

# PURDUE AGRICULTURAL ECONOMICS REPORT

MARCH 2002

## Indiana Manufacturers Employment and Trading: Insights from a Survey

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Indiana manufacturing accounted for \$56.3 billion, or 31%, of Indiana's \$182 billion gross state product in 1999 (Bureau of Economic Analysis, 2000). Manufacturing wage and salary payments were \$33.2 billion in 2000, 35% of Indiana's \$116 billion earnings by place of work (Table 1). The sector's \$47,559 average annual wage was second to that of mining. Manufacturing's 697,610 jobs (Figure 1) were 19% of the 3.9 million jobs in Indiana (Bureau of Economic Analysis, 2000).

While Indiana manufacturing employment has suffered with the current economic downturn, intensified by the terrorism against

the United States, it remains a driving force in the Indiana economy. Sustaining manufacturing competitiveness is seen as critical for continued economic prosperity (Indiana Economic Development Council, Indiana Technology Partnership). As part of an effort to understand Indiana's manufacturing sector, Purdue University's Department of Agricultural Economics, in cooperation with the Indiana Manufacturers Association and the Indiana Economic Development Council, conducted a survey of a random sample of Indiana's 8,500 manufacturing establishments with more than 5 employees in the fall of 2001 to assess

competitiveness and operational issues of Indiana manufacturing. This article reports information from the study.

### Participating Firms

Forty percent of manufacturers surveyed described themselves as single establishment corporations based in Indiana. Eighteen percent were branch plants of U.S., outside of Indiana, corporations. Sole proprietorships and Indiana corporate headquarters each comprised 10% of the sample. Partnerships (7%) and branch plants of larger corporations (5%) based in Indiana accounted for 12% of all firms. Foreign-based branch plants (4%) accounted for most of the remaining sample. Sixty-seven percent of the firms surveyed were located in urban areas.

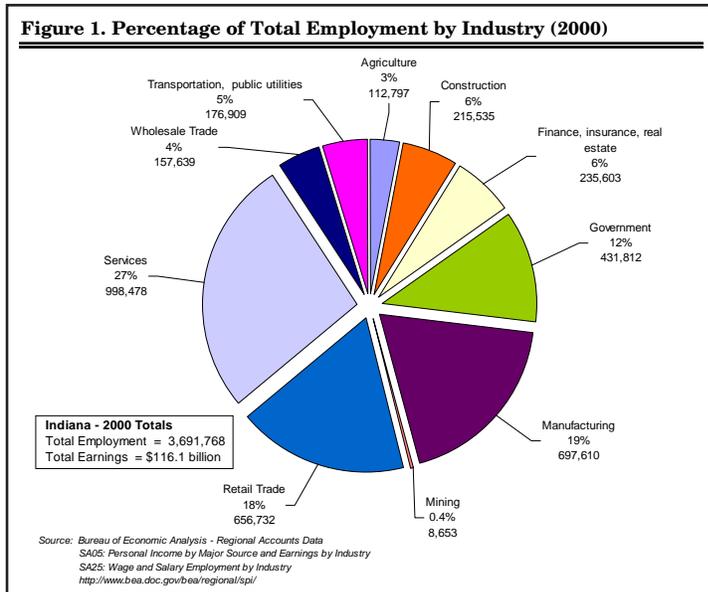
**Table 1. Total Earnings, Percent of Total, and Average Earnings per Employee by Industry in Indiana, 2000**

Industry	Total Earnings	Percent of Total State Earnings	Average Earnings per Employee <sup>1</sup>
Agriculture	\$ 1,181,718,000	1%	\$ 10,477
Construction	\$ 7,654,730,000	7%	\$ 35,515
Finance, Insurance and Real estate	\$ 7,461,815,000	6%	\$ 31,671
Government	\$ 15,530,196,000	13%	\$ 35,965
Manufacturing	\$ 33,177,923,000	29%	\$ 47,559
Mining	\$ 438,960,000	0.38%	\$ 50,729
Retail Trade	\$ 10,624,138,000	9%	\$ 10,640
Services	\$ 26,351,884,000	23%	\$ 40,126
Wholesale Trade	\$ 6,680,163,000	6%	\$ 42,376
Transportation and Public Utilities	\$ 7,007,955,000	6%	\$ 39,613
Total	\$116,109,482,000	100%	

<sup>1</sup> Full and Part-time Employees

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Survey respondents represented the diversity of Indiana manufacturing. Firms in the food, chemicals, transportation equipment, and rubber/plastic sectors each accounted for 8% of total respondents. Wood/paper industries represented 11%, metal product manufacturers 17%, and electronics/machinery 19%. The remaining respondents (22%) were from stone, clay, glass, and concrete products; apparel and textile mill

products; petroleum refining, leather products; non-wood furniture products; printing/publishing; and miscellaneous manufacturing.

The average number of employees per surveyed firm was 87. Seventy percent of the firms had 80 or fewer employees. Fifty-six percent had fewer than 40 employees. This compares to 75% employing 49 workers or fewer for all Indiana manufacturing firms in 1997 (U.S. Census Bureau, 1997). Firms were grouped by employment size to compare sales, market, and employment issues.

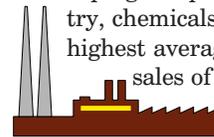
**Sales and Employment Performance**

Firm financial performance was assessed by sales and employment in year 2000 and by average change since 1997. The average sales level per respondents was \$25.7 million. A majority of firms (65%) had sales less than \$10.5 million.

Firms were grouped by employment size to examine sales and employment performance. Firms with 80 employees or fewer had average sales of \$6.3 million. Firms with more than 80 employees had average sales of \$68 million. Average sales ranged from \$3,100,000 for smaller firms to \$103,700,000 for firms with more than 150 employees (Table 2).

On average, respondents experienced a 14% increase in sales from 1997 to 2000. Larger firms tended to have lower sales growth rates (Table 2). Average sales growth rates were higher for smaller employment groups, although rates varied widely. For example, sales growth for smaller firms ranged from a decrease of 75% to an increase of 300%.

