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MOTIVATION

In the summer of 2009, the whole country was in the midst of an economic recession, marked by, among other things, massive unemployment. In Georgia, the labor problem was a serious concern as the ranks of jobless workers exceeded the national rate.

While the economic pandemonium was ongoing, over-ripe blueberries close to rotting lay un-harvested in an organic farm in South Georgia. The farm owner/operators confided about their family's struggle to salvage their crop. Their son had already quit a couple of semesters in school just to help them in the farm.

They tried to offer competitive (higher) wage rates to those who can help them harvest their blueberries. Not too many heeded their call. The few who came worked only for as at most a day and quit thereafter as they 'could not bear the summer heat'. Moreover, these workers' outputs were dismal as they only accounted for about 60%-80% of what normally would be harvested by a regular, efficient worker in a day.

The owners explained that the ones who could withstand the 'summer heat' and provide them with work worth their money's worth were no longer around. Helplessly they watched their investments of time, money and sacrifices wither in the summer's heat of 2009.

BACKGROUND

Immigration Policies and Changing Farm Labor Market

- In the farm sector, the claim is that unskilled farm labor is usually supplied primarily by migrant, seasonal workers. The supply of unskilled farm workers, however, may be constrained by recent implementation of stricter immigration policy affecting an estimated 15 million unauthorized immigrants.
- 40% of these foreigners are illegally hired in farm workers (Escalante, Levine, 2007). These illegal workers are mostly young and poorly educated. Costs associated usually hired at wages below prevailing market rates.

- Even if illegal immigrants succeed in properly documenting their residence here, the legalization of the immigration status of most of these workers will only enhance their bargaining position as demand for better wages rise above prevailing market rates, in addition to the usual fringe benefits (insurance, bonuses and others) and better working conditions they deserve.

- An economist from the American Farm Bureau, for instance, estimates that the immigration reform can push farm wages from the current average of \$6.50 per hour to about \$8.50 an hour as farms are constrained to hire fewer migrant workers for low-skilled jobs (Gard, 2006). All farmers thus bear the ultimate effects of all these immigration reforms to raise commodity prices from 5% to 10% as farm business see pass on 17% burden of higher labor costs to the consumers.

Relative Labor Demands of Organic and Conventional Farming

- The organic farm, characterized limited use of synthetic chemical inputs requires labor to implement alternative techniques for pest removal, soil addition and conservation that are usually done manually.

- Hence, the economically and environmentally sustainable organic farming system is a more labor-intensive operation compared to the conventional farming system that employs larger farm machinery and synthetic agrochemicals.

RESEARCH DESIGN

Problem Statement

The logical expectation is that the high labor-dependence of organic farms could potentially make them more economically vulnerable under the expected changes in the farm labor supply conditions due to the implementation of new immigration policies.

Research Goals

- To provide empirical evidence on the dependence of organic farms on foreign labor for their seasonal part-time labor requirements.
- To determine probable effects of immigration control policies on the farm labor management decisions of organic farms (vs-3-5 conventional farms).

Research Methodology

- In addressing research goal, utilize national organic farm survey data (i.e., Organic Farming Research Foundation) along with immigration, labor, and wage data from government agencies.
- To address research goal, use results of farm labor management survey and case study interviews on some organic and conventional farms in the Southeast.

Analytical Model

- The Heckman approach is used to analyze two hiring decisions made by farm operators: a binomial decision to hire part-time seasonal workers and a subsequent decision on the extent of hiring to be made.

- The Heckman selection model consists of the following selection mechanism and outcome equations:

$$\begin{aligned} \text{Selection} & z_i = \gamma_0 + \beta \text{Wage}_i + \gamma_1 ST_i + \mu_i \\ \text{Outcome} & y_i = \beta_0 + \beta \text{Labor}_i + \beta_1 ST_i + \epsilon_i \end{aligned}$$

where z_i is the selection's dependent binary variable that takes a value of 1 if farm decides to hire seasonal part-time workers and 0 if no such decision is made; y_i is the outcome (continuous) variable defined as the ratio of non-family seasonal part-time workers hired to total farm workers employed (regardless of source and nature of employment); Wage is the prevailing state average farm wage rate; Labor is a set of immigration and labor measures; and ST is a set of structural attributes of the farms (including demographics, location, enterprise type).

