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Adapting Community Supported Agriculture to Modern Markets – Where is it Working?

**Timothy Woods (tim.woods@uky.edu)
Debra Tropp (debra.tropp@ams.usda.gov)**

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Timothy Woods and Debra Tropp

Department of Agricultural Economics, University of Kentucky
Agricultural Marketing Service, USDA

BACKGROUND

A national survey of CSA managers was completed in 2014 examining changes in the traditional CSA business model and how managers were adapting. The farm model has been expanded in many cases to include supplementary processed products, season extension technologies, various multi-farm collaborations, flexible payment plans, and utilizing a variety of ecommerce tools to better facilitate the marketing function.

This data set allows for further investigation of variations in CSA business performance and growth expectations variations reported by managers regionally and by CSA size, proximity to urban centers and age. The expectation is that these variables can potentially be important determinants to help explain variation in CSA growth, profitability and scale.



DATA

Web-based survey of CSA managers was collected nationally exploring various adoption of emerging business practices observed in a series of case studies examining CSA innovations completed earlier.

Details of the data and study findings will be released shortly by AMS, with some of the initial analysis provided here.

Average CSA shareholder size: 141 shares	
Percent noting increased use in their CSA of	
Supplemental processed products: 26.1%	
Season extension technologies: 56.4%	
Multi-farm marketing collaborations: 26.3%	
Flexible payment terms (installments, part-shares): 37.2%	
Web-based sales: 39.2%	
The definition of selected independent variables	
Urban	Urban base of CSA production
SHTurnover	Shareholder turnover
CertOrg	USDA certified organic
CSAsalesshr	Share of total farm income from CSA
Localdemand	Observed changes in demand for local foods
Scale2014	Shareholder size in 2014
Procprodinc	Indicating increase in supplemented processed products

MODELS

❖ CSA 2-year projected growth and Overall growth in CSA profitability since inception - Ordered Logit Models:

For estimating determinants of projected growth and observed profitability we utilize an index model for a single latent variable y^* (which is unobservable, we only know when it crosses thresholds).

$$y_i^* = X_i' \beta + u_i \quad y_i = j \text{ if } \alpha_{j-1} < y_i^* \leq \alpha_j$$

The probability that observation i will select alternative j is:

$$p_{ij} = p(y_i = j) = p(\alpha_{j-1} < y_i^* \leq \alpha_j) = F(\alpha_j - X_i' \beta) - F(\alpha_{j-1} - X_i' \beta)$$

For the ordered logit, F is the logistic CDF $F(\mathbf{z}) = e^{\mathbf{z}}/(1+e^{\mathbf{z}})$.

The marginal effect of an increase in a regressor \mathbf{x}_r on the probability of selecting alternative j is:

$$\partial p_{ij} / \partial x_{rj} = \{F(\alpha_{j-1} - X_i' \beta)' - F(\alpha_j - X_i' \beta)\} \beta_r$$

❖ **CSA variations in scale measured by shareholder size-OLS model:**

For estimating determinants of CSA shareholder volume reported in 2014

$$y = X\beta + \varepsilon$$

where y and ε are $n \times 1$ vectors, and X is an $n \times p$

matrix of regressors, which is also sometimes called the design matrix. $\log(y)$ is utilized here to mitigate heteroskedasticity

RESULTS

CSA2yrgrowth = f(..)			CSAProfitability = g(..)			
	Coef.	Std. Err.	z	Coef.	Std. Err.	z
East	-0.0666	0.2726	-0.24	-0.0677	0.2846	-0.24
MidWest	0.3565	0.2707	1.32	0.0136	0.2776	0.05
South	0.2557	0.3011	0.85	0.0480	0.3024	0.16
Urban	-0.2009	0.2073	-0.97	0.0283	0.2103	0.13
SHTurnover	-0.1898	0.1189	-1.6	-0.2272*	0.1179	-1.93
CertOrg	-0.0168	0.2349	-0.07	-0.0638	0.2407	-0.27
CSASaleshr	0.0051	0.0035	1.45	0.0178***	0.0037	4.86
Localdemand	0.3034***	0.1155	2.63	0.5304***	0.1170	4.53
CSAAge	-0.1696***	0.0268	-6.34	-0.0348	0.0276	-1.26
Scale2014	0.0001	0.0006	0.23	0.0010	0.0007	1.33
Procprodinc	0.0880	0.2313	0.38	-0.1502	0.2332	-0.64
Seasonxinc	0.0479	0.2132	0.22	0.6146***	0.2178	2.82
Multifarminc	0.6380***	0.2420	2.64	0.3613	0.2420	1.49
Flexpayinc	0.0757	0.2190	0.35	0.6171***	0.2317	2.66
Websalesinc	0.2657	0.2281	1.17	0.4914**	0.2359	2.08
/cut1	-2.1030	0.8670		0.8144	0.8371	
/cut2	0.1182	0.8584		3.2776	0.8554	
Pseudo R ² : 0.0976			Pseudo R ² : 0.1231			
Log likelihood = -354.89			Log likelihood = -332.31			
LR Chi ² : 76.73			LR Chi ² : 93.31			
N = 416			N = 411			

logScale = f(..)	Coef.	Std. Err.	t
East	0.3142**	0.1379	2.28
MidWest	0.1411	0.1314	1.07
South	-0.0079	0.1486	-0.05
Urban	0.2138**	0.1027	2.08
SHturnover	-0.0413	0.0550	-0.75
CertOrg	0.4609***	0.1162	3.97
CSAsaleshr	0.0074***	0.0017	4.29
Localdemand	0.0161	0.0568	0.28
CSAAge	0.0962***	0.0127	7.59
Procprodinc	0.2708**	0.1128	2.40
Seasonxinc	-0.0155	0.1071	-0.15
Multifarminc	0.1825	0.1136	1.61
Flexpayinc	0.2085*	0.1087	1.92
Websalesinc	0.6276***	0.1078	5.82
Constant	2.4100***	0.4144	5.81

***, ** and * denote the 1%, 5% and 10% significance levels.

R²: 0.3258; adj-R²: 0.3021

F: 13.71

N = 412

CONCLUSIONS AND IMPLICATIONS

Relatively minor differences were observed for projected **CSA growth factors** across regions. Newer CSAs tended to be more bullish, as did those involved in multi-farm operations.

Newer trends toward season extension, flexible payment terms, and web-based sales helped positively explain variations in stated **CSA profitability**, while availability of multi-farm partnerships were positively associated with expected CSA sales growth over the next two years.

CSA scale (measured by shareholders) is determined by many factors. Urban-based CSAs tended to be larger as did those that were certified organic, had a larger share of the farm sales coming from the CSA, and had been around for a longer period of time. Inclusion of processed products, offering flexible payment terms, and web sales also attended larger CSAs.

CSAs are increasingly challenging businesses to manage. The analysis highlights some of the relationships between emerging management choices and expected CSA growth and profitability.

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Contact tim.woods@uky.edu for more information.