Grouping sample firms by industry, chemicals firms had the highest average, with total sales of \$70.3 million (Table 3).



Wood/paper industry firms and rubber/plastic products firms had the lowest average sales, with \$10.9 million and \$13.8 million, respectively. Chemicals firms and firms in the miscellaneous group had the highest sales growth, with an average increase in sales of 27%. Transportation equipment, the group with the highest average employment, was the only group that reported negative average sales growth, an average decline of 11%, from 1997 to 2000.

**Where Do Indiana Manufacturers Do Business?**

Survey participants identified where they purchase production inputs and where they sold their final outputs (Table 4). Indiana firms purchased inputs nationally and internationally,

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**Table 2. Sales and % Change in Sales by Firm Size**

Firm Size by Number of Employees	Average Total Sales in 2000	Average Change in Total Sales for Last 3 yrs.
5-10	\$ 3,100,00	+ 20%
11-40	\$ 7,300,000	+ 12%
41-80	\$ 9,100,000	+ 20%
81-150	\$ 26,100,000	+ 15%
151+	\$ 103,700,000	+ 6%

Note: N = 189 N = 177

**Table 3. Surveyed Firms: Employment and Sales by Sector**

<b>Manufacturing Sector</b>	<b>Number of Establishments</b>	<b>Average Employees per Establishment</b>	<b>Average Total Sales In 2000</b>	<b>Average Change in Total Sales For Last 3 yrs.</b>
Food Products	19	83	\$ 29,000,000	+ 9%
Wood / Paper	26	61	\$ 10,900,000	+ 17%
Chemicals	18	88	\$ 70,300,000	+ 27%
Electronics and Machinery	46	91	\$ 25,000,000	+ 8%
Metals and Metal Products	40	72	\$ 16,200,000	+ 9%
Rubber and Plastic Products	19	115	\$ 13,800,000	+ 8%
Transportation Equipment	16	168	\$ 43,500,000	- 11%
Misc.	52	77	\$ 25,500,000	+ 26%

although suppliers in Indiana and adjacent states were the primary suppliers. Indiana manufacturers purchased about 60% of their supplies from suppliers in Indiana and bordering states. Indiana, Illinois, Michigan, and Ohio each have strong, diversified manufacturing sectors. Manufacturing firms' ability to create strong backward linkages to this base is one of the strengths of the region as a location for manufacturing activity. Firms in these states are important suppliers to Indiana manufacturing. Manufacturers reported purchasing about one third of their supplies from other U.S. locations and 5% from outside the U.S.

While firms purchased more than half their inputs within the region, they also purchased elsewhere in the U.S. and internationally, especially larger firms. Globalization is increasing competition from developing countries like China as well as European countries. This restructuring will undoubtedly open international supply sources to Indiana manufacturers. Maintaining backward linkages to the region will be one of the keys to sustaining a strong regional economy.

Customers in Indiana and adjacent states are the primary market for Indiana manufacturers (Table 5). More than half of all surveyed firms' manufacturing output went to customers in Indiana and adjacent states. On average, larger firms sold more products out of the region. The largest firms appear to have a stronger hold in international markets, although firms of all sizes appear to ship internationally.

Shipments by Indiana manufacturers to customers in Indiana and adjacent states reflect the industry's strong forward linkages. Much of what is produced by Indiana manufacturers is used in the production processes of other regional manufacturers. These linkages within the region sustain its manufacturing base.

On average, firms in sector groups purchase the largest share of their

inputs from suppliers in Indiana and adjacent states (Table 6). Food products and wood/paper industry firms have the strongest links to in-state suppliers, a reflection of the availability of agricultural and forestry commodities in the state and the perishable nature of those commodities.

While the region is the largest source of supplies for firms in all sectors, national and international

**Table 4. Surveyed Firms: Material Purchases by Location, by Firm Size**

<b>Place of Origin</b>	<b>5-10 employees (n=41)</b>	<b>11-40 employees (n=67)</b>	<b>41-80 employees (n=29)</b>	<b>81-150 employees (n=20)</b>	<b>151+ employees (n=35)</b>
<i>Indiana</i>	42%	41%	39%	21%	25%
<i>Illinois</i>	8%	8%	7%	11%	8%
<i>Kentucky</i>	2%	2%	2%	2%	2%
<i>Michigan</i>	5%	5%	6%	6%	7%
<i>Ohio</i>	6%	9%	13%	10%	10%
<i>Elsewhere in U.S.</i>	34%	31%	30%	44%	36%
<i>Elsewhere in World</i>	3%	5%	4%	6%	11%
<i>Total</i> <sup>2</sup>	100%	101%	101%	100%	99%

<sup>2</sup> Total may not add to 100% due to rounding error.

**Table 5. Surveyed Firms: Product Shipments by Location**

<b>Customer Location</b>	<b>5-10 employees (n=38)</b>	<b>11-40 employees (n=65)</b>	<b>41-80 employees (n=28)</b>	<b>81-150 employees (n=20)</b>	<b>151+ employees (n=34)</b>
<i>Indiana</i>	46%	40%	36%	25%	13%
<i>Illinois</i>	7%	11%	8%	6%	7%
<i>Kentucky</i>	4%	4%	3%	2%	4%
<i>Michigan</i>	4%	8%	7%	13%	6%
<i>Ohio</i>	9%	5%	4%	4%	12%
<i>Elsewhere in U.S.</i>	28%	29%	36%	49%	49%
<i>Elsewhere in World</i>	3%	3%	5%	2%	9%
<i>Total</i> <sup>3</sup>	101%	100%	99%	101%	100%

<sup>3</sup> Total may not add to 100% due to rounding error

**Table 6. Surveyed Firms: Material Purchases by Sector, by Location**

Place of Origin	Food Products (n=16)	Wood / Paper (n=22)	Chemicals (n=16)	Electronics and Machinery (n=41)	Metals and Metal Products (n=39)	Rubber and Plastic Products (n=17)	Transportation Equipment (n=14)	Misc. (n=45)
Indiana	52%	54%	38%	37%	35%	24%	39%	30%
Illinois	8%	9%	9%	10%	11%	3%	4%	5%
Kentucky	1%	6%	3%	< 1%	2%	2%	2%	3%
Michigan	3%	6%	5%	5%	9%	6%	5%	2%
Ohio	14%	5%	3%	9%	15%	11%	16%	4%
Elsewhere in U.S.	21%	18%	38%	31%	21%	47%	29%	52%
Elsewhere in World	1%	2%	5%	8%	7%	7%	6%	4%
Total <sup>4</sup>	100%	100%	101%	101%	100%	100%	101%	100%

<sup>4</sup> Total may not add to 100% due to rounding error

markets also are important input sources, especially for chemical and rubber/plastics firms. International markets supply firms in all industry sectors to some degree. Globalization may increase international supply levels as differential wage rates and other costs make foreign suppliers more competitive and quality concerns lessen.

