Competition in Local Food Markets

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1 Introduction

The agricultural landscape of the second half of the 20th century can be characterized by an increase in average farm size and a corresponding decrease in the total number of farming operations. This effect is partially explained by urban and suburban expansion that led to heightened property prices and thus increased farm costs. Roth (1999) additionally documented changing agricultural trends resulting from improved transportation routes that allowed food retailers to expand while centralizing their operations. As a consequence, small farms that could no longer compete on such a large scale transitioned to direct marketing. Strict regulations and standards also prevented small farms from supplying traditional outlets and Payne (2002) pointed out that for many farmers direct marketing became the only way for them to reach the consumer market. In this paper we analyze the competitive behavior of direct marketing farms participating in a variety of direct-marketing operations using a national dataset of local foods producers. Using this data we identify entry thresholds for new entrants into direct marketing ventures, providing a window into the competitive structure of direct marketing.

Direct marketing entails bypassing intermediaries in the sale of farm products and instead transacting directly with the consumer, allowing smaller operations to augment their income as they no longer go through wholesale or intermediary markets. For small farms hoping to diversify there are a variety of direct marketing options available. The most common is arguably the farmer's market, which most closely resembles a traditional grocery establishment. Usually operated on a weekly basis, it consists of one location where multiple farmers can sell their products directly to consumers, allowing farmers to keep a larger portion of their dollars while saving on certain operational costs. These differ from farm stands, which are operated all week but potentially have lower daily traffic. Another alternative is Community Supported Agriculture (CSA), where individuals purchase shares of a local farm's production at the beginning of a growing season in exchange for produce realized later in the season. This risk-sharing model is intended to benefit both farmers, who receive an up-front influx of capital, and consumers, who receive local produce that may be difficult to obtain through traditional retailing markets. Another direct marketing innovation is agritourism, and farmers that establish a U-Pick operation are able to reduce harvesting costs while also allowing for additional on-farm sales of value-added products.

Local and direct-marketed food has become increasingly popular with consumers. In a national survey Bond (2006) found that 30% of consumers preferred to purchase their produce from a direct marketing operation and that 75% had patronized a farmer's market in the previous year. Additionally, the number of direct marketing farms in the U.S. increased from 116,773 in 2002 to 144,530 in 2012 and direct to consumer food sales grew 300% from 1992 to 2007 ($404 million to $1.2 billion). A likely explanation for the rapid growth in local, direct-marketing farms is a heightened recognition of the wide variety of benefits presumed to accrue to both farmers, through the creation of new markets for products, and consumers, who may place value on local foods. However, as new operations are established farmers must become increasingly aware of potential losses in margins.

A variety of public policies that favor local produce consumption have reinforced this direct-marketing expansion. The Farmer's Market Nutrition Program, established in 1992, allows Women, Infant's and Children (WIC) funds to be used at farmer's markets, and currently over 25% of markets accept Supplemental Nutrition Assistance Program (SNAP) benefits (USDA, 2014). More recently, the USDA's Healthy Incentives Pilot financially rewarded SNAP households that purchased fruits and vegetables (Black, 2010). Non-profit organizations are also developing programs that incentivize local food consumption by distributing grant funds to recipients of public assistance that shop at farmer's markets, with the dual goal of supporting both low-income citizens and small farmers (Black, 2010). As the local foods industry matures and demand continues to increase, it is important for farmers to understand the market structure they face.

In perfectly competitive markets, firms will enter until zero profits are realized. Thus an ideal measure of competitiveness would model how quickly price-cost margins decrease as new firms enter a market. However, cost data is largely unavailable, making a direct measure of price-cost margins infeasible, and in a static framework it is difficult to distinguish between incumbents and new entrants. Breshnahan and Reiss (1987, 1990, 1991) developed an alternative approach that estimates a firm's profit function by linking entry decisions to market size. Specifically, if a single firm has monopoly power then the minimum population size, S_1, required to support one firm can be relatively small. Consequently, progressively larger population increases are necessary to sustain subsequent firms as new competition reduces overly-large margins. Conversely, if a market is competitive then the additional population

required to support a new firm should increase proportionately to the number of firms entering a market. We apply this framework to the local foods market and find that the market for most direct-marketing establishments becomes competitive upon entry of the 3rd operation.

