AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

AE 91003 July 1991

New or Expanding Basic Sector Firms in the Upper Great Plains: Employment Creation and Economic Linkages

F. Larry Leistritz*

Department of Agricultural Economics
North Dakota State University
Fargo, ND 58105

Selected Paper for Presentation at
1991 AAEA Annual Meeting

*Leistritz is Professor in the Department of Agricultural Economics, North Dakota State University, Fargo. The author acknowledges the assistance of Brenda Ekstrom and Janet Wanzek and helpful comments from several colleagues.

Abstract

New or Expanding Basic Sector Firms in the
Upper Great Plains: Employment Creation
and Economic Linkages

F. Larry Leistritz

The purpose of this study was to identify new or growing basic sector businesses in Nebraska, North Dakota, and South Dakota and to determine their contribution to the state economy, as measured by their employment creation and their expenditures to suppliers within the state. Data from 314 firms were used in the analysis.

New or Expanding Basis Sector Firms in the Upper Great Plains: Employment Creation and Economic Linkages

The development of rational policy aimed at revitalizing rural America must recognize the changing economic structure of the country as a whole and how these changes influence potential sources of economic growth for rural areas. Recent analyses clearly indicate that the industries that have traditionally been the mainstays of the rural economy (e.g., agriculture, forestry, mining, and manufacturing) may not be major sources of future employment growth (Pulver, 1988; Ekstrom and Leistritz, 1988). Therefore, some observers suggest that rural areas seeking economic growth or revitalization will probably have to give greater attention to the development of sectors with greater growth potential, such as service-producing industries or high technology manufacturing, in order to be successful (Pulver, 1989).

The need for economic revitalization is evident in many parts of rural America, but perhaps nowhere is that need more apparent than in the Upper Great Plains states. Because their economies are heavily dependent on agriculture and natural resources (e.g., mining), these states have experienced a severe economic downturn in the 1980s. For example, the states of North Dakota, South Dakota, and Nebraska all ranked among the lowest five nationally in total personal income growth for the period 1981-89 (U.S. Department of Commerce, 1990a), and preliminary information indicates that during the decade of the 1980s North Dakota suffered a population decrease of 2.9 percent (the fourth largest percentage loss among all states) while Nebraska and South Dakota had gains of only 0.2 percent and 0.3 percent, respectively (Barringer, 1990). Although the need for economic development is broadly accepted, state policymakers and local leaders lack a clear understanding of what types of firms and industries have been most important in employment creation in the region in recent years and which factors are most important in influencing areas' economic development success. Some analysts indicate that small independent

businesses account for a very high percentage of job creation nationwide (Birch, 1987, Popovich and Buss, 1989), but others report that in nonmetropolitan areas new or small firms may be less reliable as an employment source than corporate affiliates or established firms (Miller 1985, Morse 1990).

Yet another important question concerns the economic linkages of different types of new industries. What are the relative levels of local expenditures and, hence, the local multiplier effects of different types of new industries? Without this information it is difficult for state and local leaders to determine the desirability of development alternatives or to make informed judgements about proposed incentive programs.

The purposes of this study were to (1) identify the types of new export-oriented businesses and industries that have provided additional employment opportunities in nonmetropolitan areas of the Upper Great Plains states in recent years, (2) analyze the numbers of jobs created and expenditures made within the regional economy, by firms of different types, and (3) explore the implications of these findings for economic and community development practitioners.

Procedures

The focus of the study was on nonmetropolitan and metropolitan areas of less than 250,000 population in North Dakota, South Dakota, and Nebraska (the Omaha Metropolitan Statistical Area was excluded from the study.) These states have the highest percentages of farm-dependent counties in the nation (Bender et al., 1985), and their rural areas have experienced significant economic problems during the 1980s as a result of slumps in agriculture, mining, and other resource-dependent activities.

