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Off-farm Work Among Farm Women: Motivations, Earnings, and Benefit Receipt

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Introduction

The diversity of farmwomen's lives today reflects the diversity of agriculture itself. In the past century, farming has undergone dramatic structural, technological and managerial changes (Ahearn and Lee, 1991; Gardner, 1992). One of the major changes has been a decline in the number of farms and an increase in the multiple job-holding by farm operators, especially among women on U.S. farms. (Hallberg *et al.*, 1991). Today, women contribute considerably to household income through farm and nonfarm activities as well as through work as agricultural wage laborers (Gladwin, 1991; Sachs, 1995). In the United States, around 71 percent households have either the principal farm operator or spouse or both employed in off-farm jobs (Mishra, El-Osta, Morehart, Johnson and Hopkins, 2002).

In the past literature, off-farm employment was considered as transitory situation and only considered necessary as a source of income to support poor business earnings (Bessant, 2000; Mishra, El-Osta, Morehart, Johnson and Hopkins, 2002). However, a study by Ahearn and El-Osta (1992) rejected the hypothesis that off-farm employment is a transitional state for farm households and accepted the alternative hypothesis that off-farm employment is a permanent way of life (Ahearn and El-Osta, 1992). Families might combine farming with other off-farm activities for different objectives like career development, lifestyle or personal fulfillment (Barlett, 1986). According to several studies, the growth of small farms in the United States and Canada may be due to the motivation of farm members to seek off-farm employment to support a favored life-style (Coughenour and Swanson, 1983; Bryden, 1994; Bessant, 2000). Fuller and Madge (1976) note that off-farm employment gives farm families a chance to interact with new people and to stabilize farm incomes. Mishra and Goodwin (1997) and Mishra (1996) found a positive correlation between off-farm employment and farm income variability, indicating that off-farm employment helps many farm households to diversify their income risks.

In the past few years, various studies on women have documented their extensive participation in farm and off-farm work. The study conducted by Rachel Rosenfeld (1985) on U.S. farm women in 1980 concluded that higher average education levels, advances in labor-saving technologies in the home, and smaller family sizes have contributed to the trend toward more U.S. farm women being employed off the farm. The off-farm contribution of women have increased, due to both higher participation rates of farm women in external (off-farm) labor markets and to the higher real wages earned by women today (Olfert, 1993; Findeis, 2002^a). In the 1980 U.S. National Farm Survey (Rosenfeld, 1985), 57 percent women stated financial reasons, 18 percent reported social reasons, 16 percent acknowledged maintenance of career skills, and the remaining 9 percent gave other (miscellaneous) reasons for working off-farm. The larger proportion of women employed off the farm for financial reasons suggests that working women have an important role in keeping the farm financially secure. Several studies also indicate that farm women prefer to work off-farm as it is associated with better living conditions, stable income, economic independence, social security, better work conditions and social acknowledgment and respect (Efstratoglou, 1998; O'Hara, 1998). Sometimes farm family members may be employed off the farm to provide the family financial protection that is generally not economical for the farm business to purchase for family members. These non-wage compensations include such items as group health insurance, group life insurance, social security, and unemployment insurance contributions (Scholl, 1983; Jensen and Salant, 1985).

Given the above perspective, this paper examines motivations for off-farm work among farm women in the U.S. The women were asked to rank different reasons for working in an off-farm job varying from *not important*, to *somewhat important*, to *very important*. Probit models are estimated in response to the various motivation questions. Further, determinants of employee benefit receipt and participation in off-farm work are analyzed both for farm women and their spouses. The paper goes beyond assessment of the important role of using off-farm work as a means of accessing health insurance and examines other types of benefits as well, including income for retirement. The paper uses data from a national survey of U.S. farm women conducted by Pennsylvania State University in collaboration with researchers at the Economic Research Service (ERS, USDA) and the National Agricultural Statistics Service (NASS, USDA). The next three sections lay out the theoretical framework, data and the estimation strategy for the paper. Finally the last section concludes with a discussion of the results.

Theoretical Framework

The agricultural household model analyzes the three decisions related to production, consumption and work decisions in one framework. It is an extension of the simple household goods-leisure decision model in which household members maximize total utility of the household, under the constraints of total household income and total endowment time (Findeis 1998). To provide for goods and services, some members of the household typically have to work (unless there is adequate income from non-earned sources such as rent or transfers of family wealth). Trade-offs are made between the consumption of goods and services and the amount of leisure time enjoyed by the household members.