On average, the primary product market for Indiana firms is in Indiana and adjacent states, except transportation equipment firms (Table 7). Food and wood/paper product firms have the closest ties to the region. Chemical firms and transportation equipment firms have the largest presence in international markets, with about 10% of shipments. Most production, however, is for the domestic market.

Indiana manufacturers have strong backward and forward linkages to the Midwest region. Firms in Illinois, Michigan, and Ohio, neighboring states with large populations and strong

manufacturing economies, are important sourcing and marketing locations for Indiana manufacturers. Kentucky, the neighboring state with the smallest manufacturing base, had the lowest level of factor and product market links to Indiana firms. While international markets have become increasingly important in the globalized economy, the firms surveyed, in general, have the closest links to the regional economy. However, increasing competitiveness from offshore manufacturers is pressuring manufacturers throughout the state to consider low-cost, foreign-produced inputs as quality differences between domestic and foreign produced inputs disappear. Process improvement, service, and timeliness are important keys to maintaining the competitiveness Indiana firms.

**Indiana's Manufacturing Workforce**  
Survey respondents answered several questions relating to the number and types of their employees, changes in

number of employees over the last three years, and difficulties related to hiring and human resources (Table 8).

The Indiana manufacturing economy continued to grow through 2000. About 34% of survey participants reported increased unskilled and semi-skilled employment for 1997-2000. The share of firms reporting employment cuts for unskilled/semi-skilled workers ranged from 15% to 47% by industry group. In line with the economic slowdown in 2000-2001, metal/metal products, rubber/plastic, and transportation equipment groups had the largest share of firms reporting employment cuts. Data from the Indiana Department of Workforce Development indicate employment cuts have spread across all manufacturing sectors since September 11th.

The employment data reported by surveyed firms suggest that skilled/trades and sales/professional/technical employment growth tended to be strong across all industry

**Table 7. Surveyed Firms: Products Shipments by Manufacturing Sector, by Location**

Place of Origin	Food Products (n=14)	Wood / Paper (n=20)	Chemicals (n=16)	Electronics and Machinery (n=40)	Metals and Metal Products (n=37)	Rubber and Plastic Products (n=17)	Transportation Equipment (n=15)	Misc. (n=45)
Indiana	42%	58%	30%	34%	32%	29%	17%	36%
Illinois	6%	6%	9%	10%	12%	7%	5%	5%
Kentucky	4%	5%	6%	2%	3%	3%	1%	5%
Michigan	8%	4%	6%	5%	10%	14%	12%	4%
Ohio	5%	10%	5%	8%	5%	10%	8%	5%
Elsewhere in U.S.	31%	17%	33%	37%	34%	35%	49%	41%
Elsewhere in World	3%	1%	11%	5%	4%	2%	8%	4%
Total <sup>5</sup>	99%	101%	100%	101%	100	100	100%	100%

<sup>5</sup> Total may not add to 100% due to rounding error

sectors, even those where firms were decreasing unskilled/semi-skilled and executive/managerial employment. Food products firms and wood/paper firms, sectors with strong backward and forward linkages to the region, had growth in all employment types, as did the chemical sector.

Indiana employment markets throughout the 1990s favored job seekers as the reported employment growth bares this out. It appears, however, that there has been a hiring slowdown in unskilled/semi-skilled employment, especially in the metals/metal products, rubber/plastic products, and transportation equipment groups. Availability of people to hire for these jobs has been a problem across Indiana for much of the 1990s.

Hiring new employees for all types of jobs has been a chronic problem in the Indiana economy in recent years. About 68% of all firms surveyed experienced difficulty hiring new employees the past 3 years and/or in some aspect of human resource management. Hiring difficulties were reported by a majority of firms across all sectors in all regions of the state, especially for unskilled and semi-skilled workers. Firms also indicated that the sales/professional, and technical worker markets were tight. Other hiring problems included lack executive and managerial candidates in local labor markets, a low skill base, and difficulty attracting persons from outside of the local labor market.

Among human resource management issues, firms reported high

unskilled and semi-skilled worker turnover, especially among metals and metal products firms. Firms also reported difficulties retaining skilled/trade employees. Absenteeism, especially among unskilled and semi-skilled workers, was a serious concern, and it appears to be increasing.

Two, workforce development continues to be an issue that plagues the Indiana economy. The state needs to be pro-active in all aspects of education, from primary and secondary schooling through vocational and university education, to assure a well-educated, skilled, flexible workforce to meet current and future

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***“The Indiana manufacturing sector is a large, important component of the state economy, with strong backward and forward linkages to the region’s economy.”***

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### Summary and Concluding Comments

The Indiana manufacturing sector is a large, important component of the state economy, with strong backward and forward linkages to the region’s economy. Sales and employment growth among manufacturing firms in through the 1990s demonstrate the sector’s competitiveness. The data reported in this paper raise two issues about the sector’s future.