The data were obtained from a mailed survey of firms in the three state area conducted in 1989. A total of 314 firms which completed the survey and met the criteria of (1) selling more than 10 percent of their product or service to out-of-state markets and (2) beginning operations at their present location or expanding their work force by 10 percent or more since 1977 constitute the data base for the analysis.

Results

Key findings from the survey are presented in the sections that follow. Results are presented for all firms and in many cases by major firm types, by relocation status of the facility, or by whether the facility is a branch or an independent entity.

General Characteristics

Some general attributes of the facilities are summarized in Table 1. The respondent facilities were relatively evenly distributed among the three states. Although some have indicated that service industries may have a growing role in rural economic development (Gillis, 1987; Porterfield and Cox, 1989), manufacturing firms dominated the sample, comprising almost 79 percent of the qualifying respondents.

Of the respondents, about 58 percent had begun operation at their present site (relocation or new start up) since 1977, and the remaining 42 percent had been in operation at their site prior to 1977 but had expanded their work force by at least 10 percent since that time. More than three-fourths of the firms had begun operations at their present site since 1970, and 49 percent had begun since 1980. Local ownership predominated for these firms. On average, 69 percent of the businesses' equity was held within the local area.

TABLE 1. SELECTED CHARACTERISTICS OF RESPONDENT FACILITIES, UPPER GREAT PLAINS STATES, 1989

Item	Value
	(percent)
State where facility is located:	
Nebraska	30.9
North Dakota	39.8
South Dakota	29.3
Primary product or service:	
Mining/construction[a]	2.3
Agri-products/sales[b]	8.3
Manufacturing, nondurable[c]	28.6
Manufacturing, durable[d]	50.3
Miscellaneous sales[e]	3.2
Miscellaneous services[f]	5.7
Total Annual Sales:	
Mean	$8,539,000
Median	$1,750,000
Distribution:	*(percent)*
$100,000 or less	5.7
$100,001 to 500,000	20.1
$500,001 to 1,000,000	13.3
$1,000,001 to 5,000,000	30.8
$5,000,001 to 10,000,000	11.8
$10,000,001 to 50,000,000	15.1
$50,000,001 or more	3.2
Destination of Sales:	
Local	23.4
Elsewhere in state	11.8
Adjacent states	19.4
Rest of nation	40.7
International	4.8
Percentage of expenditures to labor:	
Mean	27.8
Median	25.0
Distribution:	
20 percent or less	40.3
21 to 30	26.4
31 to 40	17.5
41 to 50	8.8
More than 50	7.0
Percentage of remaining expenditures made in state:	
Mean	38.2
Median	30.0
Distribution:	
10 percent or less	24.2
11 to 25	20.8
26 to 50	26.4
50 to 75	13.4
76 or more	15.2

[a]Gold processing, construction/repairs.
[b]Handling sales, grain/pellets, animal supplies, live animals, plants, food sales, grain dealers.
[c]Food processing, clothing products, wood products, furniture products, paper products, printing, film developing.
[d]Chemical products, rubber/plastic, concrete/stone, steel/metal products, farm equipment parts, electrical products, transport equipment, precision instruments, sporting equipment, tools--hydraulic, miscellaneous parts.
[e]Sales, hardware, auto supply, clothing, sporting.
[f]Vehicle repair, miscellaneous repairs, telemarketing, weld/machine service, miscellaneous service, truck services.

The firms had an average of about $8.5 million in total sales in their most recent accounting year (the median or midpoint value was $1.75 million). About 65 percent of these sales were made outside the state (Table 1).

The respondent firms reported that on average about 28 percent of their total expenditures were made for labor. Of their remaining expenditures, about 38 percent were made within the state. When expenditures for labor were added to the other in-state outlays, the average firm had a total of about $3.8 million in payments within the state. When expenditure patterns are compared by the firm's age and location status, new firms (i.e., those that had begun operations since 1977) were found to have the highest percentage of in-state purchases (58 percent of their total sales) followed closely by existing firms that had expanded (57 percent). Firms that had relocated from out of state and out-of-state firms that had opened new branches in the state had the lowest percentage of expenditures in state (49 percent), but their in-state expenditures per firm were second only to those of the existing firms ($3.5 million vs. $5.1 million). (The differences among these firm types were not statistically significant at the 10 percent level, however, indicating high levels of variation within each group.)

