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**The Economic Impacts Associated with Locally
Owned Agricultural Cooperatives:
A Comparison of the Great Plains and the Eastern
Cornbelt**

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**Paper Presented at
NCR-194 Research on Cooperatives Annual
Meeting
October 30, 2001
Las Vegas, Nevada USA**

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Rural economic development has been a topic of importance to community and government leaders for some time, but is of even greater importance today given recent changes in the rural and agricultural marketplace. Increased consolidation of American agriculture is resulting in fewer farms, which, in turn, places pressure on the rural economies since there are fewer farm families to generate spending and economic activity. In addition, the recent low commodity prices are placing pressure on the spending ability of producers and farm families, which puts further pressure on rural economies.

Locally owned agricultural cooperatives, whose businesses have typically centered around farm supply and grain marketing, have historically been an integral component of the local economy. In many rural areas today, local agricultural cooperatives are among a very small group of businesses in the local economy and thus are a mainstay of the rural economy.

The objectives of this paper are to: (1) estimate the direct and total employment and income impacts of locally owned farm supply and grain marketing cooperatives in Colorado and Indiana, (2) evaluate the loss of employment and income that would occur in Colorado and Indiana if the locally owned agricultural cooperatives were to cease business, and (3) to compare the local economic impact of these agricultural cooperatives in Colorado (a Great Plains state) and Indiana (an Eastern Cornbelt state).

In the following section of this paper we will discuss the economic importance of agriculture to the Indiana and Colorado economies respectively along with issues associated with measuring impact using multipliers. We will then move on and examine

the economic impact and local importance of agricultural cooperatives. A comparison of the Great Plains and the Eastern Cornbelt will be presented next followed by conclusions.

Agriculture and It's Impact on the Economy

The Role of Agriculture on the State Economy

The agricultural sector is a large industry in both Colorado and Indiana. Colorado agriculture had output valued at \$5.008 billion in 1999 (Economic Research Service) and contributed \$3.673 billion in value added to the state economy (Bureau of Economic Analysis), about 2.47% of the state's total \$153.728 billion value added in 1999. About 53% of 1999 total farm receipts from Colorado's 28,268 farms were from cattle and calves. Hogs (4%), corn (6%), dairy (6%), and wheat (5%) had the next largest shares. The value of Colorado agricultural production, while spread across the state, is concentrated in the northeast region of Colorado. About 39% of total state agricultural receipts are in Weld and Yuma counties.

Total 1999 farm receipts in Indiana were \$4.893 billion (Economic Research Service). Agriculture, forestry and fisheries, and farms contributed \$2.941 billion to Indiana's \$182.202 billion value added in 1999 (Bureau of Economic Analysis). Corn (31%), soybeans (23%), hogs (12%), dairy (7%) and eggs (6%) accounted for the largest receipt shares in Indiana. Agricultural production is less concentrated in Indiana. Kosciusko and Dubois counties, the two with the largest sales, accounted for less than 6% of total state agricultural receipts.

Measuring the Impact of Agriculture using Multipliers

Estimating the contribution of agriculture to the economy has long been an interest to show the importance of the industry. Multipliers developed have not always been valid. For instance, a commonly quoted farm multiplier of 7 can be traced back to Carl Wilken, an analyst for the Raw Materials National Council. In 1944 he published a report that claimed a farm multiplier of 7 based on the 7 to 1 ratio of nominal national income to farm marketings in 1944 (Schluter). Applying Wilken's ratio today would yield a farm multiplier in the 20s.

The advent of the computer and better access to data have allowed a number of economists to construct input/output models that can be used to present a more exact estimate the economic impacts of agriculture, and in fact studies were done for a number of states in the 1990s. The contribution of agriculture to an economy is generally evaluated by summing the output, employment, and income for all industries in the food and fiber supply chain, from input suppliers, to farm production units, to processing, marketing, and distribution. Sales, value-added, and employment from these activities are added to the induced impacts associated with household spending of income earned in the food and fiber system to produce estimated total sales, value-added, and employment impacts. Using such methodology in an input-output framework, Schluter and Edmondson (1986) estimated that about 21% of the national civilian workforce was involved in the food and fiber system. Several economists have conducted similar studies to assess the importance of agricultural to state economies. Johnson and Wade (1994) estimated the impact of Virginia's agriculture system on the state's economy to be 12% of total state value added and 15% of state employment. Henry (1995), including the

state's forestry sector, estimated that the agriculture and natural resource industries accounted for 23-25% share of the South Carolina economy.