2 Competitive behavior of direct marketing farms

Surveys of direct marketing farmers are divided on the competitive behavior of producers. For instance, in a detailed survey farmer's market vendors stated that they depended on revenue from their sales for their income (Lyson et al., 1995). However, the majority of these vendors also participated in other markets or multiple operations, and Logozar and Schmit (2009) found that the average farmer's market vendor attended two markets. This emphasis on diversification suggests that farmers direct-marketing their produce may not have much market power. Additionally, farmers often expressed non-economic reasons as the impetus for participating in direct marketing (Lyson et al., 1995; Griffin and Frongillo, 2003), which could potentially lead to a reduced emphasis on setting profit-maximizing prices. Hunt (2007) found that 62% of vendors felt relationships were the most important reason to participate in a farmer's market, relative to 36% for profit, which is not in line with the classical price-setting monopolist.

However, not all studies described direct-marketers as selfless producers. Farmer's market retailers surveyed in Logozar and Schmit (2009) stated that their primary reason for participation was to receive retail rate for their products, with social motivations a secondary concern. While the authors also suggested that vendors set prices based on their input costs plus a certain mark-up, rather than base them on other producers, Griffin and Frongillo (2003) found that farmers in the same market tried to set prices together in order to maximize profits. Vendors also stated that younger, newer farmers were those most concerned with setting profitable prices, which has significant implications as newer operations continue to open. This collusion could also be institutional as Rimal et al. (2010) found that vendors preferred to participate in markets with uniform prices and restricted entry in order to reduce potential competition. Additionally, Govindasamy et al. (1998) found that 63% of consumers stated they chose their market based on product quality and freshness, compared to 20% for convenience and 16% for price, while in a separate survey price was ranked as one of the least important reasons for consumers to shop at a farmer's market (Hunt, 2007). Price insensitivity on the part of consumers could potentially facilitate large vendor markups, requiring a large number of firms for a market to be competitive.

The vast majority of studies on direct marketing are survey-based and few attempted to evaluate competition amongst local producers. Horwich (2012) argued that the sociological emphasis of social interactions in the local foods literature had impeded traditional economic analyses of direct marketing operations. He delineated several conditions necessary for a market to be perfectly competitive that are violated by farmer's market vendors, an analysis which can be extended to all direct marketing ventures. For instance, it is possible to characterize barriers to entry faced by an individual vendor attempting to join a farmer's market, but it is unclear whether this holds for any specific direct-marketing operation. Unlike a traditional retail establishment, farmer's markets tend to be temporary and can be situated on vacant lots or in a park. Similarly, there is little to prevent a local farmer from beginning a CSA or Upick enterprise.

In terms of search costs, it is ambiguous whether there are large impediments to consumers comparing various direct-marketing operations. Govindasamy (1998) found that 77% of farmer's market customers visited more than one market and that 54% expected prices to be lower than at other retail locations, while 75% of New Jersey consumers believed direct marketing prices to be lower than those of supermarkets (Govindasamy and Nagaya, 1997). These results suggest that consumers have made clear direct-marketing price comparisons. Additionally, 86% of farmer's market consumers in North Carolina travelled at least 6 miles to shop, while 15% travelled for greater than 20 miles (Andreatta, 2002), and the average PYO customer was willing to travel 20-25 miles (Carpio, 2008) . While consumers are clearly willing to search the associated costs appear nontrivial, and thus it is unclear whether direct marketing operations violate this condition.

Finally there is the condition of homogenous products, the violation of which is predicated on the ability of producers to differentiate themselves. For instance, are farmers able to advertise attributes in such a way as to influence the choice of a specific direct-marketing operation? Do consumers view a distinction between different direct marketing outlets? Govindasamy and Nagya (1997) found that different direct marketing operations attracted specific types of customers, while Carpio (2008) showed how demographics played a large role in a consumer's decision to pick their own produce. Thus it does appear that different *types* of operations are able to differentiate themselves, but this result may not hold within a specific direct-marketing category.

The few quantitative studies that addressed the competitive nature of direct-marketing also demonstrated mixed results. Though produce obtained through direct marketing can be priced lower than at supermarkets (Cooley and Lass, 1998; Farnsworth et al., 1996; Sabih and Baker, 2000), Horwich (2012) found evidence of collusion amongst farmer's market vendors. In the only formal analysis of direct marketing competition known to the authors, Lass et al. (2005) began under the assumption that CSA's had the ability to exercise monopoly power due to their small numbers and then attempted to quantify this effect. Using survey data they found that CSA farmers exerted approximately 2% of their potential market power, suggesting that they set prices in order to cover costs and a fair wage rather than maximize profits. However, one of their assumptions, that consumers exhibit "brand loyalty" to a specific farmer, may not be accurate as their point of comparison is to traditional retailers. Connolly and Klaiber (2014) first applied an entry threshold framework to CSAs in four states and found that the market became competitive upon entry of the third CSA.