Sales and expenditure patterns of manufacturing firms are compared to those of other (predominately service) firms surveyed in Table 2. This table also provides information for durable and nondurable manufacturers and for high technology manufacturers. Of 236 manufacturing firms in the study, 41 (or about 17 percent) were classified as high tech firms. (High tech firms were classified using the definition developed by Smith and Barkley [1988].) When manufacturing firms are compared with the other firms, the other (i.e., service) firms were found to have a significantly higher level of total sales and to make a larger percentage of their nonlabor expenditures within the state. Among the manufacturers, the high tech firms had

TABLE 2. SALES AND EXPENDITURES OF DURABLE AND NONDURABLE MANUFACTURING FIRMS, HIGH TECHNOLOGY MANUFACTURING FIRMS, AND OTHER FIRMS, UPPER GREAT PLAINS STATES, 1989

Item	Manufacturing Firms				Other Firms
	All	Nondurable	Durable	High Technology	
Total annual sales:					
Mean ($000)	6,450	7,049	6,101	7,449	12,419[e]
Median ($000)	1,500	1,500	1,875	3,800	2,600
Distribution:					
$500,000 or less	25.4	29.5	23.1	19.5	30.2
$500,001 to $1,000,000	15.1	12.8	16.4	11.1	7.5
$1,000,001 to $5,000,000	33.0	33.3	32.8	36.1	24.6
$5,000,001 to $10,000,000	11.8	14.1	10.5	5.6	11.3
$10,000,001 or more	14.6	10.3	17.2	27.8	26.4
Percentage of sales:					
Local	24.2	31.0[b]	20.1[b]	19.2[d]	23.2
Elsewhere in state	11.4	12.6	10.7	9.3	13.1
Adjacent states	18.2	20.0	17.2	15.3	22.2
Rest of nation	41.5	34.0[b]	46.1[b]	48.1	36.4
International	4.5	2.4[b]	5.8[b]	7.6	5.1
Percentage of ownership:					
Locally	70.2	74.4	67.7	59.0[d]	69.2
Elsewhere in state	2.5	4.1	1.6	1.3	7.4[f]
Adjacent states	10.1	6.3[b]	12.4[b]	8.2	12.9
Rest of nation	14.0	11.2	15.6	31.5	6.9
International	3.2	4.0	2.7	0.0	3.6
Percentage of expenditures to labor:					
Mean	28.2	28.6	29.1	31.3	27.8
Median	25.0	30.0	25.0	25.5	25.0
Distribution:					
20% or less	37.0	32.9	39.4	36.8	46.0
21% to 30%	29.4	30.4	28.8	36.8	16.0
31% to 40%	20.4	22.8	18.9	5.3	12.0
41% to 50%	6.6	7.6	6.1	5.3	18.0
More than 50%	6.6	6.3	6.8	15.8	8.0
Percentage of remaining expenditures made in state:					
Mean	36.2	47.9[a]	29.1[a]	20.1[c]	48.8[e]
Median	30.0	50.0	25.0	11.5	45.0
Distribution:					
10% or less	25.0	13.9	31.8	47.2	14.0
11% to 25%	22.6	20.2	24.0	27.8	16.0
26% to 50%	26.4	24.1	27.9	13.9	28.0
50% to 75%	13.5	19.0	10.1	8.3	16.0
76% or more	12.5	22.8	6.1	2.8	26.0