RESULTS

A. National Trends

Figure 3. U.S. Distribution of Organic Farms, 2009. Source: USDA, Economic Research Service



Figure 4. U.S. Illegal Alien Distribution, 2009. Source: Federation for American Immigration Reform



B. Econometric Results Heckman Selection Model

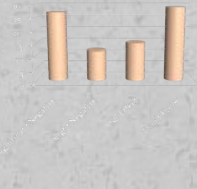
Variables	SELECTION Binomial Hiring Decision		OUTCOME Ratio of Non-Family Seasonal Part-time to Total Farm Workers	
	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	-4.44	1.41	-0.37	0.47
A. Wage, Immigration, and Labor Variables				
Average Wage Rate (\$/hour)	0.55	0.08	0.18	0.06
Illegal Residents (population)	7.99e-08	4.14e-07	-7.99e-08	3.47e-06
H2A Permits Issued (no./state)	1.27e-05	7.49e-05	3.19e-5	1.88e-05
Head Farm Labor (no./farm)	1.57e-06	4.49e-06		
Contractual Farm Labor (no./farm)	5.18e-06	4.69e-05		
B. Enterprise, Business Organization, and Geographical Dimension Variables				
Tec (enterprise)	-0.14	0.20	-0.19	0.03
Pasture (enterprise)	-0.01	0.08	-7.68e-04	0.03
Grain (enterprise)	-0.05	0.13	-0.05	0.04
Partnership (business org)	0.00	0.04	-0.04	0.04
Corporation (business org)	0.37	0.17	-0.10	0.05
Lake (geographic region)	-1.08	0.51	-0.14	0.11
Pacific (geographic region)	-0.14	0.66	-0.05	0.09
Mountain (geographic region)	-0.14	0.37	-0.11	0.09
Northeast (geographic region)	-0.60	0.39	-0.18	0.10
Corn Belt (geographic region)	-0.36	0.41	-0.17	0.10
Northern (geographic region)	-0.46	0.41	-0.01	0.11
Appalachian (geographic region)	-0.66	0.49	-0.49	0.17
C. Farm Structural and Demographic Variables				
Family to Total Labor Ratio			-0.43	0.07
Education (no. of years)	0.11	0.05		
Age (years)	-0.01	4.49e-03		
Gender (dummy, female=1)	0.17	0.11		
Years of organic farming experience	0.13	0.05		
Years of total farming experience	0.08	4.98e-03		
Operation Type (dummy, full-timers=1)	0.59	0.12		
Off-farm Income Contribution to Household Income (%)	0.08	0.11		
Model Statistics				
Log Likelihood			-88.04	
Wald chi-squared			800.73	
LR Test of Independence (2)			15.98	

C. Southeastern Farm Survey Results Immigration Policies and the Farmers' Expectations and Coping Strategies

Table 1. Farm Labor Management Strategies From 2008 Southeastern Farm Labor Management Survey

Question: "How are you going to deal with a shortage of workers should it arise in the future as a result of stricter implementation of immigration policies?" (The questionnaire results were from 100 surveys)

Response	Conventional Farms			Organic Farms			Total	
	Number	% of All	Category %	Number	% of All	Category %	Number	% of All
Reduce or delay picking and avoid work areas in the future	0	0.00	0.00	11	6.07	11.58	11	9.09
Quit or off-farm work and spend more time in the future	0	0.00	0.00	0	0.00	0.00	0	0.00
Only work on family members to do extra work in the future	11	6.07	15.31	13	7.88	13.68	24	14.56
Only hire family members to do extra work in the future	8	4.85	11.43	10	6.86	10.53	18	10.91
Offer other workers family benefits (vacation time, flexible work hours, farm workers' benefits)	1	0.61	1.43	5	3.21	3.11	6	3.182
Employing U.S. citizens (forming his or her own labor management business)	12	7.27	17.14	13	7.88	13.68	25	15.16
Change production plans to reduce conventional farm labor	6	3.34	8.57	15	9.09	15.79	21	12.93
Work in more heavily irrigated or shaded areas (other types of farms)	13	7.88	18.57	9	5.81	9.47	22	13.45
Consider other farming or other jobs in the future	10	6.06	14.29	14	8.88	14.74	24	14.55
Others	5	3.03	7.14	8	4.85	8.42	13	7.88
Total Responses	70	42.42	100.00	95	57.58	100.00	165	100.00



The Blueberry Farms

Farm S

- 150 acres of blueberries: 50% organic, 50% conventional
- Labor profile:
 - From August to March, they have 20 employees working 45 hours per week to treat soil pests. From April to June they have about 200 employees working an average 45 hours per week to handpick and package the berries and for maintenance.
 - There are 8 full-time people that manage everything.

Farm M

- 150 acres of blueberries: 30% organic, 70% conventional
- Labor profile:
 - These family members work as farm management.
 - 90% of labor comes from hired help. They have about 30-35 full-time employees working 10 hours daily, 5 days a week.
 - During picking season, they have about 400 to 450 workers working about 10 hours a week in the field.

The Peanut and Soybean Farms

Farm P

- 200 acres of peanuts in previous years and 32 acres of soybeans
- Labor profile:
 - Two family members available to work as needed, helping mostly on weekends when available.
 - Two full-time year-round helpers and one part-time seasonal helper.
 - Owner is full-time farmer, with no off-farm employment or investments.