3 Model of market power

Our model of market power links structural shifts in market demand to the number of direct marketing operations in a well-defined geographical area. More formally, suppose there are N firms in a county M. Assume there is a minimum level of demand needed for a single firm to break even. As the size of the market, S(Y), grows, this increases not only the monopolist's profit but also a potential entrant's post-entry profits. Thus continued demand growth will encourage entry while reducing incumbents' margins. Eventually, as market demand continues to grow firms' price-cost margins will reach competitive levels. Ideally, to measure the rate at which oligopoly margins decline toward zero we'd observe how quickly price-cost margins in a specific county

(1) $M_N = P_N - MC(q_N)$

fall as N increases.

However, as information on firm costs are difficult to obtain we instead use entry thresholds to draw inferences about margins. Specifically, an entry threshold is the minimum population necessary for a given number of firms to operate. Our analysis begins with a reduced form profit function first introduced by Xiao and Orazem (2011), and applied to local foods by Connolly and Klaiber (2014)

(2) $\pi_{nm} = Pop_m * \beta^{pop} + X_m * \beta - \mu^n I[N_m = n] + \epsilon_m$,

where a firm's revenue depends on total market size as well as a vector $\boldsymbol{X_m}$ of market-level factors such as land price and consumer demographics. μ^n is the effect of the nth firm's entry on a firm's profit, I is an indicator function where I_n=1 if there are n firms and ϵ_m is normally distributed and represents the market-level idiosyncratic portion of profits that is unobserved by the researcher. Denoting S_1 as the population of a market with one firm, a monopolist earns zero profits when

(3) $\pi_1 = S_1 * \beta^{pop} + X * \beta - \mu^1 + \epsilon = 0$

We can then solve for the minimum population needed to sustain one firm as

(4) $S_1 = \frac{\mu^1 - X*\beta}{\beta^{pop}}$

Similarly, the minimum population required to sustain N firms can be calculated by

(5) $S_N = \frac{\mu^N - X*\beta}{\beta^{pop}}$

It is then possible to derive our scale-free entry threshold ratio $\frac{S_N}{S_1}$, which is the fall in profits per customer between entry of the first firm and the Nth firm. A value of 1 denotes perfect competition as it suggests that the addition of the next firm did not affect the variable profits of the incumbents.

To estimate this series of entry thresholds we need data on demand and the number of firms in a market. In this analysis the probability of observing a market with zero firms is given by

(6) $\Pr(\pi_1 < 0) = 1 - \phi(\overline{\pi_1})$

where we have redefined monopolist profit as $\pi_1 = \overline{\pi_1} + \epsilon$. Note that due to our assumption of a normally distributed error term, $\phi(.)$ is the cumulative normal distribution function. New firms will enter a market when there is an expectation of non-negative profits, and thus the probability of observing $n = 1 \ldots (N-1)$ firms in equilibrium is given by

(7) $\Pr(\pi_n \geq 0 \; and \; \pi_{n+1} < 0) = \phi(\overline{\pi_n}) - \phi(\overline{\pi_{n+1}})$

and the probability of observing $n = N$ firms can be calculated as

(8) $\Pr(\pi_N \geq 0) = \phi(\overline{\pi_N})$

Given this probability framework we then estimate a reduced form profit function using an ordered probit model containing population, demographic, and community attributes given by

(9) $\pi_N = \pi_N(Pop, X, \theta) + \epsilon_N$

where profit is a function of both demand and supply factors. X includes demand values such as consumer income and cost variables such as the value of agricultural land, while Pop represents county population, and $\theta = [\beta_{Pop}, \beta_X, \mu^N]$ are our model parameters. With ordered probit results in hand, we follow Xiao and Orazem (2011) and solve for the minimum population required to maintain N firms as

(10) $$S_N = \frac{\widehat{\mu_N} I(n=N) - \widehat{\beta}\bar{X}}{\widehat{\beta}_{pop}}$$

where $\hat{\mu}$ are the ordered probit cut-off values, $\bar{X}$ are averages across markets and $\hat{\beta}_{pop}$ is the estimated coefficient on population. We standardize S_n to the n[th] entrant by calculating $s_n = \frac{S_n}{n}$. Entry thresholds are evaluated as the ratio between the n[th] and (n+1)[st] entrant as $\frac{S_{n+1}}{S_n}$. A value of 1 implies perfect competition as that suggests that the minimum population to support an additional firm increases by the same amount for the (n+1)[st] entrant as for the n[th] entrant, while a ratio greater than 1 implies that the first n firms are exerting market power.