[a]Nondurable manufacturers are significantly different than durable manufacturers based on the Tukey test using $\alpha = 0.05$.
[b]Nondurable manufacturers are significantly different than durable manufacturers based on the Kruskal-Wallis test using $\alpha = 0.05$.
[c]High tech manufacturers are significantly different than other manufacturers based on the Tukey test using $\alpha = 0.05$.
[d]High tech manufacturers are significantly different than other manufacturers based on the Kruskal-Wallis test using $\alpha = 0.05$.
[e]Other firms are significantly different than manufacturers based on the Tukey test using $\alpha = 0.05$.
[f]Other firms are significantly different than manufacturers based on the Kruskal-Wallis test using $\alpha = 0.05$.

somewhat higher annual sales, and a higher percentage of their sales were made internationally. The high technology firms also had a somewhat smaller percentage of their equity (but still a majority) held locally. The high tech firms averaged somewhat higher than other manufacturers in the percentage of their expenditures that were made to labor, but the percentage of their other expenditures made within the state was significantly lower.

When durable and nondurable manufacturers are compared, the nondurable group made a significantly higher percentage of their sales within the local area. Durable manufacturers made higher percentages of their sales to nonadjacent states or internationally. They also were likely to have a greater percentage of their equity held by out-of-state owners. Nondurable manufacturers made a substantially higher percentage of their nonlabor expenditures within the state. A likely explanation is that this group included a number of food processors that purchased substantial amounts of raw material within the state.

Community development practitioners should be aware that firms can differ substantially in the percentage of their expenditures that are made within the state and the local area. Overall, existing firms that are expanding their operations tend to have the highest percentages of in-state expenditures, perhaps because they have a well-established network of local suppliers. A brokerage service supported by a state or substate organization could be a means of helping new or relocating firms develop such networks more rapidly.

Employment

The average firm reported 57 full-time employees. A few firms with large work forces affected the average substantially, however, as the median was 17.5 employees. The firms surveyed had experienced substantial employment growth over the past few years. The average

firm reported an 80-percent increase in full-time employees in the last five years and a 246-percent increase in the last ten years. Part-time employment also increased, on average, during this period with the percentage changes being similar to those for full-time employment.

Operators and fabricators were the largest occupational category, followed by laborers and precision production crafts. Women made up 31 percent of the work force. When the work force composition of branch plants was compared to that for other facilities, branches were found to have substantially smaller percentages of executive and managerial personnel and sales representatives, but a much higher percentage of operators and fabricators. This is consistent with the findings of Barkley et al. (1988) and Smith and Barkley (1988), who found that nonmetropolitan branch plants in the western states had higher percentages of their employment in the less-skilled occupational categories.

Survey respondents also were asked about their minimum requirements and recruiting efforts for new employees. Some postsecondary education was typically required for executive and professional positions, but a high school diploma was often deemed sufficient for clerical workers and operators or fabricators. Prior work experience was most often required for sales representatives, operators or fabricators, and executives. The respondents believed it was most difficult to locally recruit qualified employees for professional, executive, and sales positions. About half the respondents reported it was also difficult to attract executive and professional candidates to their geographical area. For other occupations, there appeared to be little difficulty recruiting or attracting workers.

The survey findings also shed some light on a major current issue in rural development policy--the role of different types of firms in generating new jobs. Of the firms that answered the employment questions, 72 had relocated or opened a new branch at the present site, 97 were new

firms that had begun operations since 1977, and 118 were firms that had been in operation at the site prior to 1977 and had expanded their employment by 10 percent or more since that time (Table 3). These firms accounted for a total employment growth of 6,899 jobs in the last five years and 11,133 jobs in the last ten years. Considering the jobs created over the past ten years, expansions of existing firms accounted for 45 percent of the total, and new firms were responsible for almost 23 percent (Table 3). The relocating firms, however, also accounted for a substantial percentage of the new jobs (33 percent), and out-of-state relocations accounted for 27 percent of new jobs and generated the largest number of jobs per facility. Branch plants accounted for 38 percent of the total employment growth over the past ten years (36 percent in the last five years).

