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# Agricultural Cooperatives and Contract Price Competitiveness

Ani L. Katchova

Contact:
Ani L. Katchova
University of Kentucky
Department of Agricultural Economics
320 Barnhart Building
Lexington, KY 40546-0276
Tel: 859-257-7269
E-mail: akatchova@uky.edu

Assistant Professor, University of Kentucky

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*Ani L. Katchova*

## Abstract

This study examines the price competitiveness of marketing and production contracts depending on whether contracts are with cooperatives or investor-owned firms. A propensity score matching method is used to compare prices using contract data from a national farm-level survey. The results show that prices of agricultural contracts with cooperatives are not significantly different from those with investor-owned firms, which indicates that cooperatives are adhering to recommended business practices of offering market prices to their members.

*Key words*: agricultural prices, cooperatives, marketing contracts, production contracts, propensity score matching.
JEL codes: Q13.

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## Agricultural Cooperatives and Contract Price Competitiveness

Agricultural cooperatives play a major role in marketing agricultural commodities. There were 2,675 U.S. farmer-owned cooperatives in 2006, 48% or 1,280 of which primarily marketed farm products (USDA, 2007). These marketing cooperatives are further classified into 13 commodities or commodity groups that they market. Although farmers' decisions to contract with cooperatives are more complex because of the necessary membership capital requirements, cooperatives offer marketing contracts which have similar, if not identical, provisions to contracts offered by investor-owned firms (Zeuli and King, 2004).

The cooperative principle states that commodities will be bought and sold at market prices, and members will receive benefits in the form of patronage refunds. The presence of a cooperative in the marketplace is often hypothesized to increase the equilibrium price paid for commodities. As a result, this price effect (often called the "invisible" benefit of a cooperative) is hypothesized to impact the overall market price and not result in a difference between the cooperative and investor-owned firm's prices. In fact, it would be plausible to speculate that cooperatives might offer lower prices since their members presumably anticipate patronage refunds and make decisions based on their perceived net price after the refund. Therefore, the main question explored in this study is whether contracts with cooperatives have similar prices when compared to contracts offered by investor-owned firms.

Several agricultural economics studies have examined various aspects of agricultural cooperatives. Some studies concentrated on analyzing the characteristics of cooperatives, such as their business arrangements, productivity growth, return on equity, financial constraints, efficiency; and bargaining ability (Ariyaratne, Featherstone, and Langemeier, 2006; Boyd et al., 2007; Chaddad, Cook, and Heckelei, 2005; Fulton, Popp, and Gray, 1998; Hueth and Marcoul, 2003; Leathers, 2006). Others have addressed how the organizational form of the processor (a cooperative or an investor-owned firm) has influenced farmers' contracting decisions or farmers' trust in processors (Zeuli and King, 2004; James and Sykuta, 2006). Another set of studies examining agricultural contracts have explained the factors affecting the adoption of various types of contracts (Katchova and Miranda, 2004; Davis and Gillespie, 2007), with an overview of contracting studies provided by MacDonald et al. (2004) and Ahearn, Korb, and Banker (2005). Overall, these previous studies have addressed various characteristics of farmers, contracts, or contractors, but have not made the link between the organizational form of the contractors (cooperative or investor-owned firm) and contract structure and performance.

The objective of this study is to examine the theoretical claim that farmers who are members of cooperatives receive similar prices for their commodities as do farmers who market with investor-owned firms. In other words, we empirically test for significant price differences for agricultural contracts based on the organizational form of the contractor. The propensity score matching method is used to compare contract prices, after first matching contracts on their propensity scores to ensure comparisons of contracts with similar characteristics. Using a farm-level, national representative survey, the empirical models are estimated with contract data for several crop and livestock

commodities. The main contribution of this study is using an innovative methodology of propensity score matching to evaluate price differences for contracts offered by different types of contractors. The results reveal important insights into whether cooperatives adhere to recommended business practices of offering market prices for the commodities produced by farmer members.

**Propensity Score Methodology**

This study applies the propensity score matching method, originally developed by Rosenbaum and Rubin (1983). The method is designed to estimate the average effects of a program or a treatment between treated and control units. Unlike experimental studies, the assignment of units into treated and control groups is not random for observational studies. Therefore, the estimation of the effect of treatment may be biased due to the existence of confounding factors. The propensity score matching method reduces the bias in comparisons between the treated and control groups by comparing outcomes for treated and control units that are as similar as possible. The matching is based on a single-index variable, called a propensity score, summarizing a multi-dimensional vector of characteristics for the treated and control units. After the propensity score is calculated, the units from the treated and control groups are matched based on their propensity score to compare the differences in outcomes between the two groups.

