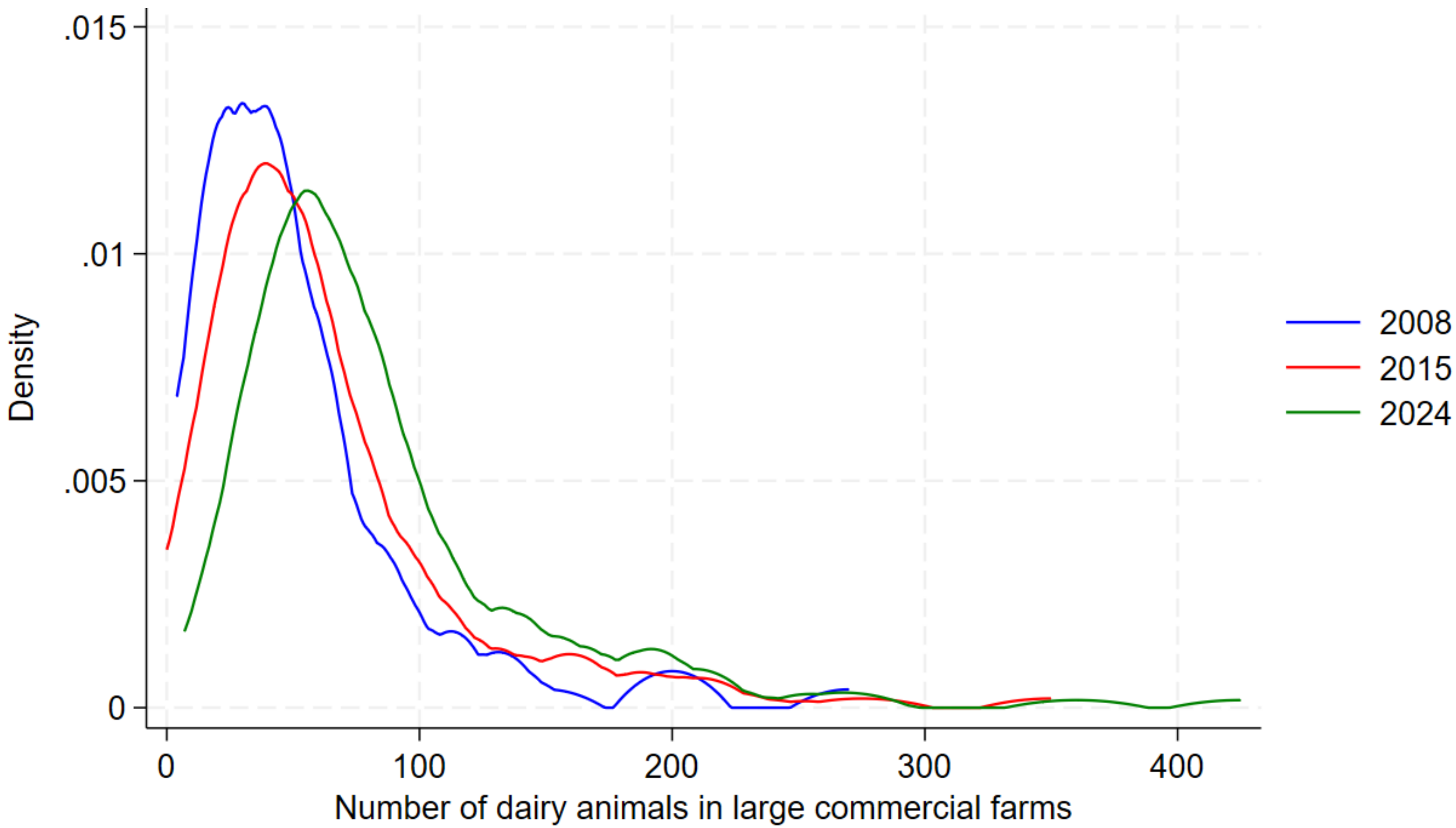


Figure 3: Commercial farm size over time.