TABLE 3. NET EMPLOYMENT CHANGE OVER THE LAST FIVE AND TEN YEARS BY FIRM TYPE, UPPER GREAT PLAINS STATES, 1989

		Net Employment Change				
		Last 5 Years		Last 10 Years		
Type of Firms:	Number of Firms	No.	% of Total	No.	% of Total	Avg. Jobs Created Per Firm
Relocated in state	23	375	5.4	535	4.8	23.3
Relocated from out-of-state	49	1,939	28.1	3,107	27.9	63.4
New firms since 1977	97	1,647	23.8	2,534	22.8	26.1
Existing firm that expanded work force by at least 10%	118	2,938	42.6	4,957	44.5	42.0
Had 20 or fewer employees 10 yrs. ago	71	-	-	1,281	25.8	18.3
Had more than 20 employees 10 yrs. ago	47	-	-	3,676	74.2	78.2
Total	287	6,899	100.0	11,133	100.0	38.8

Some authors have indicated that small firms (often defined as having 20 or fewer employees) and new start-up firms have been creating most of the new jobs in the American economy in recent years (Birch 1987). This relationship did not hold true within this sample of export-oriented firms. (However, it is possible that the procedures used in assembling the initial list of firms to be surveyed may have led to an under-representation of small firms and new start-ups.) Firms that had been in existence ten years prior to the survey and had fewer than 20 employees at that time created 1,281 jobs (26 percent of the total or 18.3 jobs per firm), but those with more than 20 employees created 3,676 jobs (74 percent of the total or 78.2 jobs per firm). If all new firms are grouped together with the small existing firms that had fewer than 20 employees ten years ago, then this group created 44 percent of the total jobs created by all firms over the past ten years.

To summarize, relocating firms represented 25 percent of the establishments in the study and accounted for 33 percent of the net job creation. New firms made up 34 percent of the firms but accounted for only 23 percent of the new jobs created. Existing firms that expanded their operations made up 41 percent of the sample but accounted for almost 45 percent of the new jobs. These results seem to indicate that while new, relocating and existing firms all make important contributions to job creation, community development practitioners may be well-advised to give priority to efforts aimed at assisting existing firms in their expansion efforts. The philosophy of concentrating local development efforts on existing businesses is, of course, the cornerstone of the business retention and expansion programs whose popularity has skyrocketed during the past decade (Morse, 1990).

Conclusions and Implications

After a decade of relatively adverse economic trends, many state policy makers and local leaders are placing a high priority on economic development. These leaders, as well as economic and community development practitioners, are interested in the economic contribution of different types of firms, including not only direct effects such as the jobs created in the establishment but also indirect effects such as those arising from the firm's expenditures within the region. The findings of this study offer some insights regarding these crucial questions.

The firms included in this study created a total of 11,133 jobs, or about 39 jobs per firm, in the last ten years. Expansion of existing firms accounted for about 45 percent of the total, firms that relocated or opened new branches were responsible for about 33 percent, and new firms were credited with almost 23 percent. The high percentage of new jobs created by existing firms suggests that communities should focus first on efforts to support and assist existing employers. At the same time, the substantial percentages of jobs created by relocating firms and new start-up operations indicate that recruitment and support for local entrepreneurs are areas that should not be neglected. Generally, these findings support those of John et al. (1988), who reported that successful communities usually combine active recruitment with efforts to support local business.

The economic contribution of different types of firms is an issue of concern to state and local officials, especially when decisions must be made regarding assistance or incentive programs. The percentage of a firm's expenditures that are made to in-state suppliers (including payments of wages and salaries), as well as the absolute amount of those expenditures, provides an indication of the economic contribution of different types of firms. The evidence from this survey, however, does not provide clear-cut guidelines for decision makers. New firms ranked highest in the percentage of in-state expenditures, but relocating firms and new branches had

higher levels of such expenditures on a per establishment basis. Existing firms that expanded rated highly in both the percentage and absolute amount of in-state purchases. Nondurable manufacturers and nonmanufacturing firms also rated highly in their percentage of in-state purchases. Perhaps more significant than the differences in the percentage of in-state purchases between groups of firms, however, is the substantial variation that exists within each group. For economic development practitioners, this suggests that developing brokerage networks that could improve the linkage between export-oriented firms and potential in-state suppliers could be an effective means of increasing such firms' contribution to state and local economies. For policy makers and practitioners, the findings also suggest that firms applying for assistance or incentive programs should be queried concerning their plans to involve in-state suppliers and subcontractors.

