Economic Impact of the Poultry Industry

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Economic Impact of the Poultry Industry

Abstract
The Iowa economy (especially the rural economy) depends heavily on livestock production and income. Not only is farm level income and employment enhanced by livestock production but other rural businesses and their employees benefit as well. Although the poultry sector is not as large as some other livestock sectors it is growing in importance. This paper reports the results of effort to measure the economic effects of the poultry industry in terms of sales, profits or wages and the number of jobs resulting from poultry production and poultry processing.

Disciplines
Economic History | Income Distribution | Labor Economics

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ECONOMIC IMPACT OF THE POULTRY INDUSTRY*

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** The authors are Associate and Full Professor of Economics, respectively.
ECONOMIC IMPACT OF THE POULTRY INDUSTRY
Daniel M. Otto and Roger G. Ginder

The Iowa economy (especially the rural economy) depends heavily on livestock production and income. Not only is farm level income and employment enhanced by livestock production but other rural businesses and their employees benefit as well. Although the poultry sector is not as large as some other livestock sectors it is growing in importance. This paper reports the results of effort to measure the economic effects of the poultry industry in terms of sales, profits or wages and the number of jobs resulting from poultry production and poultry processing.

Two different approaches were taken. First, actual employment and wage data were collected and analyzed to document changes and trends over the past decade. Then the broader effects of the industry on the Iowa economy were estimated using an input-output model based at Iowa State University. The input-output method measures the indirect and induced economic impact of the poultry industry beyond the direct effects of poultry production and processing.

ANALYSIS OF ACTUAL EMPLOYMENT SALARIES AND WAGES - 1980-1988

Employment at Production Level

Annual employment at the production level of the poultry industry is shown in table 1 for northwest Iowa, northeast Iowa, and southern Iowa. These figures include salaries and wages paid by producers of layers, broilers, turkeys, ducks, geese, breeder flocks, exhibition and game fowl as reported to the state of Iowa Department of Employment Services. It should be noted that only covered salaries and wages (those
subject to unemployment insurance premiums) are enumerated by the Department. Operators, family employees and other exempt employees would not be included in these totals. At the production level, operators and exempt employees probably outnumber the covered employees. Thus, these trends do not represent the total economic impact for the production level. However, the emerging production systems in the poultry industry are becoming more labor intensive and are likely to involve more covered employers in the future.

Employment at the poultry production level (table 1) declined in the northwest portion of the state while increasing in the southern half and in northeastern Iowa. Nevertheless, total production employment remained highest in northwest Iowa at nearly 300 employees in 1988.

Statewide, there were 67 fewer poultry production employees in 1988 than in 1980. The decline represents the combined effects of two trends. The reduction in the number of employees occurred in part because production of eggs, layers and pullets was falling in the early and mid-1980s. At the same time there was an accompanying trend toward more intensive use of capital and increased labor productivity in poultry production firms of all types.

Statewide production level employment bottomed out in the 1985-86 period. The 1985 employment of 621 was down 109 employees from 729 in 1980. Increases in egg production and new investment in the modern egg production systems helped to buoy-up production level employment from the 1985 low point to 662 in 1988. The establishment of broiler production in some parts of the state and modest increases in turkey production also contributed to the turnaround.
### TABLE 1. EMPLOYMENT IN POULTRY PRODUCTION

**Number of Employees in Poultry Production**

<table>
<thead>
<tr>
<th>Year</th>
<th>Northwest</th>
<th>Northeast</th>
<th>Southern Half</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>464</td>
<td>146</td>
<td>119</td>
<td>729</td>
</tr>
<tr>
<td>1985</td>
<td>326</td>
<td>146</td>
<td>149</td>
<td>621</td>
</tr>
<tr>
<td>1988</td>
<td>296</td>
<td>202</td>
<td>164</td>
<td>662</td>
</tr>
</tbody>
</table>

Change from 1980-1988: 
-168  +56  +45  -67

Source: Iowa Department of Employment Services and I.S.U. Rural Data Project.