Following Huffman (1991) consider a farm household consisting of two members' m and f who can choose to work on household's farm or to work off-farm. The utility function is maximized subject to the following constraints stated below.

$$\text{Max } U = U(C, L^m, L^f) \quad [1.1]$$

Subject to

$$Q = (F^m, F^f, X; A, \Pi, \Omega) \quad (\text{Production function constraint}) \quad [1.2]$$

$$P_q Q - P_x X + W^m M^m + W^f M^f + I \leq P_c C \quad (\text{Budget constraint}) \quad [1.3]$$

$$T^i = L^i + F^i + M^i \quad (\text{Time constraint}) \quad [1.4]$$

$$F^i \geq 0, M^i \geq 0 \quad (\text{non-negativity constraint}) \quad [1.5]$$

Where $i = m, f$.

C is vector of consumption goods, Q is farm output produced, X = variable inputs used in farm production, A is fixed quantity of land, Π = vector of household characteristics, Ω is farm specific exogenous characteristics, P_c = price of consumption goods, P_q = price of farm outputs, P_x = price of variable inputs, W^i = market wage for individual i , L^i = time allocated to leisure by individual i , F^i = time allocated to farm work by individual i , M^i = time allocated to market work by individual i , T^i = total time available to individual i . The utility function is

assumed to be twice differentiable, i.e., $U_i > 0$ and $U_{ii} < 0$, where i represents the arguments of the utility function.

Data

The data used for this study have been taken from a survey of farm women in the United States recently collected by Penn State in collaboration with the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS) at the U.S. Department of Agriculture. Rosenfeld collected the last major survey on farm women in 1980 (see Rosenfeld, 1985). This survey was carried out by telephone. A sum of 2,661 farm women responded to the survey. A small subset of farm men was also included in the survey, so that joint-decision making can be understood in a better way. The survey focused on questions like women's view of their roles on the farm, their participation in farm decision-making and farm work, possession of land and bequest issues, application of computers on-farm and sustainable farm practices. The survey also has questions related to participation in off-farm work and non-farm businesses. Other questions asked were related to operation of the farm and demographic characteristics of the farm household.

Data from Regional Economic Information System of the Bureau of Economic Analysis (REIS/BEA) and the 2000 census for the U.S. has been appended to the main dataset, so that information is available on variables related to off-farm labor market like population density, local employment and unemployment growth rates, non-farm wage rates and area of the county. The survey data also includes information on county of residence, which was used as a basis to match the data with the nine production regions differentiate by U.S.D.A. as: Heartland, Northern Crescent, Northern Great Plains, Prairie Gateway, Eastern Uplands, Southern Seaboard, Fruitful Rim, Basin and Range, and the Mississippi Portal. The new ERS regions created by the U.S.D.A, which represent geographic specialization in production of various farm goods, are based on four sources: a cluster analysis of U.S. farm characteristics, Farm Production Regions, the USDA Land Resource Regions, and NASS Crop Reporting Districts.

Estimation Strategy and Variable definitions

Farm women work off the farm for different objectives like supporting household expenses, improving skills and living a preferred lifestyle (Barlett, 1986). The Penn State Survey asked the women respondents to rank

the reasons for working in a non farm job varying from *not important*, to *somewhat important*, to *very important*. Binomial probit models are estimated for each of the motivations to examine the factors affecting the reasons to work in a non-farm job. The motivations range from wanted the money for family household expenses, wanted the benefits, wanted to develop or use job skills, wanted to get out of the house, see people, wanted to have your own source of income.

One of the most important motivations for farm women to work at a non-farm job is receiving employee benefits. The survey also shows that among women with off-farm work, the following employee benefits from off-farm work were more common: health insurance (59%), life insurance (52%), a pension (54%), paid vacation leave (56%) and paid sick leave (58%). Among men with off-farm work, the following benefits were among the most commonly received: health insurance (67%), life insurance (58%), a retirement pension (59%), paid vacation leave (62%) and paid sick leave (53 %). Most of the times it has been found that the farm woman (or man) works off the farm for benefits and farm man (woman) works on the farm. Farm women might even work part-time at the non-farm job depending on different circumstances where she might be either helping out the farm or looking after small children. If this is the situation, then does she receive any benefits or not? Hence, it is important to consider factors affecting benefit receipt. The following work choices are possible: no work, work in a part-time job with benefits, work in a part-time job without benefits, work in a full-time job with benefits, and work in a full-time job without benefits. A multinomial logit model is used to analyze the alternative work/benefit outcomes.

Finally, factors affecting the participation in an off-farm work examined. Since, there are both farm women and men, there might be joint decision making. When there is potential jointness in decisions, bivariate or even trivariate models can be estimated. The bivariate approach is often used to analyze the labor participation decisions of couples and this approach will be used here.

