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INFLUENCE OF THE COMMUNITY ECONOMIC BASE ON OFF-FARM EMPLOYMENT[1]

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ABSTRACT Current research indicates the prevalence of off-farm employment among United States farm families creates an important linkage between farm and nonfarm sectors of the economy. The contention is that the nonfarm sector contributes through this medium to the economic viability of the farm sector. Despite the relevance of this linkage, few attempts have been made to further specify its nature. This study examines the extent and source (by industry) of off-farm employment in Texas nonmetropolitan counties, classified by their economic base. Data are from the 1980 Census of Population and the classification of nonmetro counties developed by ERS, USDA. The analysis explores differentials in the strength and nature of this farm-nonfarm economic linkage in nonmetro economies dominated by different basic industries. Particular attention is paid to counties with agricultural economic bases.

Introduction

The increasing incidence, importance, and changing nature of off-farm employment among farm families may be one of the most significant structural changes occurring in United States agriculture. There has been a marked increase in the proportion of farm family members who are employed off the farm, with an estimated 92 percent of farm families receiving some form of nonfarm income in 1979 (Carlin and Ghelfi 1979). The total impact of such employment on farm family income is also significant. Coughenour and Swanson (1983) report that in 1979, 63.4 percent of total income for farm families with farm sales of less than $40,000 and 30.7 percent for those with sales of $40,000 to $99,999 came from nonfarm sources.[2] They also note that the nonfarm contribution to income has been increasing over time. In addition, off-farm employment is no longer viewed as a temporary stage in the life-cycle of farm families preceding entry to, or exit from, exclusive employment in agricultural production (Ladewig and Albrecht 1983, p. 41). "Off-farm employment is clearly becoming an established aspect of farm family life" (Deseran et al. 1984, p. 211).

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[2] Nonfarm income is not totally attributable to off-farm employment. Other sources are interest, dividends, rent, and transfer payments. Carlin and Ghelfi (1979, p. 272) indicate, however, that 68 percent of total off-farm income in 1975 was derived from wages and salaries.

income have been proposed. Among them are to supplement low income from farming operations (Beaulieu and Molnar 1984; Coughenour and Swanson 1983; Ladewig and Albrecht 1983) to buffer or stabilize fluctuations inherent in agriculturally derived income (Ladewig and Albrecht 1983; Molnar 1985) and to provide capital for the farming operation (Coughenour and Swanson 1983; Deseran et al. 1984; Heffernan et al. 1981).

Whatever the reasons underlying this structural change in United States agriculture, the implications are fundamental. First, off-farm employment, with the additional income it generates, facilitates the solvency and continued existence of the family farm, especially smaller operations (Deseran et al. 1984; Ladewig and Albrecht 1983). Second, off-farm employment inextricably links the economic health of the farm sector to that of the nonfarm sector (Crecink 1979), particularly the nonfarm sector of rural communities (Heffernan et al. 1981). As Tweeten (1984, p. 845) notes, "off-farm employment is saving many family farms. Is it time for agriculturalists to stop emphasizing only the contribution of family farms to rural communities and instead emphasize also the contribution of rural communities (and the off-farm employment they provide) to preserving family farms?"

Forces contributing to this fundamental change in family farm operation include increased employment opportunities in rural areas (e.g., Beale 1978) and need for additional income.[3] Various reasons for this need for additional family

Despite these contentions that the nonfarm sector provides crucial support to the farm sector, relatively little work has explored the precise parameters of this linkage, particularly in rural areas. Most studies rely on aggregated data focusing on farm families or farms. This focus leaves unspecified the conditions under which nonfarm employment and income form close ties between the farm and nonfarm sectors of local economies.

This study assesses off-farm employment in those counties where agriculture forms the base of the local economy. As Hobbs (1983, p. 107) notes, "a discussion of United States agricultural communities in the 1980s must necessarily begin by drawing a distinction between agricultural communities and the remainder of rural communities." It is readily apparent that in agricultural counties a linkage between the farm and nonfarm sectors of the local economy is particularly important. The possibility of circular effects between these two sectors exists, whereby the farm sector determines the economic health of the nonfarm sector (Tweeten and Brinkman 1976), and this, in turn, supports the farm sector to the extent it provides employment and income to farm residents.

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[3] The requirement for additional income that "pushes" farm families to seek off-farm income may not be the only force behind the trends of off-farm employment. There are indications that individuals with nonfarm employment are being "pulled" to part-time farming for its associated nonmaterial benefits (Paarlberg 1980) and material benefits in the form of tax advantages (Coughenour and Swanson 1983).