Measurement of the employment share of the food and fiber industry firms in Colorado and Indiana suggests that the industry accounts for about 14% of both economies (Economic Research Service). In Colorado agricultural production (farms) accounts for 1.7% of employment, farm inputs 0.2%, processing and marketing 1.3%, and wholesale and retail 10.6%. In Indiana farms account for 2.3% of employment, farm inputs 0.4%, processing and marketing 1.4%, and wholesale and retail 10%.

Economic Impact and Local Importance of Agricultural Cooperatives

Cooperatives provide a critical link in the food and fiber supply chain. By supplying production inputs cooperatives meet producers supply needs. Cooperatives' effectiveness influences producers' input costs, and consequently their profitability. Likewise, the marketing functions that cooperatives perform influence farmers' ability to market their commodities and directly affects the profitability of producers' operations. Cooperatives, like other input suppliers and service providers, are a critical part of the food and fiber industry's supply chain.

Another aspect of cooperative operations, the focus of the following discussion, is their presence in the local economy as a source of local employment and income, and source of goods and services to non-agricultural rural residents. In other words, cooperatives function as a critical element in sustaining a community's economic base.

To empirically evaluate the impact of local cooperatives on the economies of rural Indiana and Colorado, data was collected from the managers of the local cooperatives in

the two states. During May and June of 2000 in-person interviews were conducted with the managers of 35 cooperatives in each state. To ensure consistency a common questionnaire was used for all interviews. In addition, one individual, in each state, conducted all of the interviews. The interviews consisted of a wide range of questions including the types of business the cooperative is involved in, employment impact, involvement in mergers and joint ventures, and financial analysis. A summary of the survey results can be found in Vandeburg et. al. (2000 and 2001) and Hine et. al (2000 and 2001).

Direct Impacts of Local Cooperatives

Thirty-five cooperatives in each of Colorado and Indiana provided information about the number of people they employed. The sum of the employment by Colorado cooperatives was 1,524 employees. The estimated income for these employees is \$20,945,856. Using type III employment and income multipliers for the retail establishments of 1.74 and 2.25 respectively (IMPLAN), the estimated total employment and income impacts associated with the Colorado cooperatives in our sample is 2,652 jobs and \$47,128,176 in total income. The Indiana cooperatives reported a total employment of 2,651 and income of \$36,435,344. These direct jobs stimulated a total employment impact of 4,613 jobs and \$81,979,524 in income.

Loss of Employment and Business Service if no Cooperatives

To estimate the impact of cooperatives as a source of local employment, in addition to the retail/service support they provide for agricultural producers, cooperative managers were asked what local employment and business impact would be felt by the

local economy if the cooperative were to go out of operation. The managers were asked to estimate what share of their employees would have to move out of the county or be unable to find employment. They were also asked to estimate what share of their business, in terms of sales of products and services such as farm supplies, would be moved to business establishments outside of the local economy.

Managers of the Colorado cooperatives estimated that 429 (28%) of the 1,524 people that work for the reporting cooperatives would have to move out of the county or not work. While these jobs would not be lost to the Colorado economy, they would be shifted from the rural areas where they are currently located to other communities. The result would be a decline in the local economy's employment base. For many farming communities, the probability of other investment coming into the county to create replacement jobs is low. Additionally, the cooperative managers indicated that about 32% of sales of products and services from all reporting cooperatives would have to move to suppliers in counties outside the economy where the cooperative currently operates. The reporting cooperatives indicated that they had \$472 million sales in 1999 and would lose \$163 million of sales to suppliers outside the county if the cooperative was not in business. Twenty-four of the 33 cooperatives indicated that local business would be lost. On average, the cooperatives estimate that 37% of total business would be lost. The range was 15 to 100%.

Managers for the Indiana cooperatives estimated that 265 people (18%) working in the 2651 reported jobs would have to move out of the local economy to work or not work if the cooperative were to go out of business. Higher population densities and greater economic diversification in rural Indiana counties lessens the potential impact of

employment losses, but the loss would be substantial for the most remote counties. The managers estimated that 27% of sales of products and services from all reporting cooperatives would move to an economy in another county if a cooperative went out of business. The reporting cooperatives indicated that they had \$1.074 billion sales in 1999 and would lose \$289 million if the cooperative were not in business. Twenty-seven cooperatives said local sales in the range of 15 – 75% would be lost.

