Farmer preferences for joint venture farm business structures: a choice experiment

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Background

- Adoption of technology is critical to driving productivity improvement in the broadacre grains sector
- An increasing productivity gap between leading farms and average farms
- Strong positive relationship between farm size and profitability
- Not just returns to scale but more advanced production technology/management

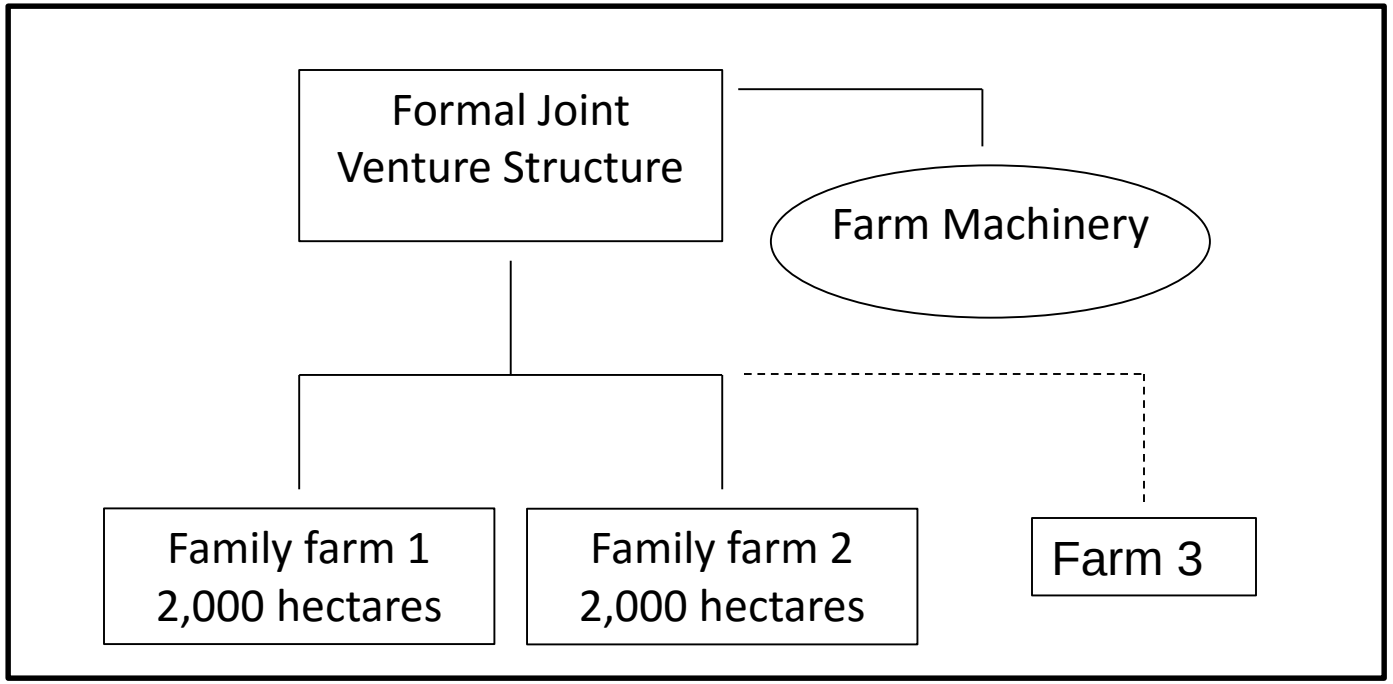
ABARES

Opportunities for new farm business structures to address constraints on small-medium size family farms

Research Questions

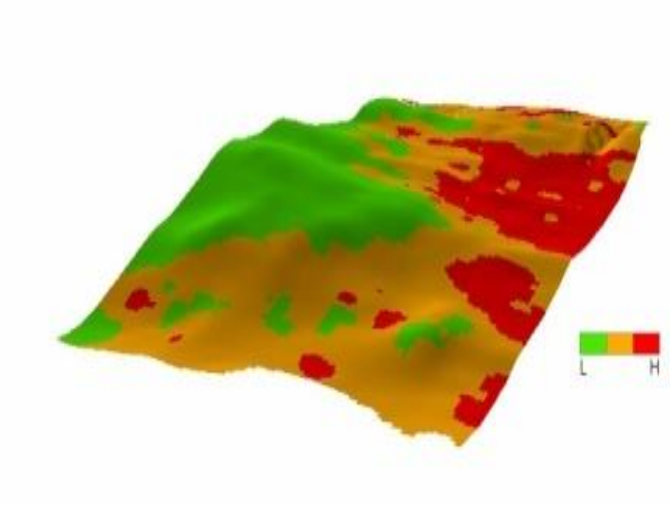
- Are broadacre producers interested in pursuing opportunities to develop joint venture farm business structures?
- What joint venture business structure characteristics are most attractive to broadacre grain producers?
- Are there unique socio-demographic and attitudinal variables associated with interest in different joint venture structures?

What could a joint venture look like?