4 Data

Our study makes use of a unique dataset encompassing the United States' local food environment. Data on farms was retrieved from Local Harvest, a national database that connects local producers with consumers. We were able to obtain the geocoded location of every farm, as well as information on whether they participate in a farmer's market, CSA, farm stand or Upick operation. For CSAs we were additionally able to geocode all CSA pickup locations. A map of the local food environment is shown in Figure 1, and displays clear spatial differences as there are relatively fewer establishments in the southwest and western portions of the country, potentially due to significant differences in population. A more discrete breakdown is provided in table 1, which shows a similar distribution as there is large variation in the number of farms, ranging from 4 in the District of Columbia to 1,447 in California.

In total the Local Harvest database contains listings for 21,693 farms in 2015 in the continental U.S. that market directly to consumers. All data is entered by the farms themselves, and the date of the most recent update is known. In order to ensure we are only including active

farms we exclude all entries with update dates prior to 2011, resulting in 14,529 farms. Of these farms, 11,238 participated in either a CSA, Upick, farmer's market or farm stand operation. Activities of the remaining 3,291 establishments included consumer plots, restaurant and specialty market supply and livestock sales. A key requirement of this analysis, which links population size to the number of firms, is that we be able to accurately define competitors in a geographic market. As urban farms could potentially compete with operations in surrounding counties, which would confound our results, we removed all counties that had a population greater than 250,000 from our analysis. Our final sample consists of 2,850 counties and 7,888 farms that operated at least one of our direct-marketing establishments.

Of these, approximately half of all farms participated in at least two outlets. Specifically, in table 2 we see that 38% were involved in two operations, 13% in 3 and that fewer than 3% participated in all four direct-marketing operations. Table 3 provides a more detailed breakdown of the direct marketing decisions made by farmers. Of the 3,635 farms that only participated in one outlet, the most common choice was a farmer's market, followed by farm stands. Conversely, very few farms concentrated solely on Upick operations for their revenue. For the 3,031 farmers that had two direct marketing operations the majority participated in a farmer's market in addition to a farm stand or CSA. This same pattern held for the 1,019 farms that chose 3 direct marketing options, suggesting that the most popular enterprise was a farmer's market, followed by roadside stands. These are most similar to traditional retail operations and are perhaps a more intuitive option for farms transitioning to direct marketing. CSAs are slightly more preferred to UPick operations, potentially due to reduced uncertainty as well as the fact that many types of produce are not easily applicable to agritourism.

Data on county attributes were taken from the U.S. census bureau. Summary statistics can be found in table 4. The average county had 40,890 residents in 2010, with a small population gain of 640 between 2010 and 2014. The average log cost for an acre of land in 2012 was $7.88 and the mean of log household income in 2013 was $10.94. 23% of residents were children while 16% were greater than 65 years of age. 19% had at least a bachelor's degree, 84% were white and only 8% were Hispanic. Turning to the local food environment, the average county had 1.11 CSAs and 1.95 pickup locations, suggesting that most CSAs offered at least one non-farm drop location. There were 1.24 farm stands and only .53 Upick operations per county, with no county having more than 10.

In addition to the local food heterogeneity there is a large population range, spanning 8,000 to 248,000. The detailed breakdown in Figure 2 demonstrates the wide range of geographic markets, with no one size occurring in more than 15% of our counties, suggesting there is ample identification for our model estimates. Turning to table 5 we analyze the relationship between the size of our market and the number of firms. This comparison reveals that the minimum population required to sustain one establishment is dependent on the type of operation, and that there is a clear relationship between market size and the number of entrants. By comparing these values to our ordered probit results we can determine the role of market size on market entry and to what degree other factors play a role.