Hence, there will be two-participation function, one for the males and other for the females. The choice of univariate or bivariate probit model depends on the correlation of the error terms, i.e. if there is no correlation then univariate probits can be used and if the male and female stochastic errors are associated with each other, then appropriate statistical model will be bivariate probit model.

The method of maximum likelihood is used for estimating the coefficients of the estimators. The independent variables in the models include characteristics of the individual, the household, the farm and off-farm

labor markets. The independent variables in the model include binary variables to differentiate whether the inherited land is transferred from his side or her side, individual characteristics like age, age², level of schooling (reflecting human capital and experience), household characteristics like presence of children of different age groups, farm characteristics like value of assets or location of the farm in various regions differentiated by U.S.D.A, local labor market conditions like unemployment growth rate and population density. A brief definition of all the variables used in the estimation is presented in table 1.

Results

Individual probit models are estimated for the following six different reasons given by farm women to work off the farm: (1) wanted the money for family household expenses, (2) wanted the money for the farm operation, (3) wanted the benefits, (4) wanted to develop or use job skills, (5) wanted to get out of the house, see people, (6) wanted to have your own source of income. Table 1 summarizes the results of probit estimation for house hold expenses, farm operation and benefits, and table 2 for maintaining skills, seeing people and having own source of income, giving the coefficients and the level of significance for various independent variables used in the estimation.

With increasing age, the probability of working goes on decreasing. A similar life cycle effect is mirrored for farm households, as reflected by the age-squared variable for both farm women and man in table I and table 2. Education usually increases the skills and marginal productivity of an individual's time, it would be expected that with completion of more years of schooling the individual should receive higher wages in the labor market. Hence individuals having a college degree or a post graduate degree are more likely to receive benefits (table 1). Higher education also increases the opportunity cost of time and so the individual is more likely to participate in the labor market to just to maintain or further develop individual skills and have an own source of income (table 2). Higher education is not so necessary if one work off-farm just to socialize with people or to support household expenses. Farm women with low skills or educational levels work as domestic cleaners, waitresses, caterers, food processors, sales workers, hairdressers and dressmakers. Women with higher qualifications are more likely to be working in clerical and professional jobs as teachers, nurses, typists and casual shop assistants .

Generally homemaking and childcare are responsibilities of women in traditional families. Hence, the presence of young children reduces the likelihood of participating in the labor market. However, if daycare facilities are available, women might continue to participate in the labor market to support household expenses. Among, the labor market characteristics, population density and area have been seen to significantly affect the participation in labor market especially, for women who are working at a non-farm job for receiving benefits, supporting household expenses or maintaining their skills.

Inheritance of the farm from a farm women's family significantly affects her participation at a non-farm job. There is an emotional attachment to the farm, and farm family probably wants to go on maintaining the farm in the family for the future generation. Hence, if the farm is inherited from the woman's side, she is more likely to work at a non-farm job to support the expenses for farm operation, household expenditure or work to get benefits like health insurance or life insurance for the farm family, especially if the husband works on the farm.

The financial position of the farm family and the characteristics of the farm operation are likely to influence off-farm work decisions and labor supplied to in off-farm work. Generally, families with large values farm assets are less likely to work. Sometimes women work off-farm as it is associated with better living conditions, own source of income, and individual self respect. Hence, sometimes even with significant assets, farm women may work off-farm to socialize or have own sources of steady income. Women in Northern Crescent, Mississippi portal are more likely to be working to support farm operation, household expenses, and benefits or to see people whereas women are working in Fruitful Rim and Southern Seaboard to maintain skills.

Receiving Benefits

Labor markets offering jobs with benefits are attracting labor off U.S. farms. Studies suggest that farm family members may be employed off the farm to provide benefits like health insurance for family members. These non-pecuniary benefits might include items such as group health insurance, group life insurance, social security, and unemployment insurance contributions. Hence, receiving benefits is quite an important reason for both farm women and farm man to work off-farm.

Data are available on whether the individual received certain kinds of benefits from their off-farm job. More specifically, information is available whether the farm woman or farm man received health insurance, life

insurance, pension, subsidized childcare, overtime pay/bonuses, transportation, paid vacation leave, and paid sick leave. Hence, a multinomial logit model is used to analyze the following work choices for farm women: no work, work in a part-time job with benefits, work in a full-time job with benefits, work without any benefits. For the husband, the categories used to examine his work choices are: no work, work with benefits and work with no benefits. Table 3 and 4 show the results of marginal effects and t-ratios for the multinomial logit model for the farm women and farm man. As shown in the table, participation increases at a decreasing rate with age and this is especially significant for farm women working at full time job with benefits and husbands working at a job with benefits. Hence, one is likely to work more when one is younger than when one is older. Education plays an important in working at a non-farm job with benefits. Women with successively higher levels of education (like high school degree, college degree or a post graduate degree) are more likely to be working full time or part time with benefits as compared to women who work at non-farm jobs without benefits. For husbands also, higher education is likely to bring jobs with benefits. However, if you have some kind of agricultural education, then probability of working off-farm is highly reduced and this is very significant for husbands (table 4).