### TABLE 2. EMPLOYMENT IN POULTRY PRODUCTION

**Statewide Summary for Poultry Production Employment**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Employment</th>
<th>Total Employer Firms</th>
<th>Average Employees/Firm</th>
<th>Average Wages/Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>729</td>
<td>50</td>
<td>14.5</td>
<td>$9,847</td>
</tr>
<tr>
<td>1985</td>
<td>621</td>
<td>46</td>
<td>13.5</td>
<td>$12,762</td>
</tr>
<tr>
<td>1988</td>
<td>662</td>
<td>53</td>
<td>12.5</td>
<td>$12,143</td>
</tr>
</tbody>
</table>

Change from 1980-1988: 
-67  +3  -2.0  +$2,296

Source: Iowa Department of Employment Services and I.S.U. Rural Data Project.
The decline in production level employment must be put in perspective when looking ahead to probable employment in 1989 and 1990 and projected levels for 1991 and beyond. The rapid increase in egg production and broiler production along with steady growth in turkey production are expected to continue to push employment upward. It is not at all unlikely that 1980 levels will be reached and exceeded by the end of 1991.

Changes in the number of poultry production firms hiring covered employees and the average salaries and wages paid are shown in table 2. The number of firms hiring covered employees increased slightly during the 1980-88 period. However, the number of employees per firm actually fell by about 14% from 14.5 employees per firm in 1980 to about 12.5 employees per firm in 1988. This reduction in employees per firm was accompanied by a 23% increase in wages per employee.

EMPLOYMENT AT THE PROCESSING AND DISTRIBUTION LEVEL

Nonexempt employment at the processing level provides a much more accurate measure since there are fewer exempt employees working at the processing level. Annual employment at the poultry processing level of the industry are shown in table 3 by region of the state. Employment levels in the Northwest increased by more than 60% between 1980 and 1988. Processing employment in the Northeast and Southeast declined during the same period by 107 and 71 employees, respectively.

The Southwest region experienced the fastest rate of growth. There were more than 2 1/2 times as many employees working in the southwest Iowa processing sector in 1988 as there were in 1980. Statewide there was an increase of about 461 employees to a total of 3,393 during the period. This represents more than a 15% increase over 1980 statewide levels.
### TABLE 3. EMPLOYMENT IN POULTRY PROCESSING AND DISTRIBUTION

<table>
<thead>
<tr>
<th>Year</th>
<th>Northwest</th>
<th>Northeast</th>
<th>Southeast</th>
<th>Southwest</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>645</td>
<td>651</td>
<td>1,495</td>
<td>141</td>
<td>2,932</td>
</tr>
<tr>
<td>1985</td>
<td>934</td>
<td>579</td>
<td>1,263</td>
<td>133</td>
<td>2,909</td>
</tr>
<tr>
<td>1988</td>
<td>1,062</td>
<td>544</td>
<td>1,424</td>
<td>363</td>
<td>3,393</td>
</tr>
</tbody>
</table>

**Change from 1980-1988:** +417 -107 -71 +222 +461

Source: Iowa Department of Employment Services and I.S.U. Rural Data Project.

### TABLE 4. EMPLOYMENT IN POULTRY PROCESSING AND DISTRIBUTION

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Employment</th>
<th>Total Employers</th>
<th>Ave. Number of Employees per Employer</th>
<th>Average Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>2,932</td>
<td>81</td>
<td>36.2</td>
<td>$10,810</td>
</tr>
<tr>
<td>1985</td>
<td>2,902</td>
<td>61</td>
<td>47.6</td>
<td>$13,300</td>
</tr>
<tr>
<td>1988</td>
<td>3,393</td>
<td>56</td>
<td>60.6</td>
<td>$15,018</td>
</tr>
</tbody>
</table>

**Change from 1980-1988:** +461 -25 +24.4 $4,208

Source: Iowa Department of Employment Services and I.S.U. Rural Data Project.
Poultry processing activity became concentrated into a smaller number of larger firms (see table 4) in the 1980s. The number of firms engaged in poultry processing and distribution fell by more than 30% between 1980 and 1988. However, the average number of employees per firm increased by 68%. Average employment in an Iowa processing firm in 1988 was more than 60 people -- up from about 36 in 1980. Average wages paid to employees increased from about $10,800 to $15,000 or about 40% over 1980 levels. This was approximately the rate of increase in the Consumer Price Index for the decade 1980-1988. It should be noted that this rate of increase was greater than the average rate of increase in average employment earnings (approximately 37% according to BEA data) for the state as a whole between 1980 and 1988.

**INPUT-OUTPUT ANALYSIS OF PRODUCTION AND PROCESSING ACTIVITY**

Economic activity centered in the business firms of an industry creates two kinds of effects in the local or regional economy. The most obvious effects are the direct impacts created when output is produced, wages and salaries paid to workers and profits generated. These direct effects are the typical measures applied to show the size and importance of an industry in the economy. Measures such as total value of product sold, value added in processing, number of people employed, payroll, taxes paid or other industry specific indicators are easier to obtain and are often used to document an industry's contribution to the overall economy.

