SUSTAINABLE AGRICULTURAL DEVELOPMENT: THE ROLE OF INTERNATIONAL COOPERATION

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Contributions of Women and Household Members to the Economy in Rural Areas

INTRODUCTION

The economies of rural areas in the United States have been in economic transition since settlement. Today, changes in agricultural production have fostered an economic environment in rural areas which is moving away from that traditional reliance on agriculture and towards greater economic diversity. The expended use of capital-intensive agricultural technologies and the increase in farm size have led to changes in the farm sector, and spurred an outward migration of labour from agriculture. Many formerly prosperous regions and residents face problems of economic adjustment and, in many cases, changed standards of living.

The ability to adapt to changes in the economic environment is a valuable human resource (Schultz, 1975). Households faced with changes in economic conditions may follow alternative adjustment strategies to stabilize or improve incomes. These adaptive strategies include moving labour resources off the farm to non-farm labour markets. The ability to adjust to these economic changes has important implications for well-being and incomes in rural areas.

In the United States, as well as in many other economies, agriculture may not be able to provide an economic base sufficient to sustain population and income levels consistent with those in the non-agricultural sectors of the economy. This situation underscores the importance of the non-farm sector to rural incomes. Although there is no single well-developed paradigm to describe the development process in rural areas of the United States, the strategies that households have used to meet these changing conditions provide insight into ways in which households adapt to the new economic environment of rural areas. Successful approaches to improving incomes often involve enhancing the ability of farm households to gain access to the economic base within the non-farm economy.

This paper is based on evidence from the United States and develops three major themes. First, the agricultural base of traditional rural areas alone is unlikely to support households in non-metropolitan areas[1] through the economic adjustments without significantly changing their standard of living relative to residents of metropolitan areas. Development policies that will successfully enhance economic growth in rural areas must entail increased

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off-farm income generation. Second, farm households have successfully used the non-farm economy of rural areas to enhance household income. This is an adaptive strategy and has occurred primarily through off-farm employment and most often through the activities of women and household members other than the farm operator. Third, both for farm and non-farm households, a major limitation to higher incomes is lack of access to higher paying jobs in rural areas. These conditions imply that more effective development strategies will benefit households in rural areas. The objective here is to provide a better understanding of the contributions of household members in rural areas to generate non-farm income in the United States, and the economic environment in which this occurs.

LINKS BETWEEN AGRICULTURE AND THE RURAL ECONOMY

Returns to agricultural production have historically been the backbone of rural economies. However, agriculture has become more limited in its ability to support the economies of rural America. Evidence suggests that there will be relatively slower growth both for agriculture and the associated rural economy. Furthermore, dependence on the non-farm rural economy will increase.

There are several reasons for the more limited economic outlook for rural areas. First, the long-term projections of real prices of major agricultural commodities, especially those important in the Mid-west, such as soybeans, corn and wheat, are projected to be relatively constant (Food and Agricultural Policy Research Institute, 1991). These projections incorporate consensus macro-economic conditions and current agricultural policies, which include relatively large subsidies to the agricultural sector. Should policies change, such as through ongoing GATT trade negotiations, the outlook on prices may improve. However, without major policy changes, the projected farm income base of the rural economy is likely to continue its downward secular decline.

Second, the growth in non-farm sectors in primarily agricultural states has been relatively slow. Evidence for the mid-western states in the United States, an area that has generated a relatively large share of US farm income, shows that non-farm employment in the Mid-west has grown more slowly than that in the United States as a whole during the 1970s and 1980s (Johnson *et al.*, 1989). Employment in agriculturally related industries has grown more slowly than employment in non-agricultural manufacturing. Off-farm income as a share of total cash income of farm operator households have averaged nearly 50 per cent in the 1980s (US Department of Agriculture, 1990).

Another indicator of the changes in the economic environment in rural areas is the presence of relatively high levels of poverty, as shown in Table 1. In the past, rural poverty in the United States has been characterized by pockets of poverty. Today, rural poverty has become more widely dispersed, with rates higher than those in urban areas among selected groups of the population: the elderly, children and female-headed households.