Generally, parents pay for health insurance when children are young; hence a job with benefit is important for individuals. Since looking after young children consumes a lot of time and energy, and formal childcare may be unavailable, mothers with young children are more inclined to be working part time with benefits especially for children under 12 years of age. Women who have older children like above the ages of 12 might even work at jobs without receiving any benefits.

Various studies have used variables like population density, unemployment rate of growth, employment growth rate and area to reflect access to and availability of employment opportunities and also as a labor market characteristic to reflect degree of urbanization. The higher the population density and smaller the area, more is the likelihood of working at an off-farm job (part time or full time). Net farm income or value of farm assets is often used as an indicator of farm and financial characteristics. Generally, the probability of participation for both farm men and farm women in a non-farm job is inversely related to net farm income or value of farm assets. Here, also the value of farm assets are quite significant (table 3 and 4) and reduce the probability of working at a non-farm job.

Different parts of the U.S. display regional differences, both in the agricultural and non-agricultural sectors. Different regions might vary in tastes and preferences, and in the motivations that prevail in specific farming

communities. Among the farm production regions, farm women are less likely to be employed at full time jobs with benefits in most regions but more likely to be employed at part time jobs with benefits, especially Eastern uplands and Basin and Range. Husbands are most likely to be working with benefits in most regions, specially Northern Crescent and Fruitful rim.

Participation in off-farm work

Participation in off-farm work, when both farm woman and husband are present, can be a joint decision. Since, there was a correlation in the error terms; bivariate probit models were used for estimating the participation equation. The marginal effects and relevant t-statistics for the participation are presented in table 5.

Age and age square are quite significant both for the farm women and farm man, which represents the concave effect or the life cycle effect of age. Hence, as one grows older, the participation in off-farm work goes down. However, age may differently affect labor market participation of farm woman and man. In this survey, farm women's probability of off-farm work peaks at 39 and then goes down and for a farm man, it peaks at 41 and then goes down. Education represents investment in human capital and statistically significant both for farm woman and farm man. Hence, the more educated one is, the more likely one is to work at a non-farm job and command higher wages. Additional schooling likely increases the earning capacity of a woman in the labor force and her access to better jobs. These include jobs as teachers, nurses, typists and casual shop assistants, two occupations that have been historically cited as typical for farm women with off-farm employment. Farm-specific human capital increases on-farm wages relative to off-farm wages, so the probability of participation and off-farm hours of work are expected to decline with farm training and farm experience. Hence, individuals with some agricultural education are less likely to work off-farm (table 5).

Presence of children, specifically young children like below 6 years of age is likely to affect women more than men in participating in off-farm work. Caring for a young child is can therefore be more compatible with farm than off-farm work. However, once the children have grown sufficiently, Women start returning to the labor market. Among the labor market variables county area and population ratio significantly affect the labor participation of farm households, especially farm men (table5). Higher the population ratio and smaller the area, more is likelihood of participation.

The transfer of farm from a farm man side is an important factor in off-farm labor participation. The husband is more likely to work on the farm and the farm woman is more likely work at a non-farm job to maintain the farm within the family. If there are sufficient farm assets, then the probability to work off-farm is greatly reduced. As expected, the 2001 survey also shows that, for both the farm man and farm woman, the probability to not work off-farm is highly significant.

It is quite likely that characteristics of a locality or region play an important role in the decision to participate in off-farm work. Among the ERS production regions, farm men are more likely to participate in non-farm jobs in Northern crescent, eastern Uplands, Fruitful Rim and Southern Seaboard (table 5).

Conclusion

One of the major changes in the U.S. agriculture has been the persistent and increasing occurrence of off-farm employment and pluriactivity among farm households, especially among women farmers and as a result, more reliance on non-farm income. Women work off-farm for various reasons, ranging from supporting the farm or house financially, o meeting people and having an own source of income. According to Barlett (1991: 45), multiple job-holding is an 'adaptive strategy' for reducing risk and increasing income and consumption levels. Receiving benefits like health insurance or life insurance with an off-farm job is a very important reason to participate in off-farm work, both for farm women and farm men. It is especially important for farm women if the husband works on the farm. Receiving benefits and participation are affected by various factors like individual characteristics, family characteristics, farm-related factors, financial characteristics, and local labor market characteristics.