One, Indiana manufacturing has strong traditional links to industry in the Midwest. While Indiana firms need to participate and be competitive in the global economy, programs to maintain and promote backward and forward linkages to the Midwest economy should be considered as key to sustaining and expanding the state’s manufacturing sector.

needs of the Indiana economy. Firms also suggest that re-training and work place training programs are needed to help manufacturers maintain and improve the skill base of current employees. As information technology becomes more integrated into manufacturing, the educational and skill level of the workforce will become increasingly important. Increasing price pressure from manufacturers in China and other developing counties is forcing Indiana manufacturers to become more efficient, increasing the importance of a skilled, flexible workforce. Human capital development—the knowledge and skill base of the workforce—is critical to sustaining and growing Indiana manufacturing industries.

**Table 8. Surveyed Firms: Number of Employees and Change in Employee Number Over the Last Three Years**

Manufacturing Sector	Employee Types											
	Unskilled / Semi-skilled			Skilled / Trades			Sales / Professional / Technical			Executive / Managerial		
	# <sup>6</sup>	↑ <sup>7</sup>	↓ <sup>8</sup>	#	↑	↓	#	↑	↓	#	↑	↓
Food Products	63	32%	16%	11	37%	0%	4	11%	5%	5	16%	5%
Wood / Paper	46	35%	23%	5	19%	4%	4	19%	8%	3	15%	8%
Chemicals	34	33%	33%	25	33%	22%	15	33%	17%	6	33%	17%
Electronics and Machinery	55	39%	22%	14	28%	22%	11	22%	11%	5	11%	17%
Metals and Metal Products	46	28%	43%	12	20%	40%	5	30%	25%	7	25%	25%
Rubber and Plastic Products	82	37%	47%	13	37%	21%	9	42%	16%	6	11%	42%
Transportation Equipment	112	31%	38%	20	31%	13%	16	19%	25%	10	13%	19%
Misc.	46	35%	15%	12	35%	14%	8	29%	15%	5	19%	15%

<sup>6</sup> Avg Number of employees; <sup>7,8</sup>% of respondents reporting increase or decrease in employee number in last 3 yrs.

# Farm Bill Options and Consequences

*Allan Gray, Assistant Professor and Otto Doering, Professor*

**W**hy is U.S. agriculture singled out for special treatment in the form of large income transfers and subsidies? Some reasons are that agriculture is at the mercy of weather and that food is a strategic good. In addition, much of the land for the U.S. is owned and managed by farmers, who are responsible for its stewardship, and this land is essentially a national resource. At the time of the great depression, when the federal government first became actively involved in agriculture, there was still a large rural population, and incomes in rural areas were 60% less than incomes in urban areas. The first farm bills were designed to relieve the extreme distress in rural areas. By its own assessment, the Roosevelt Administration's early farm bills improved the health of commercial agriculture, but did not solve the problems of the more disadvantaged in agriculture or solve the problems of land degradation and unwise use of resources.

What did the '94 Republican Congress intend with the reforms in

the 1996 Farm Act? The 1996 Freedom to Farm Bill was to make U.S. agriculture more market oriented and wean farmers away from government support. The mechanism for this was declining fixed payments to farmers, based on participation and payments from previous programs. Farmers would not have their acreage restricted or have to plant certain crops to qualify for payments (thus, "Freedom to Farm"). The payments would decline slowly and be a transition away from the large payments historically given to farmers in years of low prices. If prices got extremely low, there would be "loan deficiency payments" for farmers to give income support and effectively bring up the price to a price floor for those bushels or pounds of a commodity the farmer produced.

However, Congress substantially lost its "free market" nerve. When the '96 Farm Act was passed, commodity prices were high, and farmers got their fixed transition payments in spite of the high prices. When prices fell in the late 1990's to

extremely low levels and farm income plunged, Congress made emergency payments to farmers to maintain farm income. Prices are still low today. The question is, what do we do now for a new farm bill since "Freedom to Farm" is set to expire in 2002?

## Where We Stand Now

The House of Representatives passed a farm bill in October; the Senate passed their version of the farm bill in mid-February. The House and Senate bills are very similar for the commodity programs. Both versions of the farm bill continue the transition payments, maintain loan deficiency payments, and add a counter-cyclical payment or target price to further protect farmers when prices fall. Table 1 summarizes the key payment levels for corn, soybeans, and wheat.

The important differences between the two bills are that loan rates (used to determine loan deficiency payment levels) are higher under the Senate version, while counter-cyclical payment levels are

**Table 1. Loan Rates, Fixed Payment Rates, and Counter Cyclical Price for the House and Senate Versions of the Farm Bill.**

	Loan Rates			Fixed Payments <sup>1</sup>			Counter Cyclical Price <sup>2</sup>	
	FTF <sup>3</sup>	House	Senate	FTF	House <sup>4</sup>	Senate <sup>5</sup>	House <sup>4</sup>	Senate <sup>5</sup>
Corn	\$1.89	\$1.89	\$2.08	\$0.26	\$0.30	\$0.27-02,03 \$0.14-04,05 \$0.07-06	\$2.78	\$2.35
Soybeans	\$5.26	\$4.92	\$5.20	N/A	\$0.42	\$0.55-02,03 \$0.28-04,05 \$0.14-06	\$4.86	\$5.75
Wheat	\$2.58	\$2.58	\$3.00	\$0.46	\$0.53	\$0.45-02,03 \$0.23-04,05 \$0.11-06	\$4.04	\$3.45

1 A producer's total fixed payments are determined by multiplying the fixed payment per unit by the base production level. The base production level for the House and Senate versions of the farm bill are explained in the footnotes below.

2 The total counter-cyclical payment is determined by taking the difference between the counter-cyclical price and the market price (or the loan rate if the market price is below the loan rate), which determines the per unit counter cyclical payment. This per unit counter cyclical payment is then reduced by the amount of the fixed payment per unit. Any remaining amount is paid based on the producer's base production level. For example, if the corn market price is \$2.02, the counter-cyclical payment under the House bill would be  $(\$2.78 - \$2.02)$  or \$0.76, which is then reduced by the \$0.26 fixed payment, leaving \$0.50/bu. as the counter-cyclical payment per unit. Under the Senate bill there will be no counter-cyclical payment in the first two years of the program because the fixed payment per unit equals the difference between the counter-cyclical price and the loan rate  $(\$2.35 - \$2.08 = \$0.27)$ .