In this study, the treated group represents agricultural contracts with cooperatives and the control group represents contracts with investor-owned firms. The goal is to estimate the difference between prices received for agricultural contracts with cooperatives and with investor-owned firms. The comparison techniques account for the effects of exogenous factors that influence the assignment of contracts into one of these two groups. There are $n$ contracts, indexed by $i = 1 \ldots n$, for each commodity in the data. The treatment is a binary variable, with $D$=1 for contracts with cooperatives, and $D$=0 for contracts with investor-owned firms. For each agricultural contract for a particular commodity (representing unit $i$), $Y_i^T$ is the price received when the contract is with a cooperative (treated group), and $Y_i^C$ is the price received when the contractor is an investor-owned firm (control group). Each contract also has a vector of characteristics or covariates $X_i$. These characteristics represent variables that are likely to influence the price of each contract, such as a geographic location and farm and contract characteristics.

The price outcome $Y$ and treatment D can be formally expressed as:

$$Y_i = \begin{cases} Y_i^C \text{ if } D=0, \\ Y_i^T \text{ if } D=1. \end{cases} \quad (1)$$

The propensity score is the conditional probability of receiving treatment given pre-treatment characteristics. In other words, the propensity score is the probability of contracting with a cooperative given contract, farm, and location characteristics:

$$p(X) = \Pr\left(D = 1 \mid X\right) = E(D \mid X). \tag{2}$$

After the propensity score is calculated, it is used to match treated and control units (contracts with cooperatives or investor-owned firms) in order to estimate the difference in the price outcomes, also known as the Average Treatment Effect on the Treated (ATT):

$$\begin{aligned} ATT &= E\left(Y_i^T - Y_i^C \mid D = 1\right) = E\left(E\left(Y_i^T - Y_i^C \mid D = 1, p(X_i)\right)\right) \\ &= E\left(E\left(Y_i^T \mid D = 1, p(X_i)\right) - E\left(Y_i^C \mid D = 0, p(X_i)\right) \mid D_i = 1\right). \end{aligned} \tag{3}$$

In other words, the ATT is the difference between the prices for contracts with cooperatives and the prices they would have received had they been with investor-owned firms. Because the second term is a counterfactual situation that is not observable, it needs to be estimated. The treated and control units are matched based on their propensity scores before the outcomes are compared. Various matching methods have been suggested. In this study, the kernel matching and nearest neighbor (NN) matching methods are used. The two matching methods offer a tradeoff between quantity and quality of the matches, and neither of them is a priori superior to the other (Becker and Ichino, 2002).

Using kernel matching, each contract with a cooperative is matched with a weighted average of all contracts with investor-owned firms with weights that are inversely proportional to the distance between propensity scores for these contracts. The difference between the prices for contracts with cooperatives or investor-owned firms, $ATT^K$, is calculated as follows:

$$ATT^K = \frac{1}{n^T} \sum_{i \in T} \left[ Y_i^T - \frac{\sum_{j \in C} Y_j^C G\left(\frac{p_j - p_i}{h_n}\right)}{\sum_{k \in C} G\left(\frac{p_k - p_i}{h_n}\right)} \right], \tag{4}$$

where $n^T$ is the number of contracts with cooperatives, $p_i$ is the propensity score of contract $i$, $G(\cdot)$ is a kernel function, and $h_n$ is a bandwidth parameter.

Using NN matching, each treated contract $i$ is matched with one control contract $j$ that has the closest propensity score. The NN matching set of control units is given by:

$$C(i) = \min_j \left\| p_i - p_j \right\|. \tag{5}$$

The method is applied with replacement, meaning that a particular control unit can be a best match for several treatment units. After matching contracts with cooperatives and investor-owned firms, the difference between contract prices for these two groups $ATT^{NN}$, is calculated as follows:

$$ATT^{NN} = \frac{1}{n^T}\sum_{i \in T}\left(Y_i^T - \sum_{j \in C(i)} w_{ij} Y_j^C\right), \quad (6)$$

where the weights $w_{ij} = 1$ if $j \in C(i)$ and $w_{ij} = 0$ otherwise.