5 Results

The dependent variables in each of our ordered probits are found in table 6, with the results in table 7. The ordered probit results indicate that the determinants of entry are strikingly similar across all the direct marketing operations. As expected from the model assumptions there is a positive relationship between the size of a county and the number of direct marketers. The change in population over a 4-year period, which reflects farmer expectations of demand growth, has a negative relationship to entry. Interestingly there is also a positive relationship between land prices and the number of direct marketing operations, perhaps reflecting the increased cost pressure that induce small farmers to begin selling directly to consumers. This also demonstrates the importance of both supply and demand factors to a local farmer's profit function. The average income of a county had no relationship with any direct marketing operation. While this was initially surprising it signifies that other consumer demographics may play a larger role in farmer decision-marking, and perhaps the lower prices that farmers are able to charge relative to traditional retailers especially appeals to lower-income consumers. Counties where a majority of the residents were female have more farm stands, corroborating results from Govindasamy and Nayga (1997). For most direct marketing operations there is a negative relationship with counties that had more children or elderly, perhaps because local food consumption requires additional time and effort on the part of consumers. The lack of a negative relationship between children and Upick operations perhaps demonstrates the way agritourism is family-oriented, with activities often targeted to children. There are more establishments in counties that have a higher

percentage of white residents, even after controlling for income, while there is no relationship associated with Hispanic consumers.

We combine the ordered probit results and the summary statistics from table 4 to construct entry thresholds as shown in equation 10, which can be found in table 8. The minimum population needed to sustain a CSA is 14,230, while a CSA pickup required only 1,290, which is intuitive as a single CSA is likely to have multiple pick-up locations. A farm stand requires only 5,370 residents while a single Upick requires 30,370. This most likely reflects that the structure of CSAs and farm stands both allow for extremely small operations while Upick establishments require additional upfront costs and normally occur on larger farms. These results are remarkably different from those in table 5, which reflects the importance of non-population variables in table 7. All direct-marketing operations, other than a CSA pickup location, become competitive upon entry of the third firm. This has significant implications for farms considering direct-marketing options; currently 86% of counties have fewer than 3 CSAs, 95% have fewer than 3 Upick operations and 85% have fewer than 3 farm stands. Looking specifically at counties that meet the minimum population threshold for each operation, between 40% and 50% still have no entrants. These results are shown in table 9.

6 Conclusion

Direct marketing represents a significant revenue stream for small farms in the United States, and is touted as a way for small farms to remain viable. In this vein, there are an increasing number of national public policies geared to supporting small farmers. For instance, the USDA microloan program provides funds to beginning farmers while the "Farmer's Market and Local Food Promotion Program" supports development of direct-marketing activities. Our study used a remarkable dataset of small farms locations across the country to assess the competitive environment of these emerging markets. We found that while the local population was a significant determinant of a farm's entry into a specific market, other supply and demand factors also entered into a firm's profit function. Using these results to develop entry thresholds demonstrated that the market needs of direct marketing firms differed significantly by operation. However, all became competitive upon entry of the third firm. These results suggest the importance of targeted policy interventions as approximately 50% of our counties appear to have reached their levels of equilibrium entry.

There are several limitations to our research. First, we do not distinguish between new entrants and incumbents and cannot account for sunk costs. Additionally, though farmer's markets are the most common direct-marketing operation in which farmers choose to participate we have not been able to account for their competitive features. There are both theoretical and practical reasons for this omission. First, CSA, Upick and Farm Stand decisions are made by individual farmers while farmer's markets involve several 3rd parties, and these groups have different concerns and needs. Thus they may require separate analyses. Second, in our dataset we know whether a given farm participates in a farmer's market but not how many or which markets. Thus while our study characterizes the competiveness of farm-based direct marketing operations a complementary analysis could be useful for farmer's market organizers.