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Table 1. Probit Model Marginal Affects for Farm Operations, Household Expenses and Benefits, 2001 Survey.¹

Variables	Farm Operation	Household Expenses	Benefits
Intercept	-0.66983 (-1.61100)*	-0.07096 (-0.29100)	-0.7992 (1.954)**
Age	0.03550 (2.62000)***	0.01724 (2.25100)**	0.0336 (2.5320)***
Age square	-0.00041 (-2.96600)***	-0.00020 (-2.68000)***	-0.0004 (2.9940)***
Children under 6 years age	-0.00558 (-0.09000)	0.05402 (1.95800)**	-0.0148 (0.2400)
Children age 6 to 11	-0.07130 (-1.45500)	-0.06120 (-1.56300)*	-0.0192 (0.3970)
Children age 12 to 18	-0.06648 (-1.53800)	0.00635 (0.23100)	-0.0220 (0.5110)
Children above 18	-0.00047 (-0.01200)	0.01479 (0.65200)	-0.0369 (0.9740)
Farm Women Educational Attainment			
Vocational/technical school/some college	0.02780 (0.76100)	0.01709 (0.83000)	0.1114 (3.3110)***
College graduate	0.09085 (2.21000)**	0.00406 (0.16800)	0.1891 (5.3950)***
Post graduate	0.05013 (1.00700)	0.03803 (1.54400)	0.1719 (4.1850)***
Education related to agriculture	-0.05352 (-0.75400)	0.02269 (0.56900)	-0.0904 (-1.2500)
Household size (persons)	-0.00290 (-0.16600)	0.00753 (0.60700)	-0.0216 (-1.2100)
<i>Reference category: Less than high school or high school</i>			
Labor Market Characteristics			
County unemployment growth rate in 2000	0.00401 (0.54000)	0.00189 (0.41600)	0.0060 (0.8340)
Population density	-0.00010 (-1.36700)	-0.00003 (-0.76600)	-0.0002 (-2.7220)***
Population ratio	0.01287 (0.04900)	-0.07579 (-0.50500)	0.3075 (1.1870)
County employment growth rate	0.00157 (0.87200)	0.00026 (0.25300)	0.0012 (0.6790)
County area	-0.00003 (-1.32600)	-0.00001 (-1.20800)**	-0.0001 (-2.5410)***
Inherited or purchased from			
Through her family	0.07213 (1.63900)*	0.01747 (0.71500)	0.0140 (0.3190)
Through his family	-0.02354 (-0.69000)	0.01227 (0.63300)	-0.0521 (-1.5430)
<i>Reference category: Farm entirely purchased from non-relatives</i>			
Value of farm assets			
200,000 to \$999,999	0.02099 (0.56100)	0.00478 (0.21700)	-0.0214 (-0.5740)
More than \$1 million	0.00833 (0.15500)	-0.00759 (-0.23400)	0.0136 (0.2600)
<i>Reference category: 199,999 or less</i>			
ERS Farm Production Regions			
Basin and Range	-0.08349 (-1.81400)*	-0.06551 (-1.97000)**	-0.0206 (-0.4560)
Northern Crescent	0.03920 (0.84200)	-0.01924 (-0.63400)	0.0411 (0.9120)
Eastern Uplands	0.02622 (0.45100)	0.03237 (1.06000)	0.0435 (0.7750)
Mississippi Portal	0.06706 (1.01500)	-0.00966 (-0.23000)	-0.1166 (-1.7000)*
Fruitful Rim	-0.07702 (-0.81600)	-0.00514 (-0.09100)	0.0299 (0.3360)
Southern Seaboard	-0.13371 (-1.56300)	-0.04762 (-0.74000)	-0.0792 (-0.8940)

Reference category: Heartland, Northern Great Plains and Prairie Gateway

¹t-statistics are shown in parentheses.