Certainly these are valid dimensions of an industry and its contribution to a regional or local economy. However, they characterize the industry in isolation rather than as a functioning component of the economy as a whole. In fact, there are
numerous secondary impacts of economic activity which are not captured when the industry is examined in isolation.

The direct effects of a sector itself may be less important than the secondary effects. For many of the basic industries such as agricultural production, the extraction of mineral resources, or forestry production, the indirect economic effects are extremely important. Production in these types of "basic" industries tend to create relatively large changes in the rest of the economy. As a consequence, even a modest amount of added activity in a basic or production level industry usually translates into relatively large economic benefits to the economy as a whole.

An input-output model is a useful tool for documenting the importance of a specific sector to the overall economy as well as impacts on the total economy from economic changes taking place in a sector. The input-output model provides a representation of all sectors in a regional economy. It takes account of the linkages and interactions among sectors within that economy. A summary of all the transactions for a base period are documented in the model to provide a description of the local economy which can then be used to track the relative importance of individual sectors. The input-output model can also be used to estimate impacts on the base situation that would result from changes such as an increase in demand for a sector's output.

Secondary effects on the greater economy arise from two primary sources. First, numerous indirect effects occur. As the firms in the industry produce, they purchase inputs from the rest of the economy for use in the production process. This indirectly creates employment and increased business volume and income to those firms manufacturing the goods and rendering the services used as production inputs. For
example, poultry production requires numerous inputs including feed, building materials, transportation, construction, electricity and utilities, financial services, and other goods and services. As these goods and services are purchased, they create added employment and income in the greater economy where they are produced.

A second kind of effect which arises is called the "induced household effects." Induced effects occur when the income and wages generated by the production activities and the input activities are spent. Individuals employed in the industry itself or those employed by firms which are linked to it as input suppliers have far reaching effects on the economy as they spend their incomes. Impacts occur in what may seem to be completely unrelated businesses. An increase in poultry production or processing affects the entire range of consumer goods and service businesses through these household effects as employees spend their earned income and owners spend their profits. For example, expanded poultry production or processing is translated into increased business volume, employment and income for food stores, barbers, clothing stores, restaurants, service stations, health care facilities and the entire range of consumer sector activities.

EFFECTS OF THE POULTRY INDUSTRY ON MAJOR SECTORS OF THE IOWA ECONOMY

An input-output analysis of the Iowa poultry industry was conducted to measure the direct, indirect and induced effects it creates. Poultry production and poultry processing activities were analyzed separately to provide an indication of how an increase in activity at either level would affect three economic measures: the (1) dollar business volume, 2) the wages and profits, and (3) the number employed.
In addition to the direct effects of poultry production and processing, indirect industry and induced household impacts were estimated for other sectors in the economy. These sectors were:

1. **OTHER AGRICULTURAL PRODUCTION** - The input demand and consumer spending effects on nonpoultry agriculture. This would include economic effects from the feed grains and soybeans, as inputs and various agriculture products from dairy products to meats and other foods on the consumption side.

2. **AGRICULTURE SERVICES AND MINING** - The input demand for poultry production and the consumer spending have effects on the farm input supply industry. Included would be the mixing, milling and delivery of feed, veterinary service, animal health supplies and other inputs to production. Effects such as increased use of custom service to produce feed are also a component in boosting sales income and employment.

3. **CONSTRUCTION AND MANUFACTURING** - Construction and manufacturing effects would include the construction demand created by the industry for buildings and equipment and the demand created as higher consumer incomes are spent on construction and manufactured goods. Both durable and nondurable manufactured goods would be stimulated. This includes all types of nonconsumer durable goods from food to apparel and durable goods from appliances to lawn mowers and vehicles.

4. **TRADE, TRANSPORTATION AND UTILITIES** - A wide variety of retail, transportation and utilities also reap economic benefits from
increased poultry production. All types of retail trade benefit from increased consumer income. Transportation related activity is increased as inputs and outputs are hauled and as the increased demand for consumer durables and nondurables increase. Power and communication utilities derive gain both as input supplies to the industry and as suppliers to consumers.

