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Impact of off-farm labor supply on food expenditures of the farm household

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ABSTRACT

Farm households diversify their income sources by working off the farm. This is a risk management strategy that is used by farm households in both developed and developing countries. Income diversification via off-farm work is associated with higher incomes and food consumption. However, little is known about the association between off-farm work and farm household food expenditures. In an effort to bridge this gap, this study attempts to assess the impact of off-farm work decisions by the operator and/or the spouse on the food expenditures of the farm household. Using a nationwide farm household survey in the United States and new econometric method, we find that the decisions of the operator and/or the spouse to work off the farm are significantly interrelated (29%). However, these two decisions affect food expenditures in different ways. The operator's off-farm work decision is positively related to food expenditures, while the spouse's decision is negatively associated with expenditures on food by the farm household.

Introduction

Farm households diversify their income sources by working off the farm. This phenomenon is observed around the world both in developed and developing countries. In fact, the importance of income diversification through off-farm work by farm households, particularly in developing countries, has been underscored by the publication of scholarly papers in the *Food Policy* journal[2] in the early 21st century. Income diversification via off-farm work is associated with higher incomes and food consumption, and more stable income and consumption over years (Reardon et al., 1992). Further, De Janvry and Sadoulet (2001) conclude that off-farm sources of income offer effective strategies to combat poverty and inequality. Indeed that has been the case in the US, where Mishra and Sandretto (2001) find that off-farm income played an important role in stabilizing farm household income than government farm program payments. Finally, new approach to rural development focuses on the promotion and generation of off-farm income earning opportunities for farm and rural households.

There is an obvious connection between income diversification through off-farm work and food consumption among farm families in developing countries. For example, Anderson (2002) notes that off-farm income is extremely important to the household livelihood in many developing nations and essential to food security among farm households in Malawi. Further, Chang and Sumner (2003) note that Chinese farm households whose total income is contributed mostly by off-farm earnings are more food secure as exposed to price fluctuations. Specifically, households with off-farm work will have a better chance to reallocate their labor and can more efficiently offset the negative price effect on their food security compared to those who have fewer off-farm options. While looking at the participation in food-for-work program in Ethiopia, Gebremedhin and Swinton (2001) found that compared to other households farm households with off-farm work were less likely to participate in food-for-work program. Finally, Ruben and Van Den Berg (2001) in their study of Honduran farm household found that food consumption is strongly enhanced through engagement in non-farm activities. Further, the authors also find evidence that non-farm income enables farmers to purchase external inputs for improving yields and labor productivity.

Although there is paucity of studies that directly investigate the impact of off-farm work on food consumption by farm households, but there is considerable literature in consumer and labor economics on the issue of working wives and their impact on food and other related expenditures of the household. Much of the empirical work was initiated during the post-WWII era when there was recognition of the fact that a significantly higher percentage of women joined the regular workforce. For example, Sexauer (1980) identified the increase in labor-force participation rates for women as one of the four major changes affecting consumer expenditures. Subsequently, other researchers (Nicklos and Fox, 1983; Strober

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[2] For example, see volume 26, issue 4 and volume 29 issue 3.

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and Weinberg, 1980) found that time is a major resource constraint and they identified major strategies, such as substitution of capital equipment for household labor and/or paid labor for household labor. These options might be among those adopted and used by working wives to reduce time pressures.

A similar trend among working spouses can be identified in farm family households. However, unlike ordinary households, the situation with farm families is unique.[3] Specifically, farm operators and spouses work on and off the farm to increase and stabilize[4] their total household income (e.g., Sander, 1983; Mishra et al., 2002; Hallberg et al., 1991; Mishra and Goodwin, 1997). In addition, Mishra and Holthausen (2002) report a significant rise in the number of farm operators and/or spouses working off the farm and essentially working more hours, including farm and off-farm work hours. Mishra et al. (2002) also report that the majority of those spouses who work full-time off the farm are mainly employed in schools and other government jobs that have fringe benefits. This rise in off-farm work by farm spouses has important implications for the pattern of expenditures of the farm families involved. Data from 2003 Agricultural Resource Management Survey show that where both operator and spouse work off the farm, these families tend to spend more on household related items, such as food and recreation, and retirement savings. This pattern is consistent with the fact that working spouses have time constraints and those tend to affect the consumption of and expenditures on food away from home. There may be a strong argument for the position that food away from home (FAFH) includes leisure as well as a time-saving component.