TABLE 1 *Poverty in non-metropolitan and metropolitan areas, 1985*

	Poverty rate (%)	
	Rural	Urban
Total population	18	12
Elderly	18	11
Children	24	19
White	16	10
Non-White	24	22
Persons in female-headed households	44	36

Source: US Department of Commerce, Bureau of the Census (1985).

ADAPTIVE RESPONSE OF RURAL HOUSEHOLDS

Households which face such structural re-alignment in non-metropolitan areas make decisions about allocating physical and human resources in order to achieve efficiently their desired standard of well-being. With declines in the agricultural economic base, we would expect to see labour resources adjusted from farm work into non-farm work.

The farm household labour allocation model (see Singh, Squire and Strauss, 1986; Huffman and Lange, 1989) provides a theoretical structure for the decision-making process within which household members allocate resources to gain income and other non-wage benefits. Household labour is available from the operator, spouse and other members of the household. The allocation of labour and other physical resources occurs as household members allocate time among farm and non-farm productive activity and leisure time, choosing to allocate marginal units where the marginal return is greater than the marginal value of other uses of their time resource. Improvements in the returns from off-farm work increase participation in work off the farm. In general, the findings of empirical studies show that labour supply has a positive supply elasticity and human capital has a positive effect on off-farm work participation and supply.

Enhanced ability of households to respond in such an economic environment is determined by their ability to adapt efficiently to changes (Schultz, 1975; Huffman, 1985). Differences in adaptive ability lead to different decisions made with respect to change. We expect households with superior adaptive ability to perceive the change (or disequilibrium) better, to evaluate the situation better and to make more efficient decisions on allocating resources with respect to the changing conditions. Thus human capital in the form of adaptive abilities leads to differences in behaviours and differences in observed objective measures of well-being such as money income.

Both farm and non-farm rural residents encounter the same off-farm labour opportunities. When returns in the agricultural sector fall relative to the non-

agricultural sector, adjustments can be expected, particularly through movement of labour resources out of farming and into non-farm employment. Such a strategy may not only raise the level of income for the farm household, but also is likely to reduce the risks associated with depending solely on farm income and the greater variability attached to farm income.

Evidence of the importance of off-farm employment to the income of farm households in the United States is widely available. Off-farm work by members of the farm household has become a well-established strategy for using farm-based resources. Does non-farm income enhance the economic well-being of farm households? Recent evidence comes from the USDA 1988 Farm Costs and Returns Survey (El-Osta and Ahearn, 1991) which categorized farm operator households into income quartiles and by asset levels. As shown in Table 2, non-farm income, which includes non-farm business, wages and salary, represents a significant share of income for all farm operator households. The off-farm incomes are relatively lower for the lowest quartile, but high for farm households in the upper quartile. Non-farm income of high-asset farms averaged more than $95 000 initially. The largest share of non-farm income for the upper quartile came from non-farm business, wages and salary. Why are the farm households in the highest income quartile successful? Among major reasons, as Table 2 shows, are that more operators and their spouses worked more hours off the farm; more considered occupations other than farming as their major occupation.

In another study, Tokle and Huffman (1991) analysed the joint work participation decisions of farm and non-farm households in rural areas where both husband and wife were present. They found that wage work participation decisions by males and females in households are joint decisions. This suggests that the observed off-farm labour market activity results from an intra-household allocation process; and, consistent with earlier studies, schooling had a positive effect on the probability of wage work for the married farm and non-farm males and females. As expected, children aged under 18 had a negative effect on the probability of work by married females. When leisure was assumed to be a normal good, higher farm output prices reduced the probability of both husband and wife participating in wage work for farm households.

In addition to increasing the overall level of income, the diversification of income sources may also help to stabilize household income through market wages and, potentially, through additional compensation in the form of fringe benefits.

THE NON-FARM ECONOMY

Despite evidence linking the economic choices of farm households to the non-farm economy, the interdependencies between the two sectors are not well understood. Labour markets in rural areas become a critical link in the ability of farm, and non-farm, residents to gain access to the off-farm economic base.