A Comparison of the Colorado (Great Plains) and Indiana (Eastern Cornbelt)

The agricultural sector is an important part of the economies for both Colorado and Indiana. The states, and the regions they represent, however, are quite different from each other. Indiana is part of the established manufacturing region of the country. Manufacturing is the largest employment sector, accounting for about 22% of employment and 32% of state gross product in Indiana (Bureau of Economic Analysis). The Service sector is the second largest sector, accounting for 17% of gross state product. Indiana's population of 6,080,485 represents a growth of 11% over the past 20 years. And, while Indiana boasts a strong, diversified agricultural sector, every Indiana resident is within 60 miles of a major city so off-farm employment possibilities exist for farm families. Just over 1,600,000 people, 26% of the state's population, live in the Indianapolis metropolitan area.

Colorado, part of the Great Plains region, has an economy based on services and finance, real estate and insurance (FIRE). The service sector accounts for the largest share of the state's value added activity, contributing 23% of gross state product. FIRE accounts for 17% (Bureau of Economic Analysis). The 4,301,261 population is 49% more than in 1980. About 60% of the state's total population, 2,581,506 people, live in the

Denver metropolitan area (Census). The manufacturing sector contributes 10% of gross state product. The state is known for some of the nation's exclusive vacation and recreation sites, a fact that supports the importance of the service sector to the state economy.

The rural areas of Colorado and Indiana are different from each other in economic structure, farm structure, and population density. According to a classification system developed by the Economic Research Service of the United States Department of Agriculture, 30 rural Indiana counties, 55% of the state's non metropolitan counties, are classified as manufacturing dependent (Table 1). This means that 30% or more of total personal income in each of these counties was earned from manufacturing wages and salaries. Only 3 Indiana counties are classified as farm dependent, counties in which 25% or more total person income over the past 5 years was earned in the farm sector. Colorado, in contrast, had 17 of its 53 non metropolitan counties classified as farm dependent and none classified as manufacturing dependent counties. It is also interesting to examine the number of people that are impacted by agriculture in the respective states. Twenty-five thousand people live in a farm dependent county in Indiana. Even though there are 17 farm dependent counties in Colorado, as compared to just three in Indiana, there are 3.44 times as many people in Colorado that live in a farm dependent county. This is due to the difference in population density in the rural areas in the respective states. There are 3.3 persons per square mile in the farm dependent counties in Colorado compared to 29.6 (9 times greater) persons per square mile in the farm dependent counties in Indiana.

Table 1: Selected Characteristics of Nonmetropolitan Counties

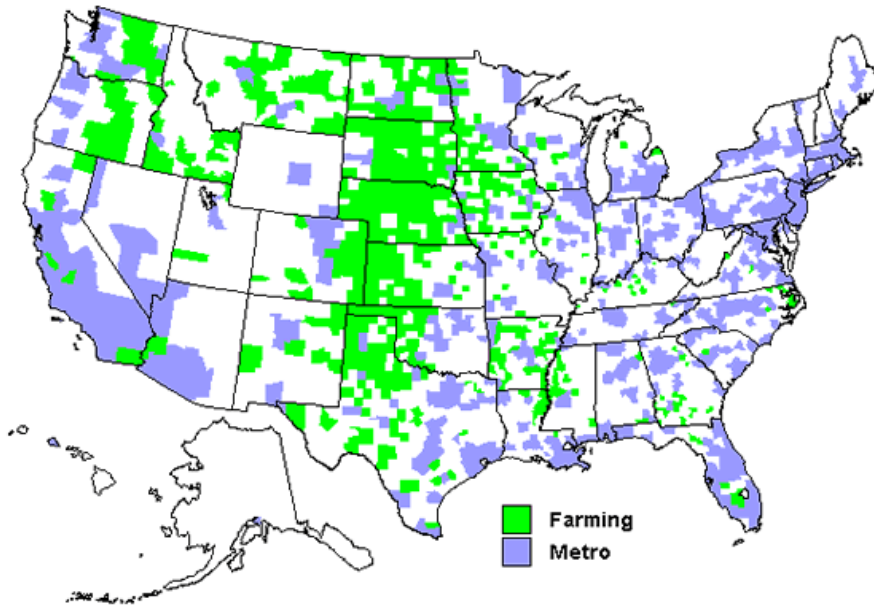
	Indiana		Colorado	
	Farm Dependent Counties	Manufacturing Dependent Counties	Farm Dependent Counties	Manufacturing Dependent Counties
Number of Counties	3	30	17	0
Population	25000	1093000	86000	-
Population/County	8198	36432	5074	-
Persons/Square Mile	29.6	87.6	3.3	-
State Population	6,080,485		4,301,261	

Source: Economic Research Service's 1989 Revised County Typology; Census

The maps in Figures 1 and 2 further illustrate the important differences between the Great Plains and the Eastern Cornbelt. The counties colored in blue represent the metropolitan counties on both maps. The majority of the farming dependent counties are found on the Great Plains covering the area from North Dakota to Texas. Most of the 17 farming dependent counties in Colorado are found in this Great Plains region, east of the Rocky Mountains. The manufacturing dependent counties are shown in green in Figure 2. It is interesting to note that manufacturing occurs in the region east of the Mississippi river and in urban areas. There are virtually no manufacturing dependent counties in the Great Plains. Rural economies in the Eastern Cornbelt are more diversified than those in the Great Plains. While agriculture is an important sector these economies also derive employment and income from manufacturing. In contrast, the rural economies in the Great Plains are much more dependent on the agricultural sector.