A number of studies have considered the stimuli for off-farm labor supply. These include the examination of the factors affecting the decisions of farm household members to participate in the off-farm labor market (e.g., Ahearn et al., 2006; Huffman, 1991; Lass et al., 1991); and the impacts of off-farm work on farm production practice (Ellis et al., 1999; Goodwin and Mishra, 2004; Nehring et al., 2005; McNally, 2002). Although there is an extensive literature on off-farm work, far less attention has been paid to investigate the effects of the decision to work off the farm on farm household expenditures. Agricultural household/production theory contends that farm households decide the optimal allocation of household labor and level of consumption by maximizing the household's utility subject to cash constraints. Since income from off-farm work accounts for more than 85% of total household income (Mishra et al., 2002), it is reasonable to hypothesize that off-farm labor supply may affect the pattern of farm household consumption expenditures. Under this working hypothesis, this paper considers how the participation of the farm operator and/or the spouse in the off-farm labor market affects farm household food expenditures.

The objective of this paper is twofold. First, we investigate the association between farm characteristics and government farm program payments and the decisions of the operator and/or the spouse to work off the farm. Inclusion of farm program payments in the off-farm work decision is important since it has been argued that farm program payments increase and stabilize the total income of farm households and hence lessen the need to work off-farm (e.g., Mishra and Sandretto, 2001). However, starting with the 1996 Farm Bill, farm program payments can be categorized into decoupled (not tied to the production of commodity crops) and coupled payments (those that are tied to the commodity crops). The former could be considered as pure income transfer payments. The second type of payment is made if the prices fall below the posted or guaranteed price (El-Osta et al., 2004; Ahearn et al., 2006). One can argue that coupled payments reduce income variability and hence have a negative impact on off-farm work.

In addition, we also test if off-farm work decisions by operators and spouses are jointly determined. Although studies have focused on the effects of off-farm labor supply on production of agricultural commodities and income of farm households, to our knowledge, none have studied the effects of off-farm labor decisions of operators and spouses on farm household food expenditures. Therefore, the second objective of this study is to examine those factors that are associated with total food expenditures of farm households. A statistical test is conducted to demonstrate if the off-farm employment status of the farm operator and/or spouse has a significant impact on farm household food expenditures. The contribution of this paper is that (1) it uses very current data and econometric method to test the economic model of household behavior; (2) it is conducted at the farm level nationwide with the unique feature of a larger sample than previously reported in the literature, comprising farms of different economic sizes and in different regions of the United States; and (3) it takes an additional step in assessing the impact of off-farm work and by extension increase in income of farm households on consumption behavior, particularly, food expenditures. Finally, although the study is US based results from this analysis are consistent with the hypotheses of on and off-farm work with respect to other economies, both developed and developing, farms, and farming regions.

To reach our goals, an econometric model that combines the strengths of the endogenous treatment effect and the bivariate discrete choice models is proposed. These models are estimated using a two-stage framework. In the first stage, the off-farm work decisions of the operator and the spouse are specified as a bivariate probit model. The emphasis in the second stage is on the estimation of factors that are associated with food expenditures of the farm household. Two binary indicators that identify the off-farm work decisions of the operator and the spouse are included in this equation, along with the correction terms for treatment selection bias. A test to see if these two binary indicators are both equal to zero can be employed to demonstrate the impact of these two off-farm work decisions on food expenditures. Furthermore, a test for the significance of the correction terms for treatment selection bias can justify if the off-farm work decisions of the operator and the spouse are correlated with food expenditures due to some unobservable heterogeneity.

This paper is structured as follows. We first review the literature that discusses the relationship between the employment status of wives and household expenditures on food. The econometric strategy is outlined and the following section introduces the data used in this study. The presentation of results includes: identification of those factors that affect the decisions of the operator and/or the spouse to work off the farm, and continues with a discussion of the impacts of off-farm work on household food expenses. The conclusions from this study are the final section in this paper.

Employment status and major family expenditures

Strober and Weinberg (1977) found that the employment status (working and non-working) of the wife was not significant in explaining purchase decisions of time-saving durables once total family income, which was significant, was held constant. Bellante and Foster (1984) focused on the relationship between the wife's employment status and expenditures on time-saving services. The authors found that in addition to family income and family life-cycle status, the education and labor-force participation of the wife was significant in determining expenditures on food away from home (FAFH), child care, and clothing care. Jacobs et al.

[3] Farm operators and spouses have dual jobs. In addition to working on the farm and home production farm wives work off the farm for fringe benefits (Jensen and Salant, 1985).

[4] For instance, Mishra and Sandretto (2001) studied variability in farm household income, much of which is due to income from farming, and conclude that off-farm income has been a major factor in stabilizing total household income.