

# Collective Action in Agriculture: The Case of Wine-grape Farmer Cooperatives in Chile

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# Motivation

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- ▶ Farmers in Chile are not organizing and reaping the potential benefits of collective action, such as access to high-value markets and increased competition.
- ▶ These could help them (especially small-holders) increase the price they receive for their produce.
- ▶ Organizing in farmer cooperatives is a way of integrating small-holder farmers (SFs) into high-value markets (Reardon and Barrett, 2000; Hellin *et al.*, 2009; Torero *et al.*, 2010).

# Motivation and Objective

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- ▶ While cooperatives have expanded in the world in the past decades (Reardon and Barrett, 2000), Chile is an exception in terms of the incidence of wine-grape farmer cooperatives. E.g. 5 active wine-grape cooperatives.

## Research Question

- ▶ Why aren't most SFs organized in wine-grape cooperatives in Chile, as they usually are in the rest of the world?

# Potential Explanations

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- ▶ The historical and institutional setting in Chile inhibited cooperative formation.
- ▶ Trust among farmers is insufficient to form cooperatives. E.g. free-rider problem.
- ▶ Cooperatives exist only where transaction costs are sufficiently high so that cooperatives help to fill market gaps.
- ▶ In this paper we focus on this last hypothesis.

# Contributions

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- ▶ Cooperative formation in economics: generally studied from an IO perspective including imperfect competition and cooperatives' potential pro-competitive effect.
- ▶ Almost no work explicitly links collective action and cooperative formation (Sexton, 1987; Hueth and Moschini, 2014).
- ▶ In Chile, certain conditions that we investigate, have prevented widespread cooperative formation.
- ▶ Farmer associations provide a way to overcome liquidity constraints, information asymmetries, minimum efficient production scales, and/or marketing (Reardon and Barrett, 2000).

# Theoretical Framework

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## Model Guidelines

- ▶ Cooperatives have elements of a public good and there are incentives to free ride, especially at the time of cooperative formation.
- ▶ For a cooperative to be formed, consumers (or future members) need to cover initial fixed costs. So, a minimum number of consumers is needed.
- ▶ Once the cooperative is created members cannot be excluded from the cooperative's goods or services.
- ▶ So, there is an incentive for potential members to wait until other agents cover the initial fixed costs and then join the cooperative, delaying or impeding formation.

# Theoretical Framework

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## Model Guidelines

- ▶ However, if there is sufficient demand for these goods or services—assumed to be privately known to consumers, cooperatives may be created to fill the missing-markets' gap (based on Hueth and Moschini 2014).
- ▶ In the case of wine-grape cooperatives, if there is no market available, or located sufficiently close, for farmers to sell their wine-grapes, farmers themselves may invest in forming a cooperative.

# Empirical Strategy

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- ▶ To study cooperative formation empirically, one would need data before and after formation, and formation is usually difficult to predict.
- ▶ Therefore, we do not study cooperative formation empirically *per se* but instead, we study the determinants of participation in farmer associations at one point in time (cross sectional data).



# Empirical Strategy

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- ▶ Analysis close in spirit to the analysis conducted by Holloway *et al* (2000) who explore the impact of household-level transaction costs on participation in governmentally-created milk groups.
- ▶ Their analysis is based on a regression of marketable surplus on transaction and other characteristics.
- ▶ They conclude that milk groups can enhance participation of farmers by providing better market access.
- ▶ We instead estimate the determinants that affect the probability of being member in a wine-grape cooperative on transaction cost measures (measures of isolation).

# Empirical Strategy

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## Variables for Hypothesis Testing

- ▶ Measures of isolation: distance to main highway (+), number of alternative offers, and having more than one buyer in the season (-).
- ▶ Market infrastructure: valley of production (+ if less market infrastructure).
- ▶ Other controls: education of the farmer, wealth, and crop-management practices.
  
- ▶ We estimate a regression of the probability of being in a farmer cooperative using MLE.

# Empirical Strategy

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## Data

- ▶ Random sample of 184 wine-grape farmers.
- ▶ Two wine valleys of Chile, Colchagua and Maule.
- ▶ During 5 months in the 2011-2012 season.
- ▶ We collected data mainly on farmer and farm characteristics, characteristics of the vineyard and crop-management practices, characteristics of the current and past contracts, investments made throughout the history of the crop, and participation in wine-grape farmer associations.

<b>Prob. of being part of a co-op</b>	<b>Co-op 1</b>	<b>Co-op 2</b>	<b>Co-op 3</b>	<b>Co-op 4</b>
Distance to the main highway (km)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)
More than one buyer last season	0.117* (0.067)	0.116* (0.067)		
Number of alternative offers	-0.004 (0.010)		-0.005 (0.011)	
Maule valley	0.185** (0.075)	0.190*** (0.073)	0.206*** (0.076)	0.209*** (0.074)
Log of farm area (ha)	-0.009 (0.024)	-0.009 (0.022)	-0.005 (0.023)	-0.006 (0.021)
Household head education (years)	0.011* (0.006)	0.011* (0.006)	0.012** (0.006)	0.013** (0.006)
Defoliation in previous contract	-0.161** (0.072)	-0.168** (0.069)	-0.161** (0.074)	-0.169** (0.072)
Summer pruning	-0.050 (0.064)	-0.032 (0.065)	-0.056 (0.064)	-0.038 (0.065)
Had Botrytis last season	-0.080 (0.093)	-0.081 (0.095)	-0.065 (0.088)	-0.064 (0.088)
Irrigation	0.073 (0.070)	0.068 (0.066)	0.098 (0.069)	0.092 (0.067)
Observations	174	177	174	177

Notes: \* $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ . Estimated using a logit model with robust standard errors. Average marginal effects reported. Standard errors are in parenthesis. Regressions include a constant term.

# Conclusion

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- ▶ We find evidence in favor of the transaction cost hypothesis: more isolation and less market infrastructure increases the probability of participating in a wine-grape farmer cooperative.
- ▶ This study highlights the need for institutional changes designed to promote farmer associations which can improve market access and pricing for the disadvantaged farmers.

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# Thank you!



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