The common support restriction is used to improve the quality of the matches. With common support, control contracts are included only if their propensity scores fall within the range of propensity scores for the treated contracts. Analyses with and without common support are used to test for the sensitivity of results.

Price comparisons for treated and control contracts are first analyzed using simple t-tests without controlling for exogenous factors. Then propensity score matching models are estimated, after matching contracts on their propensity scores.

## Data

The analysis is based on data from the Agricultural Resource Management Survey (ARMS) which is conducted annually by the U.S. Department of Agriculture. Commodities are typically sold using agricultural contracts or cash sales, but the information provided for cash sales in the data set is limited. The ARMS data include detailed information on marketing and production contracts used by farmers to sell their crop and livestock commodities. The survey includes questions about the price, quantity, and value for each commodity sold with marketing or production contracts. The main version of the survey also includes more detailed questions about contractor characteristics and contract characteristics (quantity and pricing mechanisms, contract length, and other items). The data does not include any information about possible differences in the structure of contracts offered by cooperatives or investor-owned firms. Contract prices also reflect premiums/discounts for quality, but they do not reflect possible patronage refunds, which may underestimate prices received by cooperative members. The analysis is based on data for 2003-2005 because the survey question about the organization form of the contractors was asked only in these years. The ARMS data also include survey weights indicating the number of farms in the U.S. that each farm in the survey sample represents. All estimations are weighted so that the results are representative of all marketing and production contracts used by U.S. producers. Commodities that had at least 200 contracts in the data set over the three years were included in the analysis. Specifically, this study includes marketing contracts for corn for grain, soybeans, winter wheat, upland cotton, milk, and production contracts for broilers. Marketing contracts typically set a price (or pricing mechanism) and an outlet for the commodity before harvest or before the commodity is ready to be marketed. Production contracts specify the production inputs supplied by the contractor, the quantity and quality of a particular commodity, and the type of compensation to the grower for the provided services.

Descriptive statistics for treated and control contracts are shown in Table 1.The number of contracts for each commodity, the number of "treated" contracts with cooperatives, the number of "control" contracts with investor-owned firms, and the

proportion of contracts with cooperatives are listed. Contracting with cooperatives differs based on the commodities farmers produce. Farmer contracting with cooperatives is most prevalent for milk contracts, with about 79% of the milk contracts being with cooperatives. A quarter to a half of the contracts for corn, soybeans, wheat, and cotton are with cooperatives. Only 6% of the broiler contracts are with cooperatives.

Table 1. Descriptive Statistics for Agricultural Contracts

| Commodity | Type of Contract | Number of Represented Contracts[a] | Number of Contracts | Number of Treated Contracts[b] | Number of Control Contracts[c] | Percent Contracts with Cooperatives |
|---|---|---|---|---|---|---|
| Corn | Marketing | 238,554 | 1,169 | 454 | 715 | 50% |
| Soybeans | Marketing | 184,959 | 1,177 | 417 | 760 | 44% |
| Wheat | Marketing | 28,646 | 287 | 89 | 198 | 34% |
| Cotton | Marketing | 25,388 | 362 | 120 | 242 | 27% |
| Milk | Marketing | 76,770 | 1,232 | 967 | 265 | 79% |
| Broilers | Production | 46,639 | 1,270 | 110 | 1,160 | 6% |

Notes: [a] The ARMS data include survey weights to make contracts in the sample representative of all agricultural contracts in the U.S.
[b] Treated contracts are contracts with cooperatives.
[c] Control contracts are contracts with investor-owned firms.

Price comparisons for contracts are shown in Table 2. For each of the commodities, the average price for all contracts, the average prices for the treated and control groups of contracts, the price differences between the two groups, the price differences expressed as a percent of the average price for all contracts, and t-tests for the significance of these price differences are listed. The simple t-tests show that most commodities have 1-4% price differences depending on the organizational form of the contractors and these differences do not turn out to be significant. Significant differences are found for cotton contracts which have prices that are 12% lower with cooperatives in comparison to those with investor-owned firms. Even these simple t-tests provide evidence that agricultural contract prices for most commodities do not differ based on the organizational structure of the processors.