An example

CFA
Collaborative Farming Australia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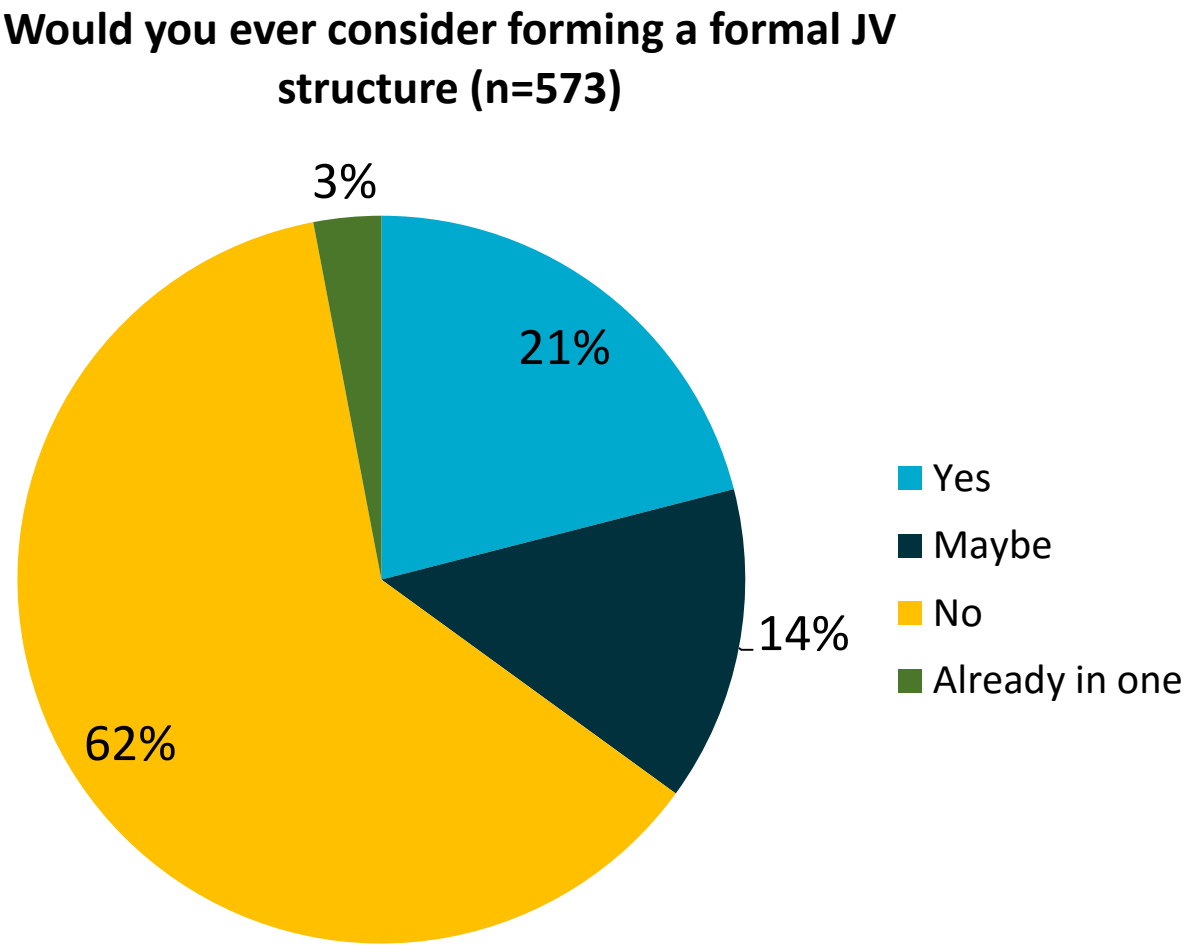
Research Methodology

- Scoping survey of grain grower interest and motivation in joint ventures (n=573 , 2012).
- Discrete choice experiment – farmer preferences for different JV business structures and characteristics (n=340, 2013)
- Phone initiated, then online choice experiment with broadacre grain producers across the southern and western grain growing regions
- Post-hoc analysis of latent classes via probit models comprising socio-demographic variables

Farmer Interest in JV



Reason for considering a joint venture:

- Reducing costs - 55%
  - Machinery costs - 28%
- Economies of scale / improved efficiency – 17%
- Improved utilisation of capital / greater profitability 15%
- Improve labour availability and efficiency – 10%

Choice attributes and levels

Attribute	Attribute levels
Number of farm businesses in the JV structure	• 2, 3 or 4 farm businesses
Influence on operational decisions	• Sole decision-maker • Final decision-maker, in consultation with other partners • Shared decision-making with other partners • Not the final decision-maker, but input into decisions • No operational decisions
Farming with the latest machinery	• New machinery • Older machinery (initially 5 yrs plus)
Leave arrangements	• Extra 2 weeks leave • No change
Change in annual net farm income	• -15k, no change, 15k, 30k, 50k or 75k

Example Best-Only Choice Set

Figure 1. Example choice set in the farmer JV choice experiment questionnaire

Carefully consider each of the following options for formal JV structures. If options A, B, C and D were the only ones available, which option would be most attractive to you?