5. FINANCE, REAL ESTATE AND INSURANCE - Lending and real estate and insurance activities benefit indirectly from both the input activities and the effects consumer income generated by those employed in the poultry industry.

6. BUSINESS, PERSONAL AND OTHER SERVICES - The service sector of the economy also gains indirectly from the poultry production activities as well as from consumer spending by households. Both business services such as accounting, legal, and various types of consulting services and consumer services including medical, dental, auto repair, barbers and beauticians and other similar services are affected by the income generated from poultry production and processing.

TOTAL EFFECTS ON THE INDUSTRY - POULTRY PRODUCTION AND PROCESSING

The input-output methodology adds the dollar value of the direct, the indirect, and the induced household effects from the poultry industry to get a total effect on the Iowa economy. It is possible to examine the industry from two perspectives using input/output techniques. The analysis can be centered at the production level and the
effect on the processing level and other sectors of the economy can be measured. This approach implies that production is changed and the other sectors are affected indirectly by the change. Alternatively the analyses can be centered at the processing level. This approach assumes that processing is changed and the other sectors are affected indirectly by that change. Since it is possible for change to occur in either the production sector or the processing sector, the industry was analyzed from both perspectives.

**Poultry Production**

The direct and indirect effects are shown in table 5 for poultry production. In 1988, the total dollar impact of poultry production on all business sales and service volume in the economy was about $458.6 million. It generated $117.5 million in wages and profits and about 5,092 jobs. The direct effects generated within the industry itself were $220 million in business volume, $18.8 million in wages and profit and 2070 jobs. However, by all three measures (business volume, wages, and jobs), the direct effect of poultry production was less than half the level of the total economic impact. Taken together the secondary or indirect effects the poultry industry created in profits and wages were greater than direct effects by a large margin. The direct wages and profits in the industry were only about $18.8 million. However, the poultry production activities generated $117.5 million in indirect wages and profits when all the indirect activities were added. This implies that the poultry industry can provide an important boost to Iowa economic growth despite relatively low direct levels of wages and profits.

A percentage breakdown of induced economic activity on other sectors as production inputs were supplied to poultry producers as poultry products were processed and as production workers’ wages and salaries were spent is shown in figures 1-3. Figure
Figure 1.

Industries Affected
By Poultry Production
(up to the farm gate -- 1989)

Business Volume Effects From Production:
$458.6 Million Generated in Iowa Economy

Figure 2.

Industries Affected
By Poultry Production
(up to the farm gate -- 1989)

Wages & Profits from Production:
$117.5 Million Generated in Iowa Economy

Figure 3.

Industries Affected
By Poultry Production
(up to the farm gate -- 1989)

Jobs Created in Iowa:
5,092 Jobs Created by Poultry Production
<table>
<thead>
<tr>
<th>Industry</th>
<th>Business Volume</th>
<th>Wages &amp; Profits</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry Production (Direct Effect)</td>
<td>$220.6 mil</td>
<td>$18.8 mil</td>
<td>2,070</td>
</tr>
<tr>
<td>Other Ag Production</td>
<td>$59.6 mil</td>
<td>$23.2 mil</td>
<td>510</td>
</tr>
<tr>
<td>Ag Services &amp; Mining</td>
<td>$11.3 mil</td>
<td>$6.1 mil</td>
<td>435</td>
</tr>
<tr>
<td>Construction &amp; Manufacturing</td>
<td>$78.3 mil</td>
<td>$21.0 mil</td>
<td>440</td>
</tr>
<tr>
<td>Trade Transport &amp; Utilities</td>
<td>$20.3 mil</td>
<td>$10.3 mil</td>
<td>347</td>
</tr>
<tr>
<td>Finance Real Estate Insurance</td>
<td>$31.8 mil</td>
<td>$17.9 mil</td>
<td>257</td>
</tr>
<tr>
<td>Business, Personal, and Other Services</td>
<td>$36.7 mil</td>
<td>$20.2 mil</td>
<td>1,033</td>
</tr>
<tr>
<td>Total Effects of the Industry</td>
<td>$458.6 mil</td>
<td>$117.5 mil</td>
<td>5,092</td>
</tr>
</tbody>
</table>
l shows how the gross business volume generated by poultry production was distributed through the major sectors of the Iowa economy. Of the $458.6 million business volume the majority was induced in the ag production sector (12%) as feed grains and proteins were purchased and in the construction and manufacturing sector (17%). Wages and profits (figure 2) were distributed somewhat differently. The other agricultural production and the construction and manufacturing benefitted most (38%) but finance and real estate (15%) and the business/personal service sector also gained (17%). Profits and wages in all these sectors were about equal to or greater than the direct profit and wage generated by production itself. Employment (figure 3) was highest in the poultry production, but business and personal services also gleaned significant benefits from employment generated by the industry (20%). Thus other sectors benefit significantly from the poultry industry.