3 FTF stands for Freedom to Farm, which is the 1996 farm bill that only contained loan rates and fixed payments.

4 The House bill pays fixed and counter-cyclical payments based on historical planted acres from 1996-2001 and historical yields from the 1980-1985 period. This base production level (acres time price) is then multiplied by 85 percent to get the final payment base.

5 The Senate bill pays fixed and counter-cyclical payments based on historical planted acres and yields from 1996-2001. This base production level (acres time price) is not adjusted by 85 percent as is done in the House bill.

higher under the House version of the farm bill. In addition, the Senate bill would allow producers to update their historical yield and planted acres based on the last five-years production, while the House would only allow acres to be updated, leaving yields at 1985 levels.

A long list of commodities would be included in a loan and loan deficiency program. Besides corn, sorghum, barley, oats, wheat, soybeans, minor oilseeds, upland cotton, and rice, also added, are wool, mohair, honey, dry peas, lentils and chickpeas. There would also be a special program for sugar, and peanuts would get cash payments to buyout quotas as peanuts begin being treated the same as other commodity crops. There would be a program for dairy, and regional compacts are still the contentious issue for this commodity. In addition, the House and Senate bills add substantial funds to existing conservation programs, helping bolster support from environmental groups.

As the House and Senate begin Conference Committee meetings, several differences must be resolved. Among the most contentious issues are the amounts of spending in the early versus later years of each bill, a more restrictive payment limit in the Senate version of the bill, and a ban on packers owning livestock that is also in the Senate version of the bill.

The House and Senate versions are budgeted at \$170 billion over 10 years. However, the Senate bill is a five-year bill, which spends nearly \$9 billion more in the first five years than the House bill. Many, including the administration, have expressed concern that the Senate farm bill spends too much money in the front years, and risks support levels in years 6 through 10 if commodity prices do not improve. However, Senate democrats argue that more help is needed in the early years given the depressed economic conditions of agriculture.

Late in the Senate debate on the new farm bill, an amendment was passed that reduced the payment limits for an individual producer to a total of \$75,000 in fixed transition payments and counter-cyclical

payments and \$150,000 in loan deficiency payments. The producer would be allowed to receive an additional \$50,000 if the spouse were included. There were also means tests and rules on the definition of active participation included.

This payment-limit language would be severely restrictive in southern states where higher value crops such as cotton and rice are grown. The House version of the farm bill contains traditional payment-limit language that has limits that are at least twice those in the Senate bill; if not more (depending on the structure of the farming operation). The public perception and political ramifications make payment limits an extremely contentious issue that lines up southern lawmakers against northern lawmakers irrespective of party lines. Important compromises will have to be made on this issue in the Conference Committee.

In another late amendment to the Senate farm bill, Senator Johnson from South Dakota introduced language that would make it illegal for packers to own livestock (except poultry) more than 14 days before slaughter. There are numerous sides to this issue, and the results could have major restructuring implications for the livestock industry. The Conference Committee will likely have compromises that deal with the ban on packers and the payment limits, but some restrictions with regard to both issues are likely to be in the next farm bill. (In a related article, the consequences of the ban on packer ownership of livestock are examined in more detail.)

### What Are the Consequences of the Proposed Farm Bills?

#### Compliance with Trade

**Agreements:** The House and Senate versions of the farm bill increase the level of government support for agriculture. Much of the increased support comes in the form of either counter-cyclical payments or increased loan rates. Either form of additional support jeopardizes the U.S. position in trade negotiations. The updating of bases is also contrary to the 1994 Uruguay Round

agreement. The U.S. currently has a spending limit on “trade distorting” government support of just over \$19 billion annually. Given the current economic conditions, spending limits may be breached, substantially degrading U.S. negotiating power in the WTO. Regardless of legality and whether spending limits are breached, either type of program is in opposition to the position the administration has taken in WTO negotiations. The negotiations have focused on reducing trade-distorting payments for all countries. Congress appears to be heading in a direction opposite of the way U.S. negotiations in WTO would like to see things move.

**Production Incentives:** The House and Senate versions of the farm bill both have mechanisms that trigger more support for producers when prices are low. The counter-cyclical and loan deficiency payments provided under both farm bills isolate the producer from the market signals contained in low prices. Low prices reflect the market’s opinion that stocks and production of a commodity are large. Therefore, the natural economic response would be to cut back on production, because the market does not “want” the commodity.

However, the price support mechanisms provided by the House and Senate versions of the farm bill send a different signal to producers. Rather than having producers respond to the market signals by curbing production (or more likely, by having the less efficiency producers go out of business or having some less productive land not farmed), the price supports and income subsidies signal to producers to keep producing the commodity despite low prices, which increases stock levels further reducing the price.

This strategy might make sense if the U.S. were trying to “outlast” its foreign competitors in a marketplace price war. However, the plan (which was started with the 1996 farm bill) has been very expensive to the U.S. taxpayer and has had little if any visible impact on competitors’ production levels or any expansion in

long-term market share position in the trade of commodity products.

**Distribution of Benefits:** The House and Senate versions of the farm bill transfer large amounts of money to traditional program crops. The payments come in the form of direct payments not tied to production, price supports for current production levels, and income supports based on historical production levels. These various payments all contribute to supporting farm incomes and asset values for traditional program crops at substantially higher levels than without these payments. Nontraditional crops, like vegetables, fruit, and livestock, have not received support in the past (aside from some small emergency payments made to pork and apple producers). These nontraditional crops will not receive support under the new farm bill either. The administration would prefer to have a farm bill that was more inclusive of other agricultural products.

**Land Value and Rents:** The House and Senate versions of the farm bill would maintain or increase current land values and farmland rents. Land values are determined based on the income stream received from the land. As such, the income support provided in the House and

Senate versions of the farm bill will likely be bid into land values and land rents in traditional program crop producing regions of the country. This can be a double-edged sword. For those producers who own the majority of their land and retired farmers who are renting their land, this increased land value support can be a big boon to their balance sheets and/or cash flow streams. However, tenant farms are likely to be in a worse position as rising rents squeeze out any margins gained by increased government support.