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Table 1: Distribution of Local Farms									
State	Farms	CSA	Upick	Farm Stand	State	Farms	CSA	Upick	Farm Stand
Alabama	252	58	55	77	Nebraska	99	29	13	22
Arizona	199	41	30	52	Nevada	66	22	10	27
Arkansas	184	26	43	48	New Hampshire	308	96	43	151
California	1447	332	178	426	New Jersey	261	101	33	121
Colorado	412	136	54	126	New Mexico	134	35	21	36
Connecticut	302	116	35	174	New York	1289	425	165	565
Delaware	46	11	5	15	North Carolina	1007	235	168	323
District Of Columbia	4	3	0	1	North Dakota	45	20	6	15
Florida	676	110	138	191	Ohio	965	204	131	345
Georgia	573	153	81	171	Oklahoma	209	31	40	58
Idaho	255	72	31	69	Oregon	714	239	113	240
Illinois	570	171	62	206	Pennsylvania	947	285	122	390
Indiana	478	128	61	207	Rhode Island	53	24	7	15
Iowa	380	108	54	96	South Carolina	262	57	39	87
Kansas	277	56	50	76	South Dakota	66	24	10	12
Kentucky	399	106	43	99	Tennessee	445	132	64	129
Louisiana	116	19	16	35	Texas	914	179	160	233
Maine	358	137	40	159	Utah	104	40	14	32
Maryland	368	130	59	136	Vermont	359	144	49	176
Massachusetts	506	220	75	261	Virginia	856	179	126	268
Michigan	1086	284	140	372	Washington	865	257	129	298
Minnesota	901	178	89	152	West Virginia	181	33	27	54
Mississippi	123	24	27	30	Wisconsin	797	270	101	232
Missouri	639	104	102	177	Wyoming	63	15	12	17
Montana	133	40	15	24					

Figure 1: Local Food Establishments

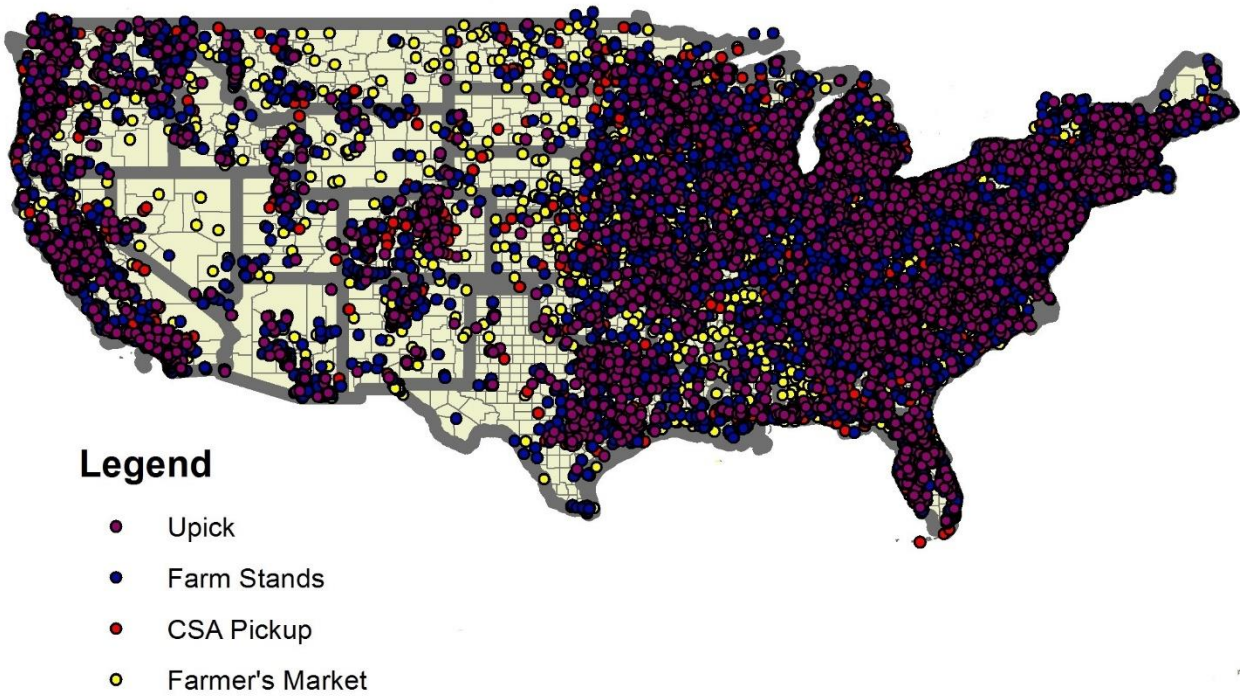

Table 2: Diversification		
# of Outlets	# of Farms	Percentage
1	3,635	46.08%
2	3,031	38.43%
3	1,019	12.92%
4	203	2.57%