**Impacts Through the Poultry Processing Level**

Total direct and indirect effects through the poultry processing sector are shown in table 6. The larger size of economic impacts occur because poultry related impact beyond the farm gate is included with the production level impacts shown in the previous section. Thus, these tables provide a more comprehensive view of economic impact than the production level analysis. Total business volume was slightly over $1 billion with wages and profits of nearly $248 million. Total employment was about 9700 employees. The direct effect of poultry processing on business volume was about $488 million generating $71.3 million dollars of profits and wages in the sector and direct employment of approximately 9700. As was the case for production the indirect effects exceeded the direct effects for the poultry processing level.
<table>
<thead>
<tr>
<th>Industry</th>
<th>Business Volume</th>
<th>Wages &amp; Profits</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry Processing (Direct Effect)</td>
<td>$487.79 mil</td>
<td>$71.3 mil</td>
<td>2,684</td>
</tr>
<tr>
<td>Poultry and Other Ag Production</td>
<td>$286.42 mil</td>
<td>$44.1 mil</td>
<td>2,639</td>
</tr>
<tr>
<td>Ag Services &amp; Mining</td>
<td>$11.6 mil</td>
<td>$7.2 mil</td>
<td>444</td>
</tr>
<tr>
<td>Construction &amp; Manufacturing</td>
<td>$110.2 mil</td>
<td>$29.9 mil</td>
<td>644</td>
</tr>
<tr>
<td>Trade Transport &amp; Utilities</td>
<td>$39.8 mil</td>
<td>$20.1 mil</td>
<td>645</td>
</tr>
<tr>
<td>Finance Real Estate Insurance</td>
<td>$58.2 mil</td>
<td>$32.7 mil</td>
<td>471</td>
</tr>
<tr>
<td>Business, Personal, and Other Services</td>
<td>$76.8 mil</td>
<td>$42.2 mil</td>
<td>2,174</td>
</tr>
<tr>
<td>Total Effects of the Industry</td>
<td>$1,070.8 mil</td>
<td>$247.5 mil</td>
<td>9,701</td>
</tr>
</tbody>
</table>
Figure 4. 

Industries Affected
By Poultry Processing
(beyond the farm gate -- 1989)

- Poultry Processing 49%
- Bus., Pers., & Other 7%
- Ag Services & Mining 1%
- Trade Trans. & Util. 4%
- Constr. & Manufact. 10%
- Fin. Real Est. Ins. 6%
- Poultry & Other Ag 27%
- Ag Service & Mining 3%
- Construc. & Manuf. 12%
- Trade Trans. & Util. 8%
- Fin. Real Est. Ins. 13%

Business Volume Effects From Processing:
$1.07 Billion Generated in Iowa Economy

Figure 5. 

Industries Affected
By Poultry Processing
(beyond the farm gate -- 1989)

- Poultry Processing 29%
- Bus., Pers., & Other 17%
- Ag Services & Mining 3%
- Construc. & Manuf. 12%
- Trade Trans. & Util. 8%
- Fin. Real Est. Ins. 13%
- Poultry & Other Ag 18%

Wages & Profits From Processing:
$247.5 Million Generated in IA Economy

Figure 6. 

Industries Affected
By Poultry Processing
(beyond the farm gate -- 1989)

- Poultry Processing 28%
- Bus., Pers., & Other 22%
- Ag Services & Mining 5%
- Construc. & Manufact. 7%
- Trade Trans. & Util. 7%
- Fin. Real Est. Ins. 6%
- Poultry & Other Ag 27%

Jobs Created in Iowa:
9,701 Jobs Created by Poultry Processing
Figures 4-6 show how these remaining indirect effects were dispersed over the other sectors in the Iowa economy. Figure 4 shows that about 46% of the $1.07 billion of business volume generated by poultry processing activity in Iowa was directly due to the processing activities themselves. An additional 25% of the total business volume was generated at the production level as birds and eggs were produced for processing. Construction and manufacturing accounted for 10%. The remainder was scattered over the other sectors. However, wages and profits were distributed much differently (figure 5). Direct wages and profits in the processing sector itself accounted for about 29% of the $248 million total profits. Other non-ag sectors of the economy received more than 50% of the induced wages and profits. About 45% of the induced employment went to non-ag-sectors (figure 6).