**Farm Consolidation:** The distribution of government payments to small versus large producers has been a hot topic lately. The general argument is that a relatively few, large farms receive the bulk of government payments under current farm programs. However, a recent publication by the United States Department of Agriculture's Economic Research Service indicates that smaller producers, those with less than \$250,000 in gross cash income, actually received as much or more government payments, as a percent of their gross income, as larger farmers did in 1998 (Figure 1).

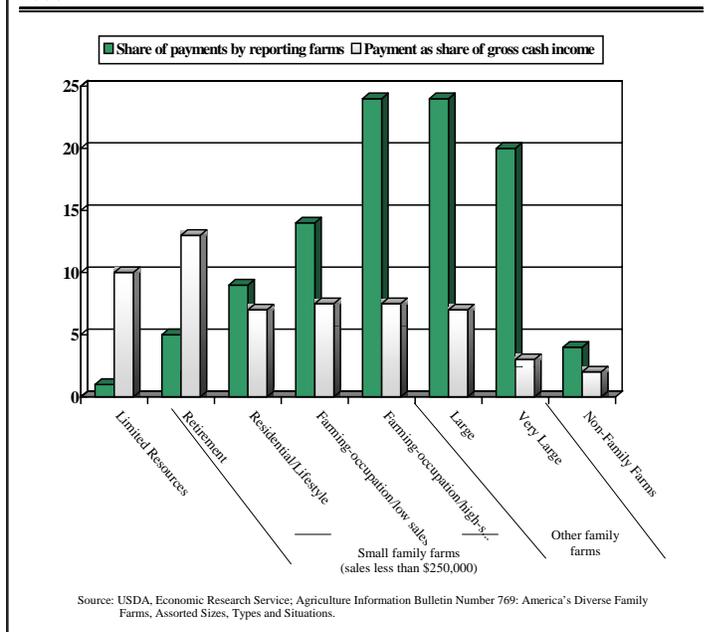
The results of this study also suggest that government programs were more important in the financial

performance of mid-size family farms. The House plan may maintain, or prolong at least, the current structure of production agriculture with respect to small, mid-size, and large producers by providing substantial income support and relatively more income support for mid-size family farm operations that may not have the economies of scale of large operations or are unable to find part-time off farm income. The Senate's payment limit restriction would reinforce the results of the ERS report and reduce the support for the very largest farms, shifting more of the relative support to smaller and mid-size family farms.

**Budget Costs:** The House and Senate versions of the farm bill are budgeted at \$170 billion over a 10-year period. However, these budget projections could be overly optimistic. Much of the budgeted cost is dependent on a baseline that forecasts considerable improvement in the economic situation for commodity production in later years. If this improved economic condition (i.e., higher prices) does not materialize, the actual cost of either the House or the Senate version could be extremely high. This is due to the counter-cyclical nature of the programs, where larger payments are made when farm economic conditions are "bad." When economic conditions improve the payments under counter cyclical programs would decline.

The basic assumption of the projected budget is that prices will be high enough in the later years (beyond year 4 of the farm bill) that counter-cyclical type payments would be almost non-existent. This is a particularly difficult assumption to make when considering that the payment mechanisms in both the House and Senate bills will encourage overproduction that will depress prices – unless an unforeseen weather event reduces production and stocks. Thus, it is likely that the actual cost of the farm bill could be much greater than \$170 billion.

**Figure 1. Distribution of Government Payments by Farm Size/Type, 1998.**



### Concluding Thoughts

The House and Senate bills are essentially a continuation of current policies adding more support from old

program mechanisms. Prior recipients, honey and wool, are added back in, and the peanut program is changed to more closely resemble other commodity programs. Little attention is paid to the foreign trade agreements, and substantial amounts are added to existing conservation programs. Both bills will maintain or enhance asset values, particularly land. The basic structure and impacts of these bills raise some basic questions.

How and to what extent does the public want to continue to support agriculture, and, within that, what groups in agriculture does the public want to support? The 1996 Farm Act made the income transfers to agriculture much more transparent than they were before. Information is readily available on both the government payment amount and the

identity of the recipients. The House/Senate farm bill looks as though it will be extremely generous to agriculture. Will the public continue to believe that the need for the subsidies is real for those receiving

Do farmers want to depend less on government and more on markets? Do farmers want higher market prices? DO farmers want free trade and competition? It seems clear that this farm bill will not deliver these

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***“The House and Senate bills are essentially a continuation of current policies adding more support from old program mechanisms.”***

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them? Will other needs like social security and defense become more important so that such generous income transfers to agriculture lose public support?

Finally, what is it that agricultural really wants from a farm bill?

things. This farm bill is designed to provide more government support for producers, insulating them from low market prices, removing the incentive to compete in world markets, and reducing the momentum for freer trade.

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## Local and Area Educational Opportunities\*

### **Farming on the Fringe: Farm It, Sell It, or Trade It.**

Topics: Rural/Urban Conflict, Limiting Liability, property Rights; Transfer Tax: Real Estate Sale, Trade, and Death, Land Trusts and Conservation Easements, Right to Farm law.

Target Audience: Farmers, landowners, developers, Extension Educators, and Indiana lawyers for continuing education credit.

Presentation time: five hours

Overview: This seminar will provide a series of presentations and discussion related to problems and opportunities of farming amidst residential, and other development, the law to help protect farming activity, tax law options for maintaining ownership as a tax and estate planning strategy as well as the lifetime transfer of property; tax-free exchange sale, gift, and the transfer of development rights to a land trust via a conservation easement.

### **Estate, Financial, and Transfer Planning: Individuals, Couples, and Closely-Held Businesses.**

Target Audience: Public, farmers, Extension Educators, and insurance agents, lawyers, accountants and certified financial planners for continuing education credit.

Presentation time: five hours. Shorter presentations may be arranged.

Topics include estate planning basics: property ownership laws, wills, no wills (law of descent), prenuptial agreements, and trusts – including “probate” versus using a living trust as a will substitute, and the probate “short cuts.” Indiana inheritance tax and federal gift and estate tax law will be explained including special valuation of farmland, and the family-owned business interest deduction for federal estate tax purposes.

