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# **Factors Influencing Contract Use and Contract Terms in Organic Markets**

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## Extent of Contracting in U.S. Agriculture

- Increasing with consolidation & concentration
- Greater for value-added products, like organics



MacDonald, J.M. and P. Korb. 2006. "Agricultural Contracting Update: Contracts in 2003." USDA, Economic Information Bulletin No. 9. <http://www.ers.usda.gov/publications/ib9/>.

Percentage of organic products purchased using various procurement methods by organic handlers in 2007



Dimitri, C., and L. Oberholzer. 2009. "Marketing U.S. Organic Foods: Recent Trends from Farms to Consumers." USDA, Economic Research Service, Economic Information Bulletin No. 58. <http://www.ers.usda.gov/publications/ib58/>.

## Data: ERS/USDA Survey Procurement & Contracting by Organic Handlers 2004 & 2007

<http://www.ers.usda.gov/Data/OrganicHandlers/>

- Data summarizing results of national surveys of organic manufacturers, processors, and distributors are published (% of respondents using written contracts, informal contracts, and spot transactions and % of contracts that are multi-year and that use various pricing mechanisms).
- Procurement data include information on 1,038 facilities in 2004 and 1,013 facilities in 2007, and contract data include information from 686 facilities in 2004 and 620 facilities in 2007 that use contracts.

## Factor Analysis: Limits error in measuring variables



## Regression Analysis

- Tobit appropriate if few zero-value observations
- Truncated OLS appropriate if there are several

## Tobit & Truncated OLS Regression Results

	Two-Limit Tobit Regression Results			Truncated Ordinary Least Squares Regression Results				
	Formal Contract	Informal Contract	Spot Market	Multi-Year Contract	Flat Price	Cost-Plus	Premium Price	Fixed Price Plus
Manufacturer	1.4011 (2.6857)	2.4771 (2.8157)	1.2403 (2.6126)	-6.1159 (5.7651)	9.4463** (4.1719)	-7.7614** (3.0839)	-5.2280 (3.8480)	-1.3131 (4.4381)
Yr-round availability	0.0550 (0.0855)	-0.1791** (0.0897)	-0.1520* (0.0832)	0.5148*** (0.1741)	-0.1697 (0.1478)	-0.2283 (0.1488)	-0.0133 (0.1551)	-0.1328 (0.1332)
Human K Investment	6.1469*** (1.5850)	-0.9355 (1.6600)	6.6775*** (1.5421)	-1.9506 (5.2750)	3.2514 (3.2521)	-0.6779 (3.8565)	-0.8859 (4.4619)	3.2083 (3.3033)
Provides \$ for transition to organic	-0.0918 (0.1055)	0.0885 (0.1107)	-0.1098 (0.1026)	0.3115 (0.2606)	-0.1576 (0.1868)	-0.3297 (0.2250)	-0.0390 (0.1973)	0.5022 (0.3377)
Locally sourced	-3.4707** (1.5728)	3.4848** (1.6480)	-0.8993 (1.5286)	3.2871 (3.4769)	-4.8881* (2.6818)	-0.0265 (1.9527)	1.3477 (2.5659)	4.1416 (2.9018)
Require Certificates	0.2209 (0.2811)	0.4258 (0.2947)	-0.5057* (0.2730)	0.5538 (0.6179)	-0.8820* (0.4528)	0.6364 (0.5328)	0.1605 (0.3814)	0.9065*** (0.3539)
Package/Merch Specs	-0.0965 (0.0755)	0.1218 (0.0789)	-0.0453 (0.0734)	0.4084** (0.1988)	0.1474 (0.1412)	0.5812*** (0.2223)	0.1124 (0.1712)	-0.1236 (0.1554)
Test to verify claims	0.1813** (0.0860)	0.1200 (0.0902)	0.0005 (0.0837)	-0.4506** (0.1837)	-0.0143 (0.1412)	-0.8819*** (0.1946)	-0.0054 (0.1540)	-0.2195 (0.1244)
3 <sup>rd</sup> party certification	0.0060 (0.1051)	0.0743 (0.1102)	0.0637 (0.1025)	-0.0995 (0.3064)	0.0157 (0.1798)	-0.5399** (0.2478)	0.2259 (0.1771)	-0.1973 (0.1208)
Uniform standards	0.0775 (0.1054)	-0.2104* (0.1103)	0.0468 (0.1027)	-0.5924** (0.2705)	-0.3796** (0.1812)	0.7988*** (0.2060)	0.1091 (0.1953)	0.1106 (0.1302)
Length of relationship	-0.0019 (0.0976)	0.1207 (0.1023)	-0.2627*** (0.0948)	0.2612 (0.2180)	-0.1479 (0.1748)	0.3726** (0.1644)	-0.4480** (0.1859)	-0.4098** (0.1756)
Reputation for quality	-0.2057** (0.0980)	0.0598 (0.1027)	0.1594* (0.0951)	-0.0769 (0.2037)	0.2507 (0.1624)	-0.2250 (0.2091)	-0.0643 (0.2214)	0.2941 (0.2285)
Coffee & tea	28.7759*** (9.3428)	-23.7471** (9.7918)	44.1036*** (9.1125)	-19.7479 (22.7773)	-34.1227* (17.9961)	-7.7537 (13.1783)	-33.1549* (18.7907)	15.4430 (12.6186)
Dairy	-2.9912 (9.3861)	-0.3185 (9.8395)	-2.4772 (9.1086)	12.1932 (21.4209)	-13.2163 (17.4017)	-19.1110* (10.3214)	-53.6037*** (16.7634)	40.7888*** (11.9551)
Fruits & nuts	17.7632** (7.2871)	-2.9684 (7.6368)	12.0809* (7.0761)	4.1911 (19.2066)	-13.6505 (14.4346)	-14.2669*** (8.7649)	-28.9509*** (12.6005)	-0.0386 (8.5615)
Greenhouse & nursery	7.7795 (7.7371)	3.4491 (10.088)	13.0512* (7.5165)	-1.7824 (18.9975)	-10.4733 (14.8907)	-25.3789 (8.5346)	-22.3434* (12.8969)	-6.9042 (6.8193)
Oilseeds, grains, legumes, & feed	12.7870* (7.0642)	0.4723 (7.4030)	16.6704** (6.8594)	-9.9976 (19.0875)	1.7917 (13.4396)	9.1435 (9.2452)	-32.5281*** (11.6106)	-3.8643 (6.5538)
Poultry & eggs	2.8768 (8.0974)	-1.2321 (7.8697)	13.4059* (7.6697)	48.4537*** (19.0162)	-1.3708 (14.3986)	4.1553 (11.0521)	-15.7868 (10.9506)	-
Vegetables	20.1012*** (7.4367)	-7.5758 (7.7948)	14.4022** (7.2195)	12.2243 (20.9422)	-0.3999 (14.4941)	-8.2665 (10.5680)	-29.3615** (13.5302)	0.1830 (7.1811)
Year 2007	-14.9403*** (5.6530)	0.6668 (5.9253)	-1.8290 (5.4933)	44.4465*** (13.0048)	-0.5562 (9.1989)	23.6517** (10.7683)	-10.3753 (12.3792)	-
Sigma	13.9023 (0.7734)	14.5705 (0.8154)	13.4891 (0.7617)	12.6100*** (1.5384)	16.0782*** (1.2193)	5.3506*** (0.7548)	6.3303*** (0.9124)	5.7248*** (0.7617)
Observations	164	163	161	66	115	33	35	37
Censored	1 at 0%, 1 at 100%	1 at 0%, 1 at 100%	3 at 0%, 2 at 100%	60 at 0%, 1 at 100%	12 at 0%, 94 at 0%	94 at 0%	92 at 0%	31 at 0%
R <sup>2</sup>	0.0424	0.0330	0.0521	-	-	-	-	-