BUSINESS VOLUME, INCOME AND EMPLOYMENT MULTIPLIERS

The distribution of economic impacts associated with changes in the poultry sector illustrated in figures 4-6 may also be conveniently summarized as economic multipliers. Multipliers are based on the differences between the initial direct change and the total effects, including household consumption effects, of that change on all sectors. The calculation is simply the sum of the direct, indirect and induced consumption effects divided by the initial direct effects.

Multipliers can be applied to anticipated increases (or decreases) in business volume, wages and profits or employment levels to gauge the implications of these changes for the economy. Multipliers are particularly useful in providing a concise evaluation of how trends in an industry are likely to affect the three measures used to judge an industry's impact on other sectors in the economy.
Production Level Multipliers

The production level multipliers are shown for the poultry industry in figure 7. The multipliers for gross output in poultry production is 2.2 (figure 7a). This implies that an increase of one dollar of gross sales at the production level will generate $2.20 of output in the rest of the Iowa economy. The wages and profits multiplier (see figure 7b) was much higher at 5.4. A multiplier of 5.4 means that a dollar of wages and profits at the poultry production level will induce $5.40 of wages and profits in the rest of the Iowa economy. The employment multiplier of 2.46 (figure 7c) for poultry production implies that nearly 2 1/2 jobs in the nonpoultry production activities are created for each production level job.

A relatively high wage and income multiplier was generated compared to the business volume multiplier or the employment multiplier. This occurs in part because poultry production is a rather high volume low wage and profit margin activity. It does not create high levels of direct salaries and wages or profits. However, when the industry purchases inputs and its output is processed, a great deal of activity is created in higher wage and profit sectors of the economy. This generates much greater income for the economy as a whole than the sector itself generates. Hence it is vital to look beyond the direct effects at the production level.

Processing Multipliers

The multiplier for the poultry production activities through the processing level of the industry (activities such as egg, turkey, and chicken processing beyond the farm gate) are shown in figure 8. The multiplier for gross business volume at the processing level
FIGURE 7. POULTRY PRODUCTION AND ITS EFFECTS ON THE IOWA ECONOMY

(A) $ $$

2.20 MULTIPLIER

A DOLLAR OF GROSS OUTPUT IN POULTRY PRODUCTION YIELDS $2.20 OF GROSS OUTPUT IN THE IOWA ECONOMY

(B) $ $$ $$

5.40 MULTIPLIER

A DOLLAR OF POULTRY PRODUCTION WAGES AND PROFITS YIELDS $5.40 WAGES AND PROFITS WHEN ALL EFFECTS ON OTHER INDUSTRIES ARE CONSIDERED

(C) 2.46 MULTIPLIER

A JOB IN POULTRY PRODUCTION YIELDS 2.46 JOBS WHEN ALL EFFECTS ON OTHER INDUSTRIES ARE CONSIDERED
was 2.35 (figure 8a) indicating that a one dollar increase in poultry processing activity will increase business activity in other sectors by $2.35.

The processing income multiplier of 3.45 (figure 8b) was somewhat smaller than the production income multiplier of 5.4 shown in the previous section. However the generation of $3.45 of wages and profits in other sectors still provides a very significant boost to the economy. The employment multiplier was 3.62 indicating that just over 3 1/2 jobs are created in the greater economy for each job in poultry processing.

Multipliers for the poultry processing industry provide evidence that there is significant economic benefit in encouraging balanced growth in processing along with any production increases that occur. Failure to do so allows some of the potential benefit to escape. The reverse situation exists when processing capacity draws production from other states. Generally, it is desirable to avoid situations where production lags too far behind processing capacity. Lagging production allows the production benefits to accrue to other states and it may eventually result in erosion of Iowa processing activity over time. In a situation where production lags too much, processors might find it more economical to move plant sites nearer to the heavy production areas. This is especially likely as existing plants wear out or become obsolete. To the extent possible the production and processing activities should be kept in parity if the state is to achieve the maximum industry stability and growth.