A primer on closely-held business organization choices will be presented with transfer-planning tools. Information on conservation easements and charitable giving strategies is also included.

### **Farmland Rents: Finding the Right Rent or Lease Arrangement and Lease Law.**

Target Audience: Farmers, landowners, and agribusiness professionals.

Presentation time 90 minutes to 2 hours.

Dr. Harrison, an attorney, will present the Indiana laws for farmland leases including termination requirements along with income tax issues, lease type choices, and the economic aspects of lease choices.

\* For these program offerings contact your local Purdue University County Cooperative Extension Service Office or Gerry Harrison, Ag. Econ. Dept., 1145 Krannert, Purdue University, West Lafayette, IN 47907-1145, Phone: 765-494-4216, toll free 1-888-398-4636; e-mail: <harrisog@purdue.edu>.

## 35<sup>th</sup> Annual Purdue Top Farmer Crop Workshop

July 21-24, 2002

**L**ast year a record attendance participated! Workshop coordinator, Howard Doster, says this year’s program is better. Call him at

(765)494-4250 to receive an invitation or go to our web page [www.agecon.purdue.edu/extensio/Top\\_Farmer/index.htm](http://www.agecon.purdue.edu/extensio/Top_Farmer/index.htm) to find the program brochure and registration form.

# Implications of Banning Packer Ownership of Livestock

*Allan Gray, Assistant Professor; Ken Foster, Professor; and Michael Boehlje, Professor*

**T**his article addresses some of the issues surrounding Sen. Johnson's (D-SD) amendment to the Senate Farm Bill (S. 1731, The Agricultural, Conservation, and Rural Enhancement Act of 2001) that would make it illegal for meat packers to own, feed, or control livestock more than 14 days before slaughter. This discussion responds to seven critical questions that have surfaced in the debate concerning this amendment and, more fundamentally, the structure of the livestock industry.

## What is control and is defining control important?

There has been much debate about this amendment in the press, and much of the debate centers on the word "control" and its likely interpretation in a court of law. The word "control," regardless of its interpretation in a court of law, generates serious concerns. While Fuez, et. al. make arguments that this word could eliminate marketing contracts, Harl, et. al. argue that, in a court of law, control would be interpreted as ownership and would not ban marketing contracts. The issue at hand seems to be that the concept of "control" is, in fact, subject to interpretation.

The degree of uncertainty surrounding the interpretation of the word "control" will lead to increased uncertainty about legal business structures and likely increased litigation. These factors will increase transactions costs in livestock industries, making them less competitive against other protein sources in both domestic and export markets. If the natural economic tendency is toward tighter alignment of the livestock value/supply chain, as will be argued later in this article, then packers will move toward tighter vertical linkages without actual ownership, if the amendment is enacted. This tendency to push for tighter alignment may be interpreted

as control without a more explicit definition and will most assuredly lead to litigation. Thus, the word "control" should be defined more explicitly in the legislation or eliminated to avoid the uncertainty and the increased litigation that would follow if it is not defined.

## Is packer ownership of livestock (vertical integration) driven by market demand?

The U.S. livestock industry is a mature industry that delivers products to a set of customers with rising incomes who demand a more differentiated, higher-value set of choices in their proteins. In addition, the marketplace is increasingly concerned about food safety and the ability to trace any contamination to the root source. This suggests that the market pressures placed on the industry to deliver more differentiated, higher-value, traceable protein products are a key driver in the development of tighter vertical linkages in the livestock industry.



A more tightly aligned livestock supply chain allows the industry to be more responsive to consumer needs, providing growth for its products in mature markets. By increasing vertical coordination (whether through vertical ownership or contracting), the industry increases the ability of information to flow quickly and unambiguously along the supply chain (in essence through quantity and quality purchase orders), thereby permitting quick responses to changes in consumer preferences through new requirements and specifications rather than through price incentives alone.

## Is packer ownership of livestock driven by cost economies?

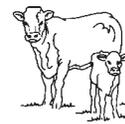
The packing industry has large investments in fixed assets that are most economical when operated at full capacity. The best way to assure

full capacity utilization and better flow scheduling, and to better match consumer or retailer quantity and quality requirements is to develop tighter vertical coordination. Thus, the industry can improve its competitive position through the improved inventory management that arises from vertical control. In addition, the shared information, learning capacity, and financial gains from vertical coordination may lead to more rapid technological adoption and enhanced efficiencies for the industry. These efficiency gains can lead to more affordable and/or desirable products for consumers over time.

## Is producer involvement in vertical integration and contracting related to risk management?

Risk in the livestock industry is another important driver of increased vertical coordination. When markets are less well coordinated, the market signals and production activities may be less aligned. This misalignment can lead to wide swings in inventories and prices, creating a higher degree of variability in income for farmers and packers. Increasing vertical coordination can reduce misalignments that lead to higher variability.

In addition, the sharing of risks and rewards in coordinated systems may be different than in an "open" market. Research has shown that producers producing under production contracts (a form of packer ownership) receive lower returns on average than their "open" market counterparts. However, this same research indicates that the variability of returns for producers in production contracts is substantially lower than the variability of their counterparts' returns. This reduction in risk could be a substantial benefit to some producers, but this and other risk reduction benefits would be reduced by the proposed amendment if it prohibits production (not marketing) contracts, which is likely.

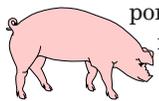


### Do packers use vertical integration to exercise market power?

An alternative argument for the increase in vertical coordination is that packers are exercising their ability to control the price of live animals. This argument contends that packers have market power in the industry and thus can squeeze producers' margins when they are more vertically aligned. Most studies have found little evidence that packers are exercising pure market power in the live animal markets. However, there is some research suggesting that packers might strategically use captive supplies (company owned or contract produced animals) to reduce the number of animals that they purchase from the open market without risking capacity utilization shortfalls; the result of this behavior is lower live animal prices than would have otherwise prevailed on the open market. However, if packers have the ability to manipulate live animal prices, it is unlikely to disappear under the terms of the proposed amendment. If there exists substantial market power, then packers will likely find ways to exercise it via exploitative marketing contracts that fit within the bounds of the proposed amendment. If the problem in the livestock industry is one of market power, and it can be documented, then it is an issue of anti-trust and not one of industry structure. Furthermore, the market power of packers is unlikely to be significantly affected by banning packer ownership of livestock.