Previous research has neglected also the precise source of this support for rural farm families. Employment in the nonfarm sector is not uniform but occurs instead in different industries. Different sources of off-farm employment will have different implications for rural farm families and communities. For example, off-farm employment in a fairly stable manufacturing sector will have different implications from off-farm employment in an unstable, resource-based industry (e.g., mining) or in the trade and services sector.

This study expands on previous research by evaluating off-farm employment and its sources in nonmetropolitan counties in general and specifically in counties (or local economies) dominated by agriculture. This analysis facilitates evaluation of the impact of off-farm employment on the rural community economies.

Methods and limitations

The extent of off-farm employment by farm operators has long been of interest to those studying the structure of agriculture in this country, and indeed, has been an item included in the Census of Agriculture for many years. Recently, however, it has been suggested that when considering the contribution of nonfarm income to family farming operations, the focus of analysis should shift from the individual farmer and farm unit to the family (Coughenour and Swanson 1983). The basic contention is that the farm family is a unique socio-economic unit (Deseran et al. 1984) in which all members provide inputs such as labor and income. Specifically, the contribution of farm wives (e.g. Coughenour and Swanson, 1983) and children (Deseran et al. 1984) in terms of off-farm income and employment has been documented.

This analysis utilizes industry of employment data for the Texas rural farm labor force as reported in the 1980 Census of Population (United States Department of Commerce 1983). By considering all members of the rural farm labor force, this analysis includes off-farm employment of farm families. Percentages of the rural farm labor force employed in agriculture and in the nonfarm sector as a whole are calculated to evaluate employment in agricultural production relative to the nonfarm sector. Within the nonfarm sector, percentages of employment in 16 different industrial categories are calculated to determine the extent of reliance on these industries by the farm population for additional income. To facilitate interpretation of this information, these 16 industries are grouped into seven categories (forestry and fisheries; mining; construction; manufacturing; transportation, communication, and public utilities; trade and services; and government) representing subsectors of the nonfarm sector.

Identification of counties whose economies are based on agriculture is taken from Economic Research Service (U.S. Department of Agriculture) work on classification of nonmetropolitan counties in the United States (Ross and Green 1985). This categorization employs cutting points for determining the importance of various sources (agriculture,

manufacturing, mining, etc.) to total county income as a way to specify the basis of the local economy. For identifying agriculturally based economies, the criterion used was that 20 percent or more of labor and proprietors' income averaged over a 5-year period, 1975-1979 (Ross and Green 1985, p. 16), should come from agricultural sources. Nonmetropolitan counties in Texas where agriculture income exceeds this criterion are classified as agriculturally based. Other classifications are manufacturing counties (25 percent or more labor and proprietor income, 1979) and mining counties (20 percent or more labor and proprietor income, 1979) (Ross and Green 1985). These parameters provide a means of categorizing the economic base of nonmetro counties.

Counties can be classified as agriculturally based by this criterion and still have other significant economic activities. Therefore, a distinction is drawn between purely agricultural counties and counties where agriculture is combined with other major economic activity. For example, a county may be classified as agricultural and also have 20 percent or more labor and proprietor income from mining. It would therefore be classified as a mixed economy, as opposed to purely agriculture. The data have three limitations. First, the population considered includes only those residents on rural farms of one acre or more from which at least $1,000 worth of agricultural products were sold during 1979. Second, only the principal industry of employment is taken into account. This omits, for example, consideration of part-time off-farm employment by farm operators who consider agriculture their principal industry of employment. Third, individuals who reside on farms but may not be direct contributors to a farm family operation (e.g., hired labor) are included.

Despite these limitations, however, this analysis should classify the extent and sources of off-farm employment in nonmetropolitan counties and, consequently, the linkages between the farm and nonfarm sectors of rural economies, particularly those with an agricultural economic base. Even though the analysis is confined to Texas, this state is so diverse in terms of rural economies and agriculture that generalization to other sections of the country should be possible.[4]

Analysis

Of the 254 counties in Texas, 48 are classified by the Bureau of Census as being in a metropolitan area (United States Bureau of Census 1984). The remaining 206 counties, 81 percent of all counties, are classified as nonmetropolitan and are the focus for this study. Sixty-two of these nonmetro counties have been classified by the Economic Research Service, U.S. Department of Agriculture, as being dependent on agriculture as the basic economic activity in the county (Bender et al. 1985). Thirteen of the counties where agriculture is a dominant influence are also classified in another economic category (manufacturing,

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[4] A more in-depth description of the populations concerned, including information on residence, age, and education, is included in the Apendix.

mining, or government). In other words, these counties have a significant economic influence in addition to agriculture. The major issue being studied here is the extent to which the agricultural sector is supported by various nonagricultural industries in a local economy or county. While this issue is no doubt important in all nonmetro counties, it is certainly more crucial in those 62 counties where the major economic impetus is provided by agriculture, particularly in the 49 counties where agriculture is the sole dominant economic influence.