Overall, the results of this study offer some reasons for optimism concerning the economic future of rural areas, even in such relatively isolated regions as the Upper Great Plains states. The firms included in this study have succeeded in competing effectively in regional and national markets, and their outlook generally is for further expansion of sales and employment. Representing not only a broad spectrum of manufacturing, but also a variety of traded services, these firms clearly demonstrate that the region has a variety of potential sources of economic growth and diversification. State and local policies and programs aimed at supporting expansion by existing enterprises, as well as nurturing new start-up enterprises and selectively recruiting firms seeking branch or relocation sites, could pay substantial dividends in the years ahead.

References

Barkley, David L., Roger A. Dahlgran, and Stephen M. Smith. "High-Technology Manufacturing in the Nonmetropolitan West: Gold or Just Glitter." *American Journal of Agricultural Economics* 70(1988):560-71.

Barringer, Felicity. "Census Data Show Sharp Rural Losses." *The New York Times*, (30 Aug., 1990).

Bender, Lloyd D., Bernal L. Green, Thomas F. Hady, John A. Kuehn, Marlys K. Nelson, Leon B. Perkinson, and Peggy J. Ross. *The Diverse Social and Economic Structure of Nonmetropolitan America.* Rural Development Research Report No. 49. Washington, D.C.: USDA, Economic Research Service, 1985.

Birch, David L. *Job Creation in America: How Our Smallest Companies Put the Most People to Work.* New York: The Free Press, 1987.

Ekstrom, Brenda, and F. Larry Leistritz. *Rural Community Decline and Revitalization: An Annotated Bibliography.* New York: Garland Publishing, Inc., 1988

Gillis, William R. "Can Service-Producing Industries Provide a Catalyst for Regional Economic Growth?" *Economic Development Quarterly* 1(1987):249-56.

John, DeWitt, Sandra S. Batie, and Kim Norris. *A Brighter Future for Rural America? Strategies for Communities and States.* Washington, D.C.: National Governors Association Center for Policy Research, 1988.

Miller, James P. "Rethinking Small Businesses as the Best Way to Create Rural Jobs." *Rural Development Perspectives* 1(1985):9-12.

Morse, George W. (ed.). *The Retention and Expansion of Existing Businesses: Theory and Practice in Business Visitation Programs.* Ames: Iowa State University Press, 1990.

Popovich, Mark G., and Terry F. Buss. "Entrepreneurs Find Niche Even in Rural Communities." *Rural Development Perspectives* 5(1989):11-14.

Porterfield, Shirley L., and Thomas L. Cox. "The Export Potential of Selected Services - Producing and Manufacturing Industries." Paper presented at AAEA 1989 Annual Meeting. Madison: University of Wisconsin, 1989.

Pulver, Glen C. "The Changing Economic Scene in Rural America." In *Proceedings of Conference on Setting a New Economic Agenda for the States.* Lexington: Council of State Governments, pp. 5-13, 1988.

Pulver, Glen C. "Developing a Community Perspective on Rural Economic Development Policy." *Journal of the Community Development Society* 20(1989):1-14.

Smith, Stephen M., and David L. Barkley. "Labor Force Characteristics of 'High Tech' vs. 'Low Tech' Manufacturing in Nonmetropolitan Counties in the West." *Journal of the Community Development Society* 19(1988):21-36.

U.S. Department of Commerce. *Survey of Current Business* 70(1990):57.

cjj/AAEA.RPT