Note: Asterisk (\*), double asterisk (\*\*), and triple asterisk (\*\*\*) denote significance at 10%, 5%, and 1%, respectively.

## Summarizing Regression Results

- Low explanatory power of regressions, as indicated by low R<sup>2</sup>, is not surprising given data are reported as the average % of respondents across commodities. (Note: no R<sup>2</sup> measure is available for truncated OLS)

### Investment and Supplier Proximity Effects

- Investing in supplier human capital increases use of formal contracts 6%. Contracts are believed to be used to ensure a return on such investments. While such investments are also related to spot market use here, significant relationship and reputation effects appear to safeguard such investments.

- Financially assisting suppliers' transition to organic not significantly associated with any procurement method.

- Formal contract are used 3% less by those sourcing organic products locally, as tabs can be kept on nearby suppliers under more informal arrangements.

- Greater contract procurement of fruits, vegetables, and nuts relative to livestock may reflect temporal issues due to perishability and the substantial sunk costs of establishing groves and vineyards and delayed returns from waiting for plants to mature to harvestable stage.

### Pricing Provisions in Organic Procurement Contracts

- Relative to other handlers, manufacturers use more flat-price and less cost-plus contracts with their suppliers.

- Relative to livestock, most commodity groups have a lower percentage of organic contracts with premiums over conventional commodity prices. Commodity group specific effects are significantly associated with other pricing mechanisms, as well.

### Duration of Organic Procurement Contracts

- Only poultry and egg procurement utilizes multi-year contracts significantly more than livestock procurement.

- Multi-year contracts are used significantly more by buyers requiring year-around availability and those with packaging and merchandising specifications and are needed significantly less when uniform product standards are used and product claims are tested.

### Changes with the Passage of Time (Learning Effects?)

- Use of formal contracts decreased, while multi-year and cost-plus contracts increased in 2007 relative to 2004.