Table 2 Probit Model Marginal Affects for Benefits, 2001 Survey¹

Variable	Skills	See People	Own Income
Intercept	0.32202 (0.93200)	1.21835 (2.99500)***	0.13453 (0.38000)
Age	-0.00426 (-0.38300)	-0.03863 (-2.82300)***	0.00255 (0.22100)
Age square	-0.00001 (-0.07200)	0.00037 (2.65700)***	-0.00005 (-0.42100)
Children under 6 years age	-0.09007 (-1.46500)	0.00543 (0.09200)	-0.07043 (-1.22700)
Children age 6 to 11	-0.03830 (-0.86800)	0.03972 (0.88900)	-0.03268 (-0.75800)
Children age 12 to 18	-0.00713 (-0.19600)	-0.00614 (-0.15200)	0.00741 (0.20600)
Children above 18	-0.02670 (-0.83800)	0.01807 (0.51200)	-0.01187 (-0.36100)
Farm Women Educational Attainment			
Vocational/technical school/some college	0.06583 (2.55600)***	-0.00833 (-0.24200)	0.02897 (0.96300)
College graduate	0.11590 (4.51000)***	0.00008 (0.00200)	0.01491 (0.43100)
Post graduate	0.10905 (3.79400)***	0.03210 (0.69200)	0.07322 (1.94100)**
Education related to agriculture	0.06798 (1.31400)	0.01104 (0.16500)	-0.06226 (-0.96100)
<i>Reference category: Less than high school or high school</i>			
Household size (persons)	0.00984 (0.60200)	-0.00389 (-0.24400)	-0.00240 (-0.17000)
Labor Market Characteristics			
County unemployment growth rate in 2000	-0.00552 (-0.95900)	-0.00350 (-0.49900)	-0.00126 (-0.20100)
Population density	-0.00006 (-1.17200)	-0.00005 (-0.72700)	0.00004 (0.64000)
Population ratio	0.13036 (0.62600)	-0.07025 (-0.29000)	0.11026 (0.50500)
County employment growth rate	-0.00037 (-0.26100)	0.00076 (0.44400)	-0.00110 (-0.73300)
County area	-0.00004 (-2.64300)***	-0.00002 (-0.95800)	-0.00001 (-0.66900)
Inherited or purchased from			
Through her family	-0.01028 (-0.28400)	0.07042 (1.77700)*	0.01723 (0.46000)
Through his family	-0.00347 (-0.12900)	0.00866 (0.27300)	-0.03208 (-1.09100)
<i>Reference category: From entirely purchased from non-relatives</i>			
Value of farm assets			
200,000 to \$999,999	0.02677 (0.92800)	0.02759 (0.79400)	0.05090 (1.68000)*
More than \$1 million	0.02344 (0.58300)	0.08904 (1.93700)*	-0.02496 (-0.54200)
<i>Reference category: 199,999 or less</i>			
ERS Farm Production Regions			
Basin and Range	-0.01358 (-0.36400)	0.00770 (0.18000)	-0.04171 (-1.02700)
Northern Crescent	0.00407 (0.11100)	0.00696 (0.15900)	0.04640 (1.22800)
Eastern Uplands	-0.02483 (-0.51100)	-0.00381 (-0.06900)	0.01284 (0.26300)
Mississippi Portal	0.04546 (0.96200)	0.05796 (0.97200)	-0.06971 (-1.11200)
Fruitful Rim	0.04135 (0.65700)	-0.10315 (-1.11200)	-0.18549 (-1.99600)**
Southern Seaboard	0.00890 (0.13400)	1.21835 (2.99500)	0.04488 (0.65400)
<i>Reference category: Heartland, Northern Great Plains and Prairie Gateway</i>			
¹ t-statistics are shown in parentheses.			