Table 3: Direct Marketing Decisions		
Direct Marketing Combinations	**Number**	**Percent**
Csa Only	608	16.73%
Farmer's Market Only	1,614	44.40%
Upick Only	432	11.88%
Farm Stand Only	981	26.99%
CSA and Farmer's Market	1,277	42.13%
CSA and Upick	56	1.85%
CSA and Farm Stand	226	7.46%
Upick and Farmer's Market	279	9.20%
Farm Stand and Farmer's Market	1,003	33.09%
Upick and Farm Stand	190	6.27%
CSA, Farmer's Market and Upick	94	9.22%
CSA, Farmer's Market and Farm Stand	666	65.36%
CSA, Upick and Farm Stand	46	4.51%
Farmer's Market, Upick and Farm Stand	213	20.90%
Participates in all 4 operations	203	
Total	7,888	

Table 4: Summary Statistics				
Variable	**Mean**	**Std. Dev**	**Min**	**Max**
Population (1,000's)	40.89	47.13	0.08	248.01
Population Change (1000s; 2010-2014)	0.64	2.77	-6	29
Log cropland value (incl buildings)	7.88	0.70	5.26	10.89
Log Mean HH Income	10.94	0.20	10.36	11.90
% Male	50.03	2.22	43.20	72.10
% Residents less than than 18	0.23	0.03	0.09	0.40
% Residents greater than 65	0.16	0.04	0.037	0.434
% Residents with at least a Bachelor's	0.19	0.08	0.032	0.744
% Residents White	0.84	0.16	0.029	0.992
% Residents Hispanic	0.08	0.13	0	0.957
# CSAs	1.11	2.07	0	24
# CSA pickup locations	1.95	3.95	0	46
# Upick establishments	0.53	1.04	0	10
# of farm stands	1.24	2.29	0	26