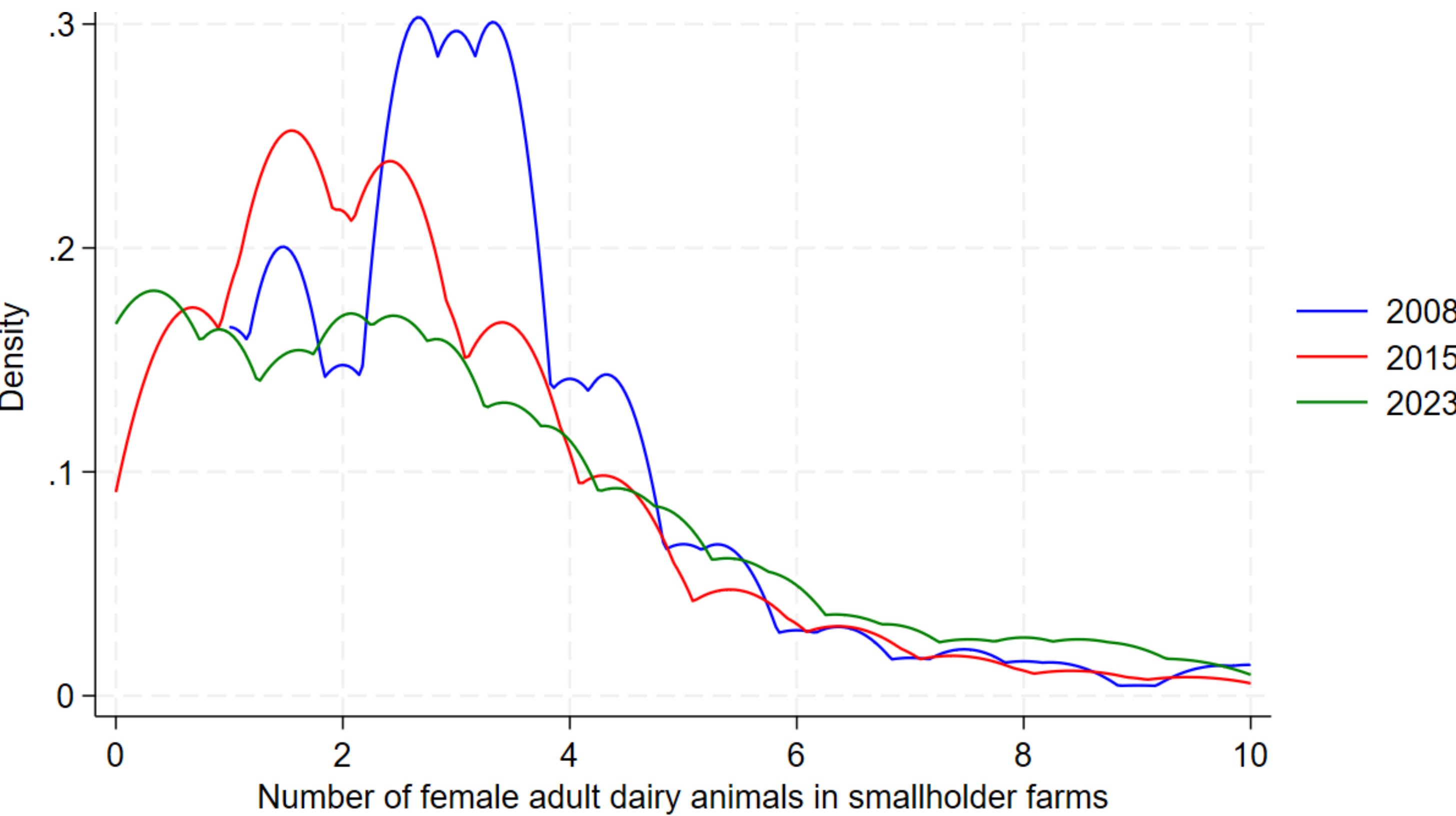


Figure 4: Smallholder farm size over time, focusing on the farms with at most 10 dairy animals.

Figure 2: Surveyed districts in the state of Punjab.