Table 3. Multinomial Logit Model Marginal Affects for Benefits, 2001 Survey ¹				
Variable	No Job	Part time job with benefit	Full time job with benefit	Job with no benefit
Intercept	-0.0573 (-0.148)	-0.0311 (-0.141)	-0.1280 (-0.352)	0.2164 (0.823)
Age	0.0109 (0.859)	-0.0894 (-1.245)	0.0194 (1.580)*	-0.2151 (-2.587)***
Age square	-0.00003 (-0.237)	0.00008 (1.127)	-0.0003 (-2.406)***	0.0002 (3.061)***
Children under 6 years age	0.1119 (2.109)**	0.0233 (-0.732)	-0.0685 (-1.639)*	-0.0055 (-0.141)
Children age 6 to 11	0.0661 (1.505)	0.0418 (-1.560)*	-0.0685 (-1.661)*	0.0443 (1.412)
Children age 12 to 18	-0.1087 (-2.749)***	-0.0340 (-0.521)	0.0431 (1.158)	0.0773 (2.668)***
Children above 18	-0.0875 (-2.520)***	-0.0340 (-1.747)*	0.038 (1.203)	0.0147 (0.610)
Farm Women Educational Attainment				
Vocational/technical school/some college	-0.0494 (-1.659)*	0.0250 (1.360)*	0.0547 (1.885)**	-0.0303 (-1.368)
College graduate	-0.1607 (-4.131)***	0.240 (1.047)	0.114 (3.198)***	0.0217 (0.846)
Post Gradutaion	-0.3921 (-6.197)***	0.0701 (2.452)***	0.3218 (6.565)***	0.0001 (0.004)
Education related to agriculture	0.0639 (0.996)	0.0076 (0.222)	-0.0020 (-0.036)	-0.0695 (-1.291)
<i>Reference category: Less than high school or high school</i>				
Household size (persons)	0.0368 (2.505)***	0.0013 (0.170)	-0.0270 (-1.738)*	-0.0111 (-0.921)
Labor Market Characteristics				
County unemployment growth rate in 2000	0.0048 (0.782)	0.0010 (0.274)	0.0014 (0.244)	-0.0073 (-1.567)
Population density	.0001 (2.050)**	0.0001 (0.512)	0.0001 (-2.3543)***	-0.0000 (-2.177)**
Population ratio	-0.4076 (-1.729)*	0.1506 (1.063)	0.1066 (0.488)	0.1530 (0.903)
County employment growth rate	0.0010 (0.670)	-0.0010 (-0.101)	0.0014 (0.957)	-0.0014 (-1.195)
County area	0.00002 (1.689)*	0.0000 (0.160)	0.0000 (-2.481)***	0.0000 (1.681)*
Inherited or purchased from				
Through her family	-0.0333 (-0.870)	-0.0224 (-0.897)	0.4993 (1.391)	0.0057 (0.212)
Through his family	-0.0261 (-0.873)	0.0085 (0.488)	0.0074 (0.263)	0.0100 (0.477)
<i>Reference category: Farm entirely purchased from non-relatives</i>				
Value of farm assets				
200,000 to \$999,999	0.0384 (0.946)	0.0372 (2.078)**	-0.0473 (-1.538)	-0.0207 (-0.874)
More than \$1 million	0.2329 (5.743)***	-0.0246 (-0.910)	-0.1937 (-4.388)***	-0.0145 (-0.498)
<i>Reference category: 199,999 or less</i>				
ERS Farm Production Regions				
Basin and Range	0.0416 (1.047)	0.0065 (0.293)	-0.0579 (-1.492)	0.0096 (0.358)
Northern Crescent	0.0930 (2.366)***	-0.0307 (-1.245)	-0.0331 (-0.896)	-0.0291 (-1.001)
Eastern Uplands	0.16464 (3.319)***	0.0553 (-1.671)*	-0.0630 (-1.330)	-0.0462 (-1.211)
Mississippi Portal	0.0975 (1.819)**	-0.0131 (-0.410)	-0.0904 (-1.677)*	0.0060 (0.164)
Fruitful Rim	0.0455 (0.610)	-0.0054 (0.127)	-0.0085 (-0.116)	-0.0424 (-0.761)
Southern Seaboard	.1151 (1.577)*	-0.0814 (-1.405)	-0.0309 (-0.456)	-0.0027 (-0.51)
<i>Reference category: Heartland, Northern Great Plains, and Prairie Gateway.</i>				
¹ t-statistics are shown in parentheses.				

Table 4. Multinomial Logit Model Marginal Affects for Benefits, 2001 Survey ¹			
Variable	No Job	Working with benefit	Job with out benefit
Intercept	-0.9984 (-2.109)*	-0.1280 (-0.352)	0.2164 (0.823)
Age	.0590 (.03910)***	0.0194 (1.580)*	-0.2151 (-2.587)***
Age square	-0.00003 (-0.237)	-0.0003 (-2.406)***	0.0002 (3.061)***
Children under 6 years age	0.1119 (2.109)**	-0.0685 (-1.639)*	-0.0055 (-0.141)
Children age 6 to 11	0.0661 (1.505)	-0.0685 (-1.661)*	0.0443 (1.412)
Children age 12 to 18	-0.1087 (-2.749)***	0.0431 (1.158)	0.0773 (2.668)***
Children above 18	-0.0875 (-2.520)***	0.038 (1.203)	0.0147 (0.610)
Farm Man Educational Attainment			
Vocational/technical school/some college	-0.0494 (-1.659)*	0.0547 (1.885)**	-0.0303 (-1.368)
College graduate	-0.1607 (-4.131)***	0.114 (3.198)***	0.0217 (0.846)
Post Graduation	-0.3921 (-6.197)***	0.3218 (6.565)***	0.0001 (0.004)
Education related to agriculture	0.0639 (0.996)	-0.0020 (-0.036)	-0.0695 (-1.291)
<i>Reference category: Less than high school or high school</i>			
Household size (persons)	0.0368 (2.505)***	-0.0270 (-1.738)*	-0.0111 (-0.921)
Labor Market Characteristics			
County unemployment growth rate in 2000	0.0048 (0.782)	0.0014 (0.244)	-0.0073 (-1.567)
Population density	.0001 (2.050)**	0.0001 (-2.3543)***	-0.0000 (-2.177)**
Population ratio	-0.4076 (-1.729)*	0.1066 (0.488)	0.1530 (0.903)
County employment growth rate	0.0010 (0.670)	0.0014 (0.957)	-0.0014 (-1.195)
County area	0.00002 (1.689)*	0.0000 (-2.481)***	0.0000 (1.681)*
Inherited or purchased from			
Through her family	-0.0333 (-0.870)	0.4993 (1.391)	0.0057 (0.212)
Through his family	-0.0261 (-0.873)	0.0074 (0.263)	0.0100 (0.477)
<i>Reference category: Farm entirely purchased from non-relative</i>			
Value of farm assets			
200,000 to \$999,999	0.0384 (0.946)	-0.0473 (-1.538)	-0.0207 (-0.874)
More than \$1 million	0.2329 (5.743)***	-0.1937 (-4.388)***	-0.0145 (-0.498)
<i>Reference category: 199,999 or less</i>			
ERS Farm Production Regions			
Basin and Range	0.0416 (1.047)	-0.0579 (-1.492)	0.0096 (0.358)
Northern Crescent	0.0930 (2.366)***	-0.0331 (-0.896)	-0.0291 (-1.001)
Eastern Uplands	0.16464 (3.319)***	-0.0630 (-1.330)	-0.0462 (-1.211)
Mississippi Portal	0.0975 (1.819)**	-0.0904 (-1.677)*	0.0060 (0.164)
Fruitful Rim	0.0455 (0.610)	-0.0085 (-0.116)	-0.0424 (-0.761)
Southern Seaboard	0s.1151 (1.577)*	-0.0309 (-0.456)	-0.0027 (-0.51)
<i>Reference category: Heartland, Northern Great Plains, and Prairie Gateway.</i>			