Characteristics	Option A	Option B	Option C	Option D
Number of farm businesses in the JV structure	2	3	4	4
Your influence on operational decisions (non-board decisions)	Sole decision-maker	Shared decision-making with other partners	Not the final decision-maker, but input into decisions	No operational decisions
Farming with the latest machinery	Older machinery (initially 5 yrs plus)	New machinery	New machinery	New machinery
Leave arrangements	Extra 2 weeks of flexible leave	No change	No change	Extra 2 weeks of flexible leave
Change in annual net farm income (compared to current 5yr average)	+ $30k	No Change	+ $50k	+ $15k
Most attractive option	☐	☐	☐	☐

Latent class model results

Table 4. Latent class model result

Choice Attributes	Class A		Class B		Class C		Class D	
	Parameter	S.E.	Parameter	S.E.	Parameter	S.E.	Parameter	S.E.
Income	0.044***	0.004	0.039***	0.006	-0.002	0.003	0.313***	0.004
Partners	-0.509***	0.100	1.426***	0.389	0.362***	0.129	-0.237*	0.130
Decisions	0.037	0.041	0.497***	0.113	-0.032	0.051	0.647***	0.085
Machinery	0.780***	0.209	-0.877***	0.313	0.512***	0.185	0.241	0.232
Leave	-0.348*	0.184	-1.820***	0.512	-1.475***	0.193	0.095	0.338
Log-likelihood	-1708.98							
Adjusted R2	0.27							
AIC/n	2.04							
BIC/n	2.10							

Notes: ***, **, * denote significance at the 1%, 5% and 10% levels, respectively. n=340.

D- WTA $20k less income for each step loss in control (Decisions)

Post-hoc analysis of socio-demographic & attitudinal variables

Table 7. Probit model results based on market segment membership

Socio-demographic variables	Class A Coefficient	Class A Std. Err.	Class A P>z	Class B Coefficient	Class B Std. Err.	Class B P>z	Class C Coefficient	Class C Std. Err.	Class C P>z	Class D Coefficient	Class D Std. Err.	Class D P>z
JV interest	0.017	0.120	0.885	0.149	0.134	0.267	0.025	0.127	0.845	-0.227	0.138	**0.099***
Flexible work	0.166	0.102	0.103	-0.058	0.113	0.611	0.267	0.113	**0.018****	-0.377	0.106	**0.000*****
University degree	0.333	0.215	0.121	-0.434	0.275	0.114	-0.724	0.290	**0.013****	0.596	0.242	**0.014****
More professional	0.030	0.094	0.746	0.189	0.108	**0.080***	-0.081	0.102	0.427	-0.115	0.105	0.274
Rely on experts	-0.089	0.089	0.322	0.264	0.109	**0.016****	-0.034	0.099	0.735	-0.087	0.100	0.385
Family history	-0.212	0.096	**0.027****	-0.136	0.108	0.210	0.180	0.101	**0.077***	0.233	0.105	**0.026****
JV risky	-0.079	0.108	0.464	-0.034	0.122	0.782	-0.153	0.118	0.194	0.313	0.126	**0.013****
Constant	-0.548	0.126	**0.000**	-1.106	0.150	**0.000**	-0.699	0.135	**0.000**	-0.581	0.138	**0.000**
Log likelihood		-211.0			-150.7			-174.5			-162.5	
Prob > Chi2		**0.028****			**0.030****			**0.007*****			**0.000*****	
Pseudo R2		0.036			0.049			0.053			0.145	

Notes: ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Latent class summary

- **Class A (34%) – Control neutral farmers**
  ▲ income, ▼ partners, (n.s.) control, ▲ machinery & ▼ leave
  ▼ *Family history*

- Class B (18%) – Managerial farmers
  ▲ income, ▲ partners, ▲control, ▼machinery & ▼ leave
  ▲ *More professional and* ▲ *rely on experts*

- **Class C (23%) – Income & control neutral farmers**
  (n.s) income, ▲ partners, (n.s) control, ▲ machinery & ▼ leave
  ▲ *Flexible work,* ▼ *university degree &* ▲ *family history*

- **Class D (25%) – Business as usual farmers**
  ▲ income, ▼ partners, ▲control,
  ▼ *JV interest,* ▼ *flexible work,* ▲*university degree,* ▲ *family history &* ▲ *JV risky*

Conclusions

- There is significant level of (niche) farmer interest in JV structures – focused on cost reduction
- Limited ability to predict JV interest using the socio-demographic /attitudinal variables
- Grain growers have diverse preferences for JV characteristics – but overall, loss of control is the key concern
- Substantial farmer segments are more open to collaboration and ‘sharing control’
- Structures that can accommodate members with different preferences for control are worth exploring

Thank you

Take Home Messages

- There is a small, but significant niche farmer interest in the adoption of JV structures, despite the current low levels of adoption.
- Exploring unobserved heterogeneity of farmer JV preferences indicates that farmers are interested in a diverse range of JV structure characteristics
- Limited ability to predict market segment membership using socio-demographic /attitudinal variables
- Important farmer segments were identified that are more open to collaboration and considering a range of JV decision models
- Structures that can accommodate members with different preferences for control need exploring