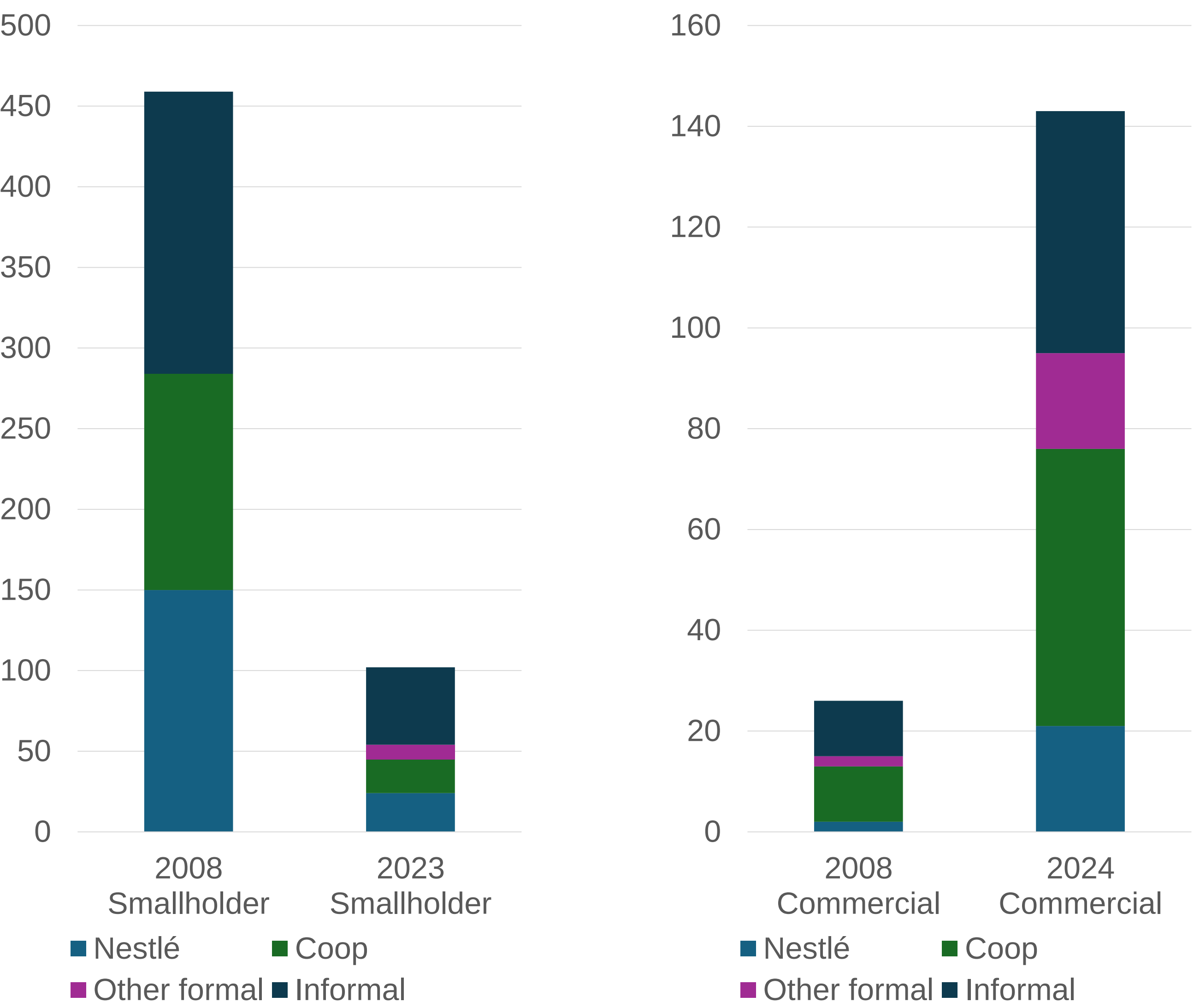


Figure 5: Main buyer channel of smallholder & commercial farmers in 2008 & 2023-24.

What do we find?

- Many smaller farms (<6 dairy animals) either ceased operations or declined in size
 - Growth of smallholder farms with 6-10 dairy animals
 - Growth of large commercial farms
 - Smallholder farm sales to informal channels ↑ & to formal channels ↓
 - Commercial farm sales to informal channels ↓ & to formal channels ↑
- What are the conducive factors for smallholder dairy farms to persist as medium-sized players?