### What form of supply/value chain governance structure might emerge if this amendment is enacted?

Packer vertical integration in the pork and beef industries is relatively small when compared to that of the broiler industry. The latest statistics show packer ownership in beef to be between 5 and 7 percent, while pork is closer to 30 percent. However, more than 80 percent of hogs were marketed through some form of non-spot market transaction in January 2002. And, the incidence of vertical



integration in beef and pork is rapidly increasing. Thus, while this amendment would eliminate vertical integration in its purest form (i.e., ownership of livestock raw materials), it is unlikely to reverse the trend toward tighter alignment in the livestock supply chain and re-establish the dominance of independent producers of livestock and open access market coordination between producers and packers.

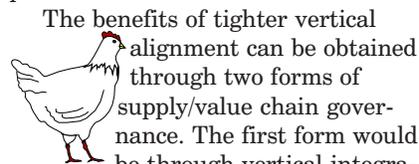
obtain some of the benefits of vertical alignment is through marketing contracts. However, the economic pressure will likely be to create very tightly controlled marketing contracts with a limited set of "preferred suppliers." This limited set of preferred suppliers would consist of producers with the ability to deliver the quality and quantity of livestock needed by the packer to take advantage of the economic forces in the

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***"In summary, there is a sound argument that vertical coordination in the livestock industries is driven by changes in consumer demand to deliver high-quality, differentiated products to the market place, and the desire of some producers to improve the risk/reward sharing between themselves and packers."***

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The argument above is that tighter vertical alignment through ownership and/or contractual arrangements is primarily driven by the need to meet consumer demands and lower cost. If this is the case, it is unlikely that this amendment (assuming control is not defined as eliminating detailed quality and quantity specified procurement/marketing contracts) would curtail the industry's move towards tighter vertical alignment. That is, this amendment is unlikely to preserve the "independence" of livestock producers.



The benefits of tighter vertical alignment can be obtained through two forms of supply/value chain governance. The first form would be through vertical integration or ownership. This has been the primary choice of the poultry industry, which is widely credited with being more responsive to customers' needs, and has led to increases in the demand for poultry products at the expense of beef and pork. It should be noted that the poultry industry is not included in the proposed amendment.

Because this amendment would eliminate the possibility of vertical integration (at least, backward integration by packers), the other choice of governance structure to

market place. The "preferred" suppliers would have an extremely close relationship with the packer and would, in effect, act as an agent or franchisee for the packer, more or less imitating the vertical integration structure.

This change in the structure of the livestock industry is at best a marginal change from the currently emerging structure. While it is likely that this amendment would shift some of the margins in the industry towards producers, it is likely that these margins would be collected by relatively few select producers "hand chosen" by packers. This leaves most other producers in an unchanged situation with limited access to markets and the necessity to sign contracts (albeit with production companies rather than packers) that more or less specify their production practices and who may own the livestock.

### Would packers and producers in areas with limited livestock production and only one or two packing facilities suffer?

It seems likely that livestock production in fringe areas could suffer under this amendment. As stated previously, the fixed cost nature of the packing industry requires a high degree of capacity utilization to

achieve profitability. In “fringe” areas where livestock production is limited, packers may need to own a portion of the livestock production to maintain an economically feasible throughput in their plants. By eliminating ownership, these plants may have no alternative but to shut down or be sold at a loss. Because of the limited production and packing capacity in these regions, farmers would likely have to cease operations as well. Thus, it would appear that this amendment might favor the regions where production is most concentrated, at the expense of less concentrated areas of production.

### Summary

In summary, there is a sound argument that vertical coordination in the livestock industries is driven by changes in consumer demand to deliver high-quality, differentiated products to the market place, and the desire of some producers to improve the risk/reward sharing between themselves and packers. This amendment would simply eliminate one form of vertical coordination for delivering products to consumers and would be unlikely to affect the market power of packers. In fact, the amendment could, at the margin, increase the packers’ market power since it would likely lead to an

increase in contracting, placing more of the ownership of specific assets in the hands of producers who would subsequently be in a weaker bargaining position with packers. The new market would be one for contracts rather than for live animals, and with more producers seeking those contracts, the potential for packers to extract price discriminating rents from the producers is not likely to decrease. This amendment is likely to make only marginal changes in the structure of the pork and beef industries with a few large producers creating tighter coordination linkages with packers and a few limited production areas being eliminated.

## 70<sup>th</sup> Annual Indiana Farm Management Tour

*Johnson and Shelby Counties*

*Tuesday and Wednesday,*

*July 9-10, 2002*

**C**ome tour five outstanding Indiana farms with Purdue Cooperative

Extension staff members as your guides and the Indiana Farm Management Association as your host. The scheduled farm visits are:

- Poe Stock Farm, west of Franklin, Tuesday, 1 pm
- Kelsay Dairy Farm, near Whiteland, Tuesday, 3 pm

- Bruce and David Daugherty Farm, northeast of Franklin, Wednesday, 8 am
- Rex Kuhn Farm, southeast of Morristown, Wednesday, 10:15 am
- Foltz Farms, northeast of Shelbyville, Wednesday, 1:30 pm

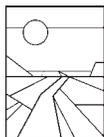
An educational program “Relationships Across the Counter and Across the Fence” will be presented

at 7:30 pm on Tuesday, July 9 at a facility in Franklin, IN. There are several hotels in Franklin and nearby Greenwood for out-of-town guests.

Lunch will be available for registered tour participants at the Foltz Farm at noon on Wednesday, July 10.

For more information about the 70<sup>th</sup> Annual Indiana Farm Management Tour, call Alan Miller at (765)494-4203 or send him an e-mail inquiry to millerwa@purdue.edu.

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