Table 2. Comparing Contract Prices Using T-tests

| Commodity | Unit | Average Price ($ per unit) | Average Price for Treated Contracts[a] | Average Price for Control Contracts[b] | Price Differences | Percent Price Differences[c] | t-statistics |
|---|---|---|---|---|---|---|---|
| Corn | Bushel | 2.46 | 2.47 | 2.45 | -0.02 | -1% | -0.42 |
| Soybeans | Bushel | 6.46 | 6.40 | 6.54 | 0.15 | 2% | 1.60 |
| Wheat | Bushel | 3.44 | 3.49 | 3.34 | -0.15 | -4% | -1.69 |
| Cotton | Pound | 0.54 | 0.52 | 0.58 | 0.07 | 12% | 3.34 |
| Milk | Cwt | 14.55 | 14.34 | 14.61 | 0.27 | 2% | 0.92 |
| Broilers | Head | 0.26 | 0.26 | 0.26 | 0.00 | -1% | -0.15 |

Notes: [a] Treated contracts are contracts with cooperatives.
[b] Control contracts are contracts with investor-owned firms.
[c] Percent price differences are price differences between the treated and control groups as a percent of the average prices for each commodity.

However, the results from the simple t-tests may be biased because the assignment of contracts into the treated group) and the control group is not random. Confounding factors, such as the geographic location and farm and contract characteristics, affect both the farmer's propensity for choosing cooperatives and contract prices, and need to be incorporated in the analysis before contract prices are compared.

**Propensity Score Matching Results**

The propensity score matching methodology is a two-step estimation. In the first step, a probit model is estimated for the farmer's propensity to be with a cooperative depending on contract and farm characteristics. The propensity scores, which are the predicted probabilities from the probit model, are used to match each treated contract to one or more control contracts. Two matching techniques are used: kernel matching and NN matching. In the second step, the ATT price differences between treated and control contracts are estimated. T-tests are used to conclude if these differences are statistically significant.

In the probit model for the farmer's propensity to be with a cooperative, several factors are hypothesized to affect the farmer's probability of having a particular type of contractor and/or contract prices. The geographic region where the farm is located and the year the commodity is marketed may determine the availability of other types of contractors and the prices received for the commodities. Five regions include the South, chosen as the reference dummy variable, the Midwest, the Plains, the West, and the Atlantic region. Indicator variables for different years are also included in the models. Contract characteristics such as the quantity marketed with each contract, whether the contract specified premiums tied to commodity attributes, and contract length may affect access to markets and contract prices. Finally, farm characteristics such as farm size and farmer age and education are included in the models. The overall results and conclusions turn out to be robust with respect to several alternative specifications of the propensity score models.

The results from the propensity score models are presented in Table3. For each of the six commodities, the dependent variable in the probit model is whether contracts are with cooperatives or investor-owned firms. The independent variables are expected to affect the propensity of a farmer to be with a particular type of a contractor. The probit model results show some important differences between contracts with cooperatives and investor-owned firms. For instance, in comparison to the South, the Midwest and Plains regions are more likely, and the Atlantic region is less likely, to have contracts with cooperatives for corn and soybeans. The Midwest is also more likely to have milk contracts with cooperatives, whereas the Atlantic region is more likely to have broiler contracts with investor-owned firms. Contract characteristics such as contract quantity, premiums tied to commodity attributes, and contract length also affect the type of contractor chosen for some commodities. The predicted probability from the probit model is the propensity score for a particular farmer to be with a cooperative. The models show good ability to correctly predict the outcome, with the percent of correctly predicted values ranging from 68 to 78%.

Table 3. Propensity Score Models for Contracts with Cooperatives versus Investor-Owned Firms