Farm W

- 210 acres of peanuts: 20 to 30 acres of soybeans
- Labor profile:
 - Owner is the only family member working on the farm, spending a minimum of 50 hours a week.
 - 4 to 5 full-time employees
 - During harvest season, 6 part-time helpers are hired to help with hand picking and grading peanuts.

Interview Highlights

- On expected changes in farm production, these workers' estimates change as they are not sure how much labor will be needed in the future as a result of new immigration policies.
- Yes, both blueberry farms expect changes:
 - However, one will continue to hire hand pickers while the other plans on becoming more mechanized and less labor intensive.
- Both will have to become more competitive in prices in order to attract workers.
- One farm says they will have to go to the H-2A employment program to hire workers. This will require setting up boarding facilities, increased wages for workers and other H2A requirements.
- On expectations on wage rates demanded by workers in the future:
 - Wage rate adjustments are expected. If the H2A is adopted then wage rates will certainly increase.
 - Since one farm is mostly labor oriented, they will have to increase wages to compete for labor.

- On expected changes in farm production, these workers' estimates change as they are not sure how much labor will be needed in the future as a result of new immigration policies.
- Farms W and P are mostly capital-intensive in their production and harvest operations. Both farms do not increase any changes when it comes to labor for their operations.
- On expectations on wage rates demanded by workers in the future:
 - There has not been a problem in finding labor in the past and they cannot foresee that changing with new immigration policy. There has, however, been a problem finding migrant labor.

DISCUSSIONS AND CONCLUSIONS

THE NON-FAMILY SEASONAL PART-TIME LABOR DECISIONS

- Econometric results present interesting relationships between foreign worker-related variables and the hiring of non-family seasonal part-time workers.
- The extent of hiring is inversely related to the population of illegal residents. Among other possible explanations, this in part may be due to the fact that perhaps such labor source could be relied on when there is less concentration of such illegal residents, hence, the lesser tendency for stricter governmental monitoring employment activities.
- The outcome variable (extent of hiring) is directly related to the number of H2A permits (foreign guest farm workers visas for temporary, contractual work) issued.
- Higher wages are associated with tendencies to hire (selection decision) and the extent of hiring (outcome) seasonal part-time workers. This could imply that wage rates need to be high and lucrative enough to attract such type of workers that perform relatively menial tasks in the farm.
- Corporate farms have greater tendency than single proprietorships (excluded business org category) to hire non-family seasonal part-time workers; but among those that actually hire, the latter business group tends to hire more of these workers.
- Family labor is used to supplement the lack of available non-family seasonal part-time workers.
- More educated, younger and full-time farm operators tend to have a greater tendency to hire non-family seasonal part-time workers.

IMMIGRATION POLICIES, FARM LABOR DEMAND, AND COPING STRATEGIES

- In the regional (southeastern) farm survey, among those that provided an opinion on the effects of immigration policies on farm labor supply conditions (providing either Yes or No answers), 50% of conventional farmers recognize a linkage between new (stricter) immigration policies and farm labor supply conditions. As for organic farms, 44% chose either of the two "Yes" categories.
- The survey participants' preferences for specific business strategies for coping with expected changes in the farm labor market provide interesting implications that can be associated with certain structural differences between organic and conventional farms.
- The more popular business strategy for conventional farms (63.5%) considers an input substitution scheme where more machinery will be acquired to reduce labor requirements in the event of a farm labor hiring (or shortage) problem. This perhaps reflects the conventional farms' more mechanized (machine-dependent) existing operations that make them more familiar with this strategy.
- Downsizing of farm operations is the 2nd most popular strategy (17.14%) for conventional farms. This is a logical result considering that conventional farmers usually operate much larger operations (vs-3-vis their organic counterparts).
- Production diversification is the most popular strategy for organic farms. Organic farms are structurally more diversified as their farms are usually planted to various types of fruits and vegetables. The need for regular crop rotation practices to enhance soil productivity expose these farmers to various production (or crop choice) options.
- Both organic and conventional farms also consider relying on family members to increase their participation in the farm business when extra help from non-family workers cannot be obtained.
- The following recurring themes can be noted in the case study results:
 - The hiring of "motivated" labor is common to both conventional and organic farms.
 - More mechanized or capital-intensive farms (usually conventional farms) are less stressed in dealing with farm labor hiring issues.
 - Family labor has always been the source of reliable farm workers.
 - "Motivated" labor can only be lured into farm employment by offering highly competitive compensation packages, which will erode farm profits.
- Thus, both conventional and organic farms are vulnerable in the face of the shortage of "motivated" labor willing to do difficult farm work. Vulnerability, however, depends on:
 - Capability to either enhance capital-intensiveness or minimum labor-intensiveness of farm operations.
 - Financial endowment flexibility to sacrifice erosion of profits to offer more attraction compensation packages.