¹T-sttistics are shown in parentheses.

Table 5. Bivariate Probit Model Marginal Effects, 2001 Survey¹

Variable	Farm women	Farm man
Age	0.0544 (5.5170)***	0.0328 (3.525)***
Age square	-0.0007 (-7.409)***	-0.0004 (-5.763)***
Children under 6 years age	-0.0898 (-1.872)*	-0.0251 (-0.485)
Children age 6 to 11	-0.0563 (-1.425)	-0.06913 (-1.712)*
Children age 12 to 18	0.0742 (2.155)**	-0.0850 (-2.360)***
Children above 18	0.0422 (1.325)	0.0543 (1.675)*
Educational Attainment		
Vocational/technical school/some college	0.0489 (1.818)*	0.1001 (3.214)***
College graduate	0.1581 (4.693)***	0.0907 (2.193)**
Post graduate	0.3327 (6.741)***	0.3073 (6.542)***
Education related to agriculture	-0.0612 (-1.064)	-0.1554 (-4.197)***
<i>Reference category: Less than high school or high school</i>		
Household size (persons)	-0.0350 (-2.992)***	0.0080 (0.663)
Labor Market Characteristics		
County unemployment growth rate in 2000	-0.0048 (-0.858)	0.0004 (0.084)
Population density	-0.00007 (-1.575)	-0.000004 (-0.110)
Population ratio	0.0872 (0.449)	0.4004 (1.901)**
County employment growth rate	-0.0006 (-0.434)	0.0009 (0.622)
County area	-0.000008 (-0.587)	-0.00004 (-2.655)***
Inherited or purchased from		
Through her family	0.0225 (0.650)	-0.0001 (-0.005)
Through his family	0.0426 (1.634)	-0.0762 (-2.828)***
<i>Reference category: Farm entirely purchased from non-relatives</i>		
Value of farm assets		
200,000 to \$999,999	-0.0173 (-0.600)	-0.01401 (-0.479)
More than \$1 million	-0.1199 (-3.336)***	-0.2548 (-6.410)***
<i>Reference category: 199,999 or less</i>		
ERS Farm Production Regions		
Basin and Range	-0.0330 (-0.951)	0.07078 (1.917)**
Northern Crescent	-0.0996 (-3.007)***	0.1139 (3.062)***
Eastern Uplands	-0.1385 (-3.252)***	0.0683 (1.515)
Mississippi Portal	-0.1075 (-2.148)**	0.7594 (1.554)
Fruitful Rim	-0.1091 (-1.579)*	0.1473 (1.990)**
Southern Seaboard	-0.1374 (-2.155)**	0.1780 (2.643)***

Reference category: Heartland, Northern Great Plains, or Prairie Gateway

*** = statistically significant at the 0.01 level; ** = significant at 0.05 level; * = significant at 0.10 level

¹t-statistics are shown in parentheses.