The empirical evidence drawn from the work by Tokle and Huffman indicates that both rural farm and non-farm households respond to economic

TABLE 2 *Characteristics of US farm operator households based on income levels of farm operator households and farm asset values, 1988*[a]

Item	Income distribution[a]					
	Lower quartile		Middle quartile		Upper quartile	
	<$500 000 in farm assets	>=$500 000 in farm assets	<$500 000 in farm assets	>=$500 000 in farm assets	<$500 000 in farm assets	>=$500 000 in farm assets
Number of farms	365 015	71 990	798 576	75 935	307 499	129 730
Share of all farms (%)	21	4	46	4	18	7
Farm operator household characteristics						
Income by source ($)						
Net cash farm income	–8 768	–48 963	1 150	6 620	18 734	59 922
Nonfarm business, wages, and salaries	3 053	5 251	14 894	8 802	48 012	75 100
Interest and dividends	583	2 660	1 445	3 832	4 352	12 423
Income from all other nonfarm sources	2 350	2 023	4 065	4 137	4 636	8 214
Average total income	–2 782	–39 029	21 554	23 391	75 734	155 659
Operator characteristics						
On-farm average hours of work (per week)	32	51	27	48	28	48
Off-farm average hours of work (per week)	10	4	19	6	25	11
Major occupation (%)[b]						
Farming	66	89	48	86	40	77
Other	34	11	52	14	60	23
Spouse characteristics						
% of farm operators with spouses	75	77	89	85	92	93
On-farm average hours of work (per week)	8	15	7	14	8	12
Off-farm average hours of work (per week)	9	7	13	10	21	11
Major occupation (%)[b]						
Farming	23	31	18	32	17	22
Home-making	51	49	48	48	29	47
Other	26	20	34	20	55	32

Notes: [a]The cut-off incomes for lower quartile, middle quartile and upper quartile are $8401 or less; greater than $8401, or $38 240 or less; and greater than $38 240; respectively.
[b]Numbers may not add up to 100 per cent, owing to rounding.

Source: El-Osta and Ahearn (1991). Data from the *Farm Costs and Returns Survey*, 1988. Note that farms that are organized as non-family corporations, or managed by an operator who does not share in the net income of the business are excluded.

conditions in local labour markets when making labour supply decisions. Increased wages and expectations of improved labour market offers (specifically those viewed as permanent changes) led to higher levels of participation in off-farm labour markets. The effects of anticipated economic changes through employment growth and unemployment rates appear to be stronger for males in the labour force than for women (Tokle and Huffman, 1991).

If households rely on employment in rural areas, how 'good' are the jobs? Are there differences in the returns from employment for those working in non-metropolitan areas compared to metropolitan areas? These could be due to different types of jobs, different costs of living, or relatively slow adjustment of labour and lack of mobility caused by the fixity of capital (for farm households) and an unwillingness to migrate.

There is some evidence that compensation offered by non-metropolitan employers is not as high as that offered by those in metropolitan areas for the same occupations (Jensen, 1982; Jensen and Salant, 1985). A national survey of employer compensation practices indicated that neither average wages nor non-wage compensation was as high in non-metropolitan areas. Both the structure of industry and the location contributed to this outcome.

A 1980 national sample of women who head families provides evidence on rural–urban differences in women's earnings. Among women who worked full-time, those living in rural areas had earnings comparable to those living in small towns; the earnings of the rural women were significantly lower than the earnings of those in central cities or suburban areas. The differences were found to be due more to differences in pay scales than to occupational differences (Cautley and Slesinger, 1989). That is, lower pay does not seem to come from having different occupations, although aggregated occupational classification may mask some differences in jobs.

Other evidence from recent surveys of farm households shows that women who worked off the farm earned less than males. This was the case both when compared at different levels of education (Saupe, 1990) and by industry of employment (Salant, 1983), as shown in Tables 3 and 4. These differences indicate that rural women face different off-farm job prospects than men, and that the differences are not fully explained by education.

CONCLUSIONS

Changes in agricultural technologies and in the size of farms are altering the economic base of rural areas. Households in rural areas are in the process of adapting to these economic changes. The major shift has been to move labour resources off the farm, away from farm-based home activities and into non-farm jobs. The dependence of farm households on agriculture as a source of income has diminished.