It is anticipated that the amount of off-farm employment generated in a local economy will be lower in agriculturally based counties than in counties where the economy is based on some other industry or on agriculture in combination with some other industry. The contention here is that not only does nonagricultural basic industry provide off-farm employment, it also tends to generate additional jobs in secondary sectors of the economy (e.g., trade and services) because of its typically larger employment base.

Table 1, which presents the percentage of the rural farm resident labor force employed in the nonfarm and agricultural sectors, indicates that this is the case. Off-farm employment is lowest (45 percent) in those counties where agriculture is the sole dominant economic activity. In counties where agriculture is not a dominant economic activity, off-farm employment is 58 percent. In those counties where agriculture and some other industry provide significant amounts of income to the local economy, off-farm employment is slightly higher (61 percent). These results conform to expectations; however, evaluating off-farm employment in this manner provides some interesting insights into this phenomenon.

Table 1. Extent of off-farm employment by county economic classification, Texas, 1980.

	Agricultural		
Employment	Agr. only	Agr. + other	Nonagricultural
Nonfarm	45%	61%	58%
Farm	55%	39%	42%
Total (N)	20,815	3,507	64,514

First, support is provided for the contention that where the nonfarm sector provides employment opportunities, farm family residents take advantage of them. In other words, it is probable that availability of jobs is an important limiting factor on the support that may be offered to the farm sector by the nonfarm sector. Where nonagricultural industries are dominant in a county, the extent of off-farm employment is higher than in counties where agriculture is the sole, dominant industry.

Second, it should be noted that although the extent of

off-farm employment is relatively low in the purely agricultural counties, it still involves half of the rural farm resident labor force. Thus, it can be surmised that even in these economies the nonfarm sector represents an important source of support for the farm sector. The difference between purely agricultural economies and the others appears to be mainly in degree of dependence on the nonfarm sector for employment.

The nature of jobs available to rural farm residents is equally important as the quantity of jobs.[5] As can be seen in Table 2, off-farm employment patterns of the rural farm

Table 2. Sources of off-farm employment (percent) by county economic classification, Texas, 1980

	Agricultural		
	Agr. only	Agr. + other	Non agricultural
Forestry & fisheries	0	1	0
Mining	5	7	5
Construction	10	10	11
Manufacturing	13	13	17
Trans., comm., & Util.	8	7	8
Transportation	4	4	4
Communication & public utilities	4	3	4
Trade & services	47	39	42
Wholesale trade	7	7	6
Retail trade	16	10	15
Finance, insurance and real estate	6	6	5
Business & repair services	2	4	3
Personal services	3	2	3
Entertainment & rec. services	1	1	0
Health services	9	6	7
Other services	3	3	3
Government	18	24	18
Public administration	6	6	6
Educational services	12	18	12

[5] Educational services are included in the government sesctor, as it is believed most employment here will be under government auspices. Similarly, health services are included in trade and services, as most employment here is probably in the private sector.

labor force in Texas follow nationwide employment trends, with the bulk of such employment being in the trade and service sectors (Taylor 1986). Noticeable differences exist, however, between counties with an agricultural economic base, counties dependent on agriculture and some other industry, and counties where agriculture plays a relatively minor role in the local economy.

In agricultural counties, the trade and services sector appears to offer proportionately greater employment to rural farm residents. Because no other basic industry is dominant in these counties, most off-farm employment opportunities occur in the trade and services sector. This presents a problematic situation in these counties because the economic health of the trade and service sector in these counties probably is directly related to agriculture.[6] There appears to be a circular dependence between the farm and nonfarm sectors of the local economy, with the trade and services sector being dependent on agriculture and rural farm families being dependent on the trade and services sector for off-farm employment and the additional income associated with it.

In the nonagriculturally based counties, the dependence of the farm population on the trade and services sector is not as extensive. The major difference between these counties and those based on agriculture appears to be in the extent of employment in manufacturing. Manufacturing employment accounts for 17 percent of off-farm employment in these counties compared with 13 percent in counties where agriculture is a dominant economic force. Off-farm employment in trade and services is lowest in counties where there is an economic base in addition to agriculture. The most obvious difference between these counties and the others is the extent of employment in the government sector. This difference can be attributed to employment of rural farm residents in educational services, which accounts for 18 percent of off-farm employment, compared with 12 percent for the other two categories.