| | Corn | Soybeans | Wheat | Cotton | Milk | Broilers |
|---|---|---|---|---|---|---|
| Contract quantity | -2.4E-06 | -7.1E-06 | -1.4E-07 | 6.4E-08 | 1.6E-06** | 6.2E-08 |
| | -2.E-06 | -5.E-06 | -6.E-06 | -2.E-07 | -6.E-07 | -8.E-08 |
| Contract premiums | 0.159 | 0.210 | -0.155 | 0.268 | 0.282 | 0.174 |
| | (0.199) | (0.204) | (0.397) | (0.281) | (0.166) | (0.205) |
| Contract length | -0.018 | -0.012 | -0.061 | 0.083** | -0.002 | -0.006* |
| | (0.018) | (0.020) | (0.033) | (0.027) | (0.009) | (0.003) |
| Farm assets | 2.1E-08 | 7.5E-08* | 5.4E-09 | -1.1E-08 | -1.4E-08 | 9.0E-08 |
| | -3.E-08 | -4.E-08 | -6.E-08 | -5.E-08 | -9.E-09 | -6.E-08 |
| Operator age | -0.012 | -0.010 | 0.003 | -0.014 | 0.006 | 0.007 |
| | (0.006) | (0.007) | (0.011) | (0.011) | (0.007) | (0.007) |
| Operator education | -0.014 | -0.058 | -0.343* | 0.266 | 0.253** | -0.144 |
| | (0.090) | (0.100) | (0.141) | (0.188) | (0.086) | (0.084) |
| Midwest region | 0.770** | 0.599** | 0.113 | -1.356* | 0.840* | -0.126 |
| | (0.213) | (0.163) | (0.387) | (0.610) | (0.352) | (0.375) |
| Plains region | 0.742** | 1.585** | 0.844* | -0.265 | 0.275 | |
| | (0.254) | (0.234) | (0.408) | (0.411) | (0.429) | |
| West region | 0.878 | | -0.275 | 0.648 | -0.210 | |
| | (0.540) | | (0.434) | (0.375) | (0.300) | |
| Atlantic region | -0.813** | -0.570* | -1.312** | 0.001 | 0.204 | -0.608** |
| | (0.268) | (0.258) | (0.443) | (0.427) | (0.304) | (0.159) |
| Year 2004 | 0.481** | 0.313 | -0.397 | -0.322 | 0.047 | 0.300 |
| | (0.182) | (0.215) | (0.318) | (0.558) | (0.206) | (0.167) |
| Year 2005 | 0.215 | 0.186 | -0.253 | -0.151 | 0.242 | 0.137 |
| | (0.199) | (0.199) | (0.333) | (0.529) | (0.197) | (0.266) |
| Constant | -0.249 | -0.323 | 0.723 | -1.045 | -0.542 | -1.731** |
| | (0.466) | (0.478) | (0.815) | (0.966) | (0.565) | (0.481) |
| Observations | 1169 | 1177 | 287 | 362 | 1232 | 1108 |
| Log likelihood | -760 | -726 | -147 | -174 | -596 | -265 |
| Chi square statistic | 78.9 | 86.4 | 40 | 35 | 40.8 | 37.7 |
| P-value | 7.E-12 | 9.E-14 | 7.E-05 | 5.E-04 | 5.E-05 | 4.E-05 |
| R square | 0.06 | 0.10 | 0.20 | 0.18 | 0.07 | 0.07 |
| Percent correctly predicted | 0.71 | 0.73 | 0.75 | 0.69 | 0.78 | 0.68 |

Note: Standard errors are in parentheses. Single and double asterisks denote significance level of 0.10 and 0.05, respectively.

After calculating their propensity scores, each treated contract with a cooperative is matched to one or more control contracts with investor-owned firms using kernel matching or NN matching. With kernel matching, each contract with a cooperative is matched with a weighted average of all contracts with investor-owned firms, with weights that are inversely proportional to the distance between the propensity scores of the treated and control contracts. With NN matching, each contract with a cooperative is matched with one contract with an investor-owned firm that has the closest propensity score. After establishing a group of control contracts with as similar as possible propensity scores to the treated contracts, the contract prices in the two groups can be statistically compared.

The ATT is calculated as the difference between the contract prices for the treated group and the prices for the control group of contracts but with similar propensity scores of being with cooperatives. The results from the ATT price comparisons using kernel matching and NN matching are presented in Table 4. The table shows the number of all treated contracts, the number of control contracts that are used as matches for the treated contracts, ATT price differences, ATT price differences expressed as a percent of the average prices, and t-statistics for the price comparisons. While kernel matching uses all of the control contracts, NN matching only uses a subset of these contracts that have the closest propensity scores to the treated contracts.

Table 4. ATT Price Differences for Contracts with Cooperatives and Investor-Owned Firms

| Commodity | Matching Method[a] | Number of Treated Contracts[b] | Number of Control Contracts[c] | ATT Price Differences[d] | ATT Percent Price Differences | t-statistic |
|---|---|---|---|---|---|---|
| Corn | Kernel | 454 | 715 | -0.035 | -1.4% | -1.74 |
| | NN | 454 | 285 | -0.028 | -1.1% | -1.09 |
| Soybeans | Kernel | 417 | 760 | -0.072 | -1.1% | -1.13 |
| | NN | 417 | 260 | -0.021 | -0.3% | -0.29 |
| Wheat | Kernel | 89 | 198 | -0.028 | -0.8% | -0.47 |
| | NN | 89 | 49 | -0.133 | -3.9% | -1.41 |
| Cotton | Kernel | 120 | 242 | 0.012 | 2.2% | 1.27 |
| | NN | 120 | 81 | 0.018 | 3.4% | 1.31 |
| Milk | Kernel | 967 | 265 | -0.007 | 0.0% | -0.04 |
| | NN | 967 | 225 | 0.091 | 0.6% | 0.55 |
| Broilers | Kernel | 110 | 1160 | 0.002 | 0.8% | 0.35 |
| | NN | 110 | 257 | 0.001 | 0.4% | 0.11 |