While it is useful to examine the impacts of local cooperatives on employment and income at the state level, those aggregate measures may not tell the complete story with respect to their importance to rural communities. To illustrate the impact from the

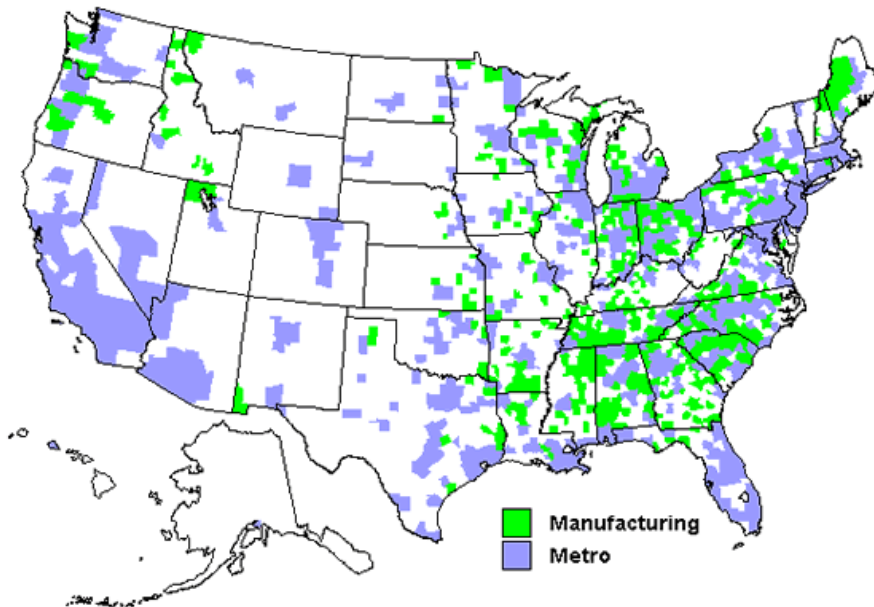
Nonmetro farming-dependent counties, 1989*



*Counties with 20 percent or more labor and proprietors' income from farming, 1987-89 annualized average.
Source: Economic Research Service, USDA.

Figure 1: Nonmetro Farming-Dependent Counties

Nonmetro manufacturing-dependent counties, 1989*



*Counties with 30 percent or more labor and proprietors' income from manufacturing, 1987-89 annualized average.
Source: Economic Research Service, USDA.

Figure 2: Nonmetro Manufacturing Dependent Counties

perspective of rural communities, one locally owned agricultural cooperative's county level data was evaluated. In the one Colorado county the local cooperative accounted for 20 of the 807 civilian jobs. In that same county there were 47 private nonfarm establishments. The cooperative operated a convenience store, retail gasoline, a retail farm supply outlet, car care operation, grain marketing facility, sold animal health and feed products as well as liquid propane, fertilizer and bulk petroleum sales. The cooperative obviously represents an integral part of the county's economy. It provides local jobs. It also is a major supplier of goods and services to the local economy. If cooperatives in remote rural counties like this were to go out of business, jobs would be lost and consumers could lose access to critical retail markets.

Conclusions

Agricultural cooperatives are an important source of income and employment in Colorado and Indiana communities. Seventy reporting cooperatives account for 4,175 jobs and an estimated \$56 million in income in the two states. The combined total employment and income impacts associated with the operation of the cooperatives are 7,265 jobs and \$129 million in personal income.

While the income and employment contribution of cooperatives is important to the state economies, cooperatives can be a critical income and employment source to remote rural communities. To the extent that a community can sustain a cooperative as a viable local enterprise, it is maintaining the associated income and employment in a community that would not be competitive in attracting other private business capital (manufacturing, retail, or service) because a business could not achieve the scale of operation to obtain a competitive return on investment.

Given the presence of cooperatives in rural communities, rural development programs should consider the importance of sustaining cooperatives as viable businesses for their income/employment contribution to the local economy. Policy might also consider strategies that utilize the management and other resources of local cooperatives as a building block for development activities that expand the availability of goods and services to rural residents.

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