Table 3. Persons aged 16 and over (percent) employed by industry, nonmetropolitan counties in Texas, 1980

Sector	Agricultural dependent	Other
Agriculture, forestry & fisheries, mining	22	14
Construction	7	9
Manufacturing	12	16
Transportation	3	4
Communication, other public utilities	3	3
Wholesale trade	4	4
Retail trade	15	16
Finance, insurance & real estate	4	4
Business & repair services	3	3
Personal, entertainment & rec. services	4	4
Professional services	19	19
Public administration	4	4
Total	100	100

A look at total employment in nonmetropolitan Texas counties provides additional information. Table 3 lists industry employed persons by economic sector and distinguishes between the agriculturally dependent counties and all remaining nonmetropolitan counties. The percentage of employment breakdown is similar in many sectors of the economy, but there are notable exceptions in the agricultural-mining and manufacturing sectors. The service sector employment which exists in agriculturally dependent counties depends greatly on agriculture. If the basic industry experiences trouble, the service and support industries will most likely follow the same pattern.

Discussion

There appears to be a definite relationship between off-farm employment and the economic base of local economies. The extent of off-farm employment among the rural farm resident labor force is lowest in local economies dominated solely by agriculture and greater where some basic industry other than agriculture exercises a dominant influence. This relationship and the structuring of employment within the nonfarm sector have definite implications for the economic future of rural farm families and their communities.

Most published literature in this area indicates a substantial dependence of the agricultural sector on the nonfarm sector for additional employment and income. The data presented here indicate that in agricultural communities this dependence, while substantial, is less than it is in nonmetro counties where agriculture is not a dominant industry. It appears that rural farm families in agricultural counties are more dependent on agriculture for family income than are similar families residing in other counties--for several reasons.

First, the opportunities for off-farm employment is lower in agricultural counties than other counties. Second, most off-farm employment in agricultural counties is in the trade and services sector which normally offers lower wages than industries in other economic sectors. Thus, the economic contribution of off-farm employment to farm family income in these counties may be lower than in other counties. Finally, even off-farm employment in these counties is affected by the agricultural sector since, in the absence of other basic industry, the economic health of trade and services industries will be strongly affected by agriculture. In agricultural counties, therefore, factors affecting the economic health of the agricultural sector (policy, production costs, etc.) will have a much more substantive effect on farm families than they do in other counties.

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[6] from previous page

One reviewer has suggested that the relatively high proportion of older people found in agriculture counties is associated with large transfer payments, which in turn support further off-farm employment in the trade and service sector.

Essentially the same arguments apply to rural communities. Those communities with nonagricultural, diversified economic bases will remain relatively immune to factors affecting agricultural income. These communities will continue to offer support to the agricultural sector through the medium of off-farm employment. Agricultural communities, on the other hand, may find themselves in precarious situations whereby lowered farm incomes depress the trade and services sector of the local economy, which has a negative impact on total farm family income from off-farm employment, which has a further depressing effect on the trade and services sector, and so on. This perspective does, however, point out the potential contribution of economic development activities in agricultural communities. Actions taken to strengthen the trade and services sector or create jobs in other sectors will serve to support the agricultural sector through off-farm employment.

It is obvious that this essentially descriptive study of off-farm employment patterns has merely scratched the surface of this issue. Much more research is required before definitive conclusions can be reached regarding the interrelationships of the farm and nonfarm sectors of local economies occasioned by off-farm employment. For example, precise determinants of off-farm employment in terms of relationships between the structuring of agriculture and the nonfarm economy in rural communities need to be identified. In addition, much would be gained by examining the extent of support provided in terms of income rather than employment. Nevertheless, by evaluating patterns of off-farm employment using a policy-oriented classification scheme for nonmetro counties, this research indicates that off-farm employment of rural farm residents is not a homogeneous phenomenon. Rather, support offered the farm sector by this medium varies with the economic base of the rural economy.

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Appendix: Selected Demographic Characteristics

Table A. Population, nonmetropolitan counties in Texas

	Agriculture dependent		Other	
	Number	Percent	Number	Percent
Urban	191,633	37	1,152,413	49
Rural	326,945	63	1,178,183	51
(Farm)	(55,782)	(11)	(132,963)	(6)
Total	518,578	100	2,330,963	100

Source: U.S. Bureau of Census, Summary Tape File 3A.

Table B. Persons by age (percent) nonmetroplitan counties in Texas

	Agriculture dependent	Other
Under 16	27	26
16-21	10	11
22-54	37	38
55 or older	26	25
Total	100	100

Source: U.S. Bureau of Census, Summary Tape File 3A.

Table C. Persons 18 years old and over by years of school completed, nonmetropolitan counties in Texas

	Agriculture dependent	Other
Not high school	51	47
High school graduate	28	30
College, 1-3 years	12	14
College, 4 years	5	5
College, 5 or more years	3	4
Total	100	100