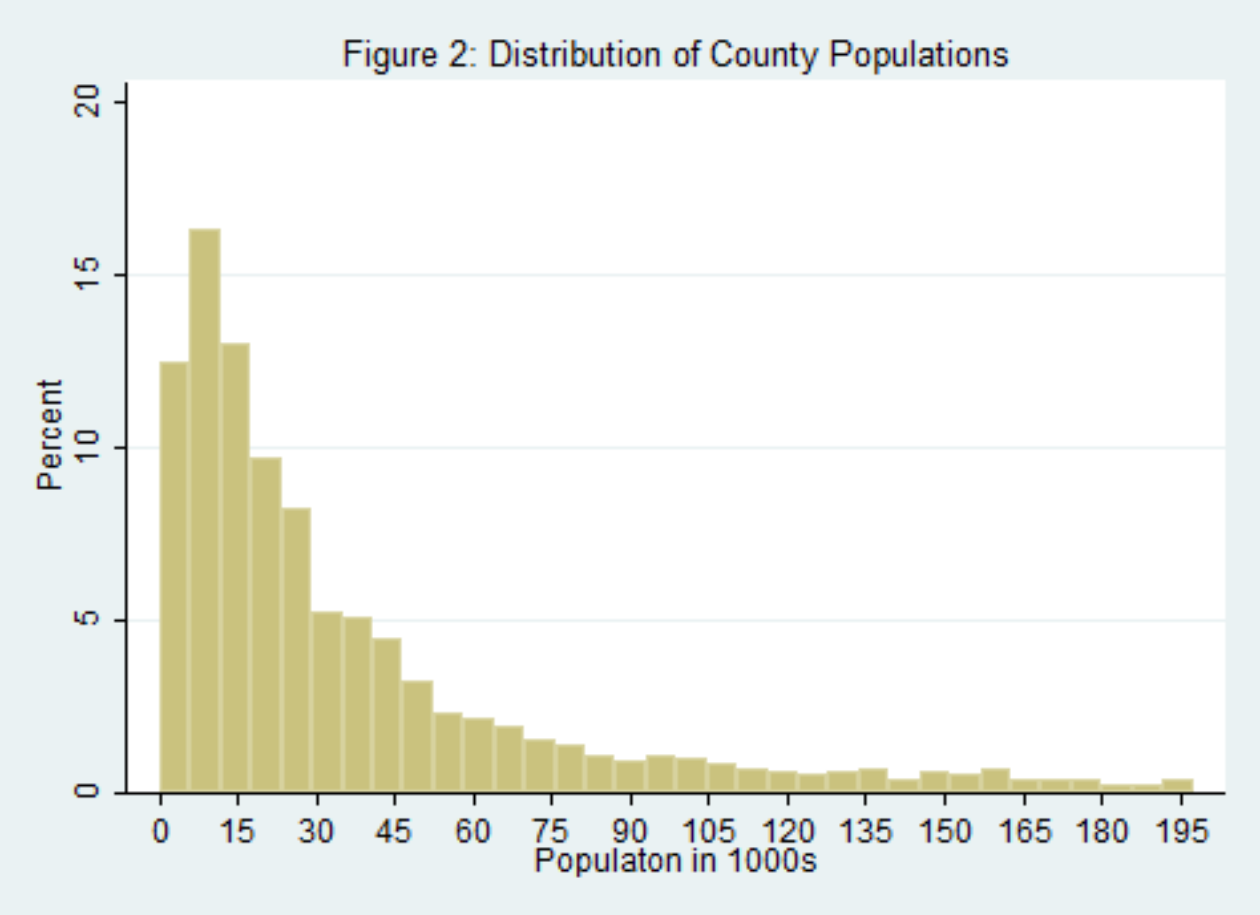

Table 5: County Population and Number of Entrants				
	CSA	**Upick**	**Farm Stand**	**CSA Pickup**
No entrants	23.818	27.039	22.133	21.055
Monopoly	42.452	50.624	40.634	36.952
Duopoly	50.973	70.545	54.499	45.459
3 entrants	71.054	80.454	70.371	55.735
4 entrants	78.640	105.649	77.609	67.565
5+ Farms	87.624	114.812	89.945	89.209

Table 6: Market Counts by Establishment				
# of Operations	**CSA**	**Upick**	**Farm Stand**	**CSA Pickup**
0	1,591	1,960	1,531	1,510
1	584	515	601	446
2	239	189	269	245
3	165	67	128	164
4	71	37	83	94
5	148	30	186	339

Table 7: Firm entry ordered probit				
	Coefficients			
Variable	**CSA**	**Upick**	**Farm Stand**	**CSA Pickup**
Population (1,000's)	0.01 *	0.01 *	0.01 *	0.01 *
Population Change (1000s; 2010-2014)	-0.06 *	-0.05 *	-0.08 *	-0.06 *
Log cropland value (incl buildings)	0.39 *	0.26 *	0.34 *	0.42 *
Log Mean HH Income	0.25	0.15	0.56	-0.07
% Male	-0.02	-0.03	-0.03 **	-0.01
% Residents less than than 18	-5.09 *	-2.32	-4.48 **	-6.09 *
% Residents greater than 65	-5.28 *	-2.74 **	-3.86 **	-5.63 *
% Residents with at least a Bachelor's	1.74 **	0.85	0.10	3.85 *
% Residents White	1.50 *	0.82 *	1.33 *	1.40 *
% Residents Hispanic	-0.47	0.12	-0.03	-0.50
/cut1	4.88	3.16	7.13	2.08
/cut2	5.63	3.97	7.89	2.67
/cut3	6.08	4.55	8.36	3.08
/cut4	6.50	4.96	8.68	3.41
/cut5	6.76	5.36	8.95	3.65

*** p<0.01, ** p<0.05, * p<0.1

Standard errors are clustered at the state level

Table 8: Entry thresholds and competition				
Entry Thresholds	**Population (1000s)**			
	CSA	**Upick**	**Farm Stand**	**CSA Pickup**
S1	14.23	53.57	5.37	1.29
S2	85.96	131.77	63.34	44.20
S3	128.37	188.24	99.73	73.95
S4	168.75	227.16	123.67	98.51
S5	194.11	266.29	144.34	115.52
Threshold ratios		**Ratio Values**		
s2/s1	3.02	1.23	5.90	17.11
s3/s2	1.00	0.95	1.05	1.12
s4/s3	0.99	0.91	0.93	1.00
s5/s4	0.92	0.94	0.93	0.94

Table 9: Current Market Structure				
# of Operations	**CSA**	**Upick**	**Farm Stand**	**CSA Pickup**
0	56.86%	70.05%	54.72%	53.97%
1	20.87%	18.41%	21.48%	15.94%
2	8.54%	6.75%	9.61%	8.76%
3	5.90%	2.39%	4.57%	5.86%
4	2.54%	1.32%	2.97%	3.36%
5	5.29%	1.07%	6.65%	12.12%
Counties that have no entrants and meet the minimum population				
# of counties	802	243	1,230	1,466
Percent	43.66%	39.97%	49.58%	53.23%

Note: The number of counties differs by operation as they have different minimum population thresholds.