Notes: [a] Matching methods include kernel matching and NN matching.
[b] Number of contracts with cooperatives
[c] Number of contracts with investor-owned firms that are used as matches for the cooperative contracts
[d] ATT price differences for contracts with cooperatives versus investor-owned firms, after matching contracts on their propensity scores.

The estimated ATT percent price differences for most commodities are relatively small in magnitude (less than 4% of the average commodity price) and not significant. The only exception is corn contracts with cooperatives, which receive 1.4% lower prices than corn contracts with investor-owned firms. This difference is only marginally significant at the 10% significance level and is only significant using the kernel matching method. Therefore, in the case of corn contracts, contracting with cooperatives provides marginally lower prices. Overall, these findings provide evidence that farmers do not receive different prices for agricultural contracts issued by cooperatives relative to similar contracts issued by investor-owned firms.

Because the results in this study show a lack of significant differences, the statistical power of the test is calculated. The power of a test shows the probability that a test will correctly identify significant differences when such significant differences exist. The probabilities are calculated given the sample sizes and price variability for different commodities and several percent price differences as effect sizes. The probability to correctly detect significant price differences of 3% is greater than 0.9 for corn, soybeans, and milk. To detect significant price differences of 5% is greater than 0.9 for cotton and

broilers and greater than 0.8 for wheat. In other words, the tests here show sufficient power to detect significant price differences above 3-5% depending on the sample sizes of different commodities.

To check the robustness of the results, sensitivity analyses are conducted. Similar overall results are found for different comparison methods (simple t-tests and propensity score matching analysis), matching techniques (kernel matching and NN matching; with and without the common support restriction for the range of propensity scores of treated and control contracts), data censoring (with and without price outliers), and alternative specifications of the propensity score models. Therefore, this study provides strong evidence that the organizational form of contractors is not associated with different prices offered on agricultural contracts.

## Conclusions and Policy Implications

This study examines commodity price differences for agricultural contracts issued by cooperatives and investor-owned firms. In particular, marketing and production contract prices are compared for farmers marketing their commodities with cooperatives versus investor-owned firms. This study addresses the question of whether farmers who are members of cooperatives receive market prices for their commodities as expected according to cooperative principles.

The propensity score matching method is used to estimate price differences in agricultural contracts issued by cooperatives and investor-owned firms. The analysis is conducted for six commodities (corn, soybeans, wheat, cotton, milk, and broilers) using data from the USDA's Agricultural Resource Management Survey. The propensity score results show that the probability for marketing with cooperatives or investor-owned firms depends on the geographic region, year, and contract and farm characteristics. The ATT differences in contract prices indicate that the organizational form of the contractor generally does not lead to significant differences in contract prices for most commodities.

These findings present interesting insights into the organizational form of contractors and contract price comparisons. Farmers frequently contract with cooperatives, with about one to three quarters of all contracts being with cooperatives instead of investor-owned firms. The fact that prices received on contracts do not seem to be different based on the type of contractor provides indirect evidence of a cooperative benefit since the members do not have price penalties in contracting with cooperatives, but retain the upside potential of a patronage payment. The ARMS data used in this study do not reflect patronage refunds that are distributed by the cooperatives at year-end, and therefore, the results showing similar pricing do not necessarily imply that farmers are not benefitting from participating in cooperatives. The findings also provide evidence that cooperatives are adhering to recommended business practices of offering market prices to their members.

The structure and performance of agricultural contracts are influenced by the competition among processors to offer farmers either more appealing terms or contract prices (Sykuta and Cook, 2001). In comparison to most other industries, agricultural contacts are offered by two distinct types of organizations (cooperatives and investor

owned firms) providing similar contracting services. Thus, agricultural cooperatives may continue to have a special niche in a more consolidated and coordinated agricultural supply chain.

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