Women and other household members have increased off-farm work. The success of this adaptive strategy to meet the declines in agricultural prospects is apparent. When women (farm operator spouses) earn off-farm income, the economic prospects for the farm family household are improved.

TABLE 3 *Average off-farm wage rates of individuals in south-western Wisconsin farm households, 1986 (dollars per hour)*

Category	Male farm operator	Wife	Other farm household members			
			< Age 25		≥ Age 25	
			Male	Female	Male	Female
Years of schooling completed						
< 12 years	6.95	3.68	3.47	2.50	6.00	3.68
12 years (high school grad)	8.29	5.83	4.90	5.00	7.73	6.61
> 12 years	13.06	8.15				
Average	10.09	6.71				

Source: Saupe (1990).

TABLE 4 *Mean hourly wage rates, by sex of worker, selected occupations and industries, 29-county Mississippi – Tennessee area, 1980 (dollars)*

Job classification[a]	Female	Male
Industrial		
Manufacturing		
Durable	4.52	6.36
Non-durable	3.88	5.14
Trade (wholesale & retail)	4.28	5.26
Services		
Education	5.88	6.71
Other services	4.69	4.99
Occupational		
Administrative, professional & technical	6.36	7.66
Marketing, sales & clerical	4 71	6.45
Service	3.41	3.88
Production work	4.03	6.10

Note: [a] Standard Occupational Classifications and Standard Industrial Classification.

Source: Salant (1983).

It is unlikely that agriculture will lead the economic development of rural areas in the United States. Other industries, including those that can overcome geographic separation through new communications technologies, are likely to be relatively more important in rural areas. Public policies and programmes that enhance the ability of rural household members to have access to such jobs will improve employment prospects and incomes. This would include information services to reduce labour market transaction costs. For women, especially, this would include childcare services, and, although this is less easy to identify, we need to understand better the basis for lack of equality in pay levels. This becomes increasingly important to incomes of farm households as women move to work in off-farm jobs.

NOTES

[1]The terms 'non-metropolitan' and 'rural' are used interchangeably throughout this paper.

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DISCUSSION OPENING – HIROYUKI NISHIMURA*

Dr Jensen is able to show increased trends in off-farm and non-farm income earned by women in the United States, using empirical results derived by herself and by others. The effects have been favourable both in terms of increasing and in stabilizing total household income. This phenomenon has also been observed in Japan, as well as in other countries, though it can occur in different forms and the policy implications which follow can have different impacts on agricultural structure.

I would like to begin by raising a question concerning increased off-farm employment. Are the impacts of dependency on non-farming jobs taken by members of farm households favourable when viewed in a long-term perspective? Dr Jensen's view seems optimistic. I think the phenomenon is not always favourable, either for the farming business or for family relations in households. Usually, it is difficult to achieve harmonious and complementary relationships between farming and non-farm employment. Reliance on supplementary income does not, in itself, provide the incentive to increase productivity or efficiency in agriculture. Much depends on the type of labour which is diverted towards non-farm employment.

In Japan, for example, it is widely recognized that farm operators (normally husbands) have tended to take off-farm jobs, and their spouses, with aged family members, perform an increasing amount of farmwork. This appears to contrast to the situation in the United States. Japanese women usually have to put in more physical work and cope with the additional problems of acquiring knowledge of rapidly changing technology of farming. To me this appears to be a short-term expedient rather than a long-term foundation for successful farm business operation.

It is also important to consider the case of developing countries. Commonly, the family income derived from small-scale agriculture is not sufficient to maintain large families, and they come to depend on different sources of income from a number of jobs. They are not specialized and do not operate their farms on an efficient scale. In order to achieve higher productivity, and reduce production costs, farm structure must alter. Off-farm and non-farm income is a vital supplement when farm technology is backward, but it is again short-term in relation to the need to improve the farming base.

I found it extremely interesting to listen to a paper dealing with the particular conditions of the United States, but I do want to emphasize that its lessons may be country-specific and that the general theme needs to be explored on a case-by-case basis. In short, the influence of non-farm activities in the economy of rural areas can influence agriculture in complex, and not always helpful, ways.

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