PROJECTIONS FOR ECONOMIC IMPACT 1989-1993

Current growth trends in the Iowa poultry were not fully captured in the data used in the input-output analysis. The Iowa broiler production industry has undergone a rapid increase in volume since 1989. Turkey production has trended up very slightly.
FIGURE 8. POULTRY PROCESSING AND ITS EFFECTS ON THE IOWA ECONOMY

(A) $ $ $$$

2.35 MULTIPLIER

A DOLLAR OF GROSS OUTPUT IN THE POULTRY PROCESSING SECTOR YIELDS $2.35 OF GROSS OUTPUT IN THE IOWA ECONOMY

(B) $ $ $$$

3.45 MULTIPLIER

A DOLLAR OF POULTRY PROCESSING WAGES AND PROFITS YIELDS $3.45 WAGES AND PROFITS WHEN ALL EFFECTS ON OTHER INDUSTRIES ARE CONSIDERED

(C) 3.62 MULTIPLIER

A JOB IN POULTRY PROCESSING YIELDS 3.62 JOBS WHEN ALL EFFECTS ON OTHER INDUSTRIES ARE CONSIDERED
Pullet and egg production has been increasing at a rapid rate since 1989. Several new egg production complexes have been constructed and have begun operation. Others are in various stages of planning and construction. Several Iowa egg breaking plants have already expanded capacity, are in the process of expanding, or are renovating existing facilities.

In view of these changes, an input-output analysis was conducted based on the higher levels of production and processing activity these changes are expected to bring about. Estimates of the direct economic impacts of these changes at the poultry production and processing level and the indirect impacts on the other sectors are shown in tables 7 and 8.

The poultry production level effects on business volume wages and profits and employment are shown in table 7. An increase of 50% from $458 million to about $690 million is projected for total business volume. Profits and wages generated are expected to increase from $117.5 million to about $179 million -- an increase of over 50%. Employment levels are projected to increase from 5092 to about 7689 or about 51%.

If the expected changes in the industry are viewed from the perspective of processing similar trends show up. Total expected business volume increases by about 52% from $1.07 billion to $1.63 billion. Wages and profits also increase by 51% from $247 million to about $375 million. Employment is projected to undergo an increase from about 9700 jobs to about 14,550 or a 50% increase.
### TABLE 7. INDUSTRIES AFFECTED BY POULTRY PRODUCTION (up to farm gate) 1989 projected 1992

<table>
<thead>
<tr>
<th>Industry</th>
<th>Business Volume</th>
<th>Wages &amp; Profits</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry Production (Direct Effect)</td>
<td>$333.0 mil</td>
<td>$28.4 mil</td>
<td>3,125.7</td>
</tr>
<tr>
<td>Other Ag Production</td>
<td>$90.0 mil</td>
<td>$35.0 mil</td>
<td>770.2</td>
</tr>
<tr>
<td>Ag Services &amp; Mining</td>
<td>$17.1 mil</td>
<td>$10.8 mil</td>
<td>656.8</td>
</tr>
<tr>
<td>Construction &amp; Manufacturing</td>
<td>$117.8 mil</td>
<td>$31.6 mil</td>
<td>664.8</td>
</tr>
<tr>
<td>Trade Transport &amp; Utilities</td>
<td>$30.9 mil</td>
<td>$15.6 mil</td>
<td>523.5</td>
</tr>
<tr>
<td>Finance Real Estate Insurance</td>
<td>$48.0 mil</td>
<td>$27.0 mil</td>
<td>388.2</td>
</tr>
<tr>
<td>Business, Personal, and Other Services</td>
<td>$55.4 mil</td>
<td>$30.4 mil</td>
<td>1,560.0</td>
</tr>
<tr>
<td>Total Effects of the Industry</td>
<td>$692.2 mil</td>
<td>$178.8 mil</td>
<td>7,689.2</td>
</tr>
</tbody>
</table>
## TABLE 8. INDUSTRIES AFFECTED BY POULTRY PROCESSING (beyond the farm gate) 1989 projected 1992

<table>
<thead>
<tr>
<th>Industry</th>
<th>Business Volume</th>
<th>Wages &amp; Profits</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry Processing (Direct Effect)</td>
<td>$736.6 mil</td>
<td>$107.7 mil</td>
<td>3,952.8</td>
</tr>
<tr>
<td>Poultry and Other Ag Production</td>
<td>$443.1 mil</td>
<td>$67.9 mil</td>
<td>3,984.3</td>
</tr>
<tr>
<td>Ag Services &amp; Mining</td>
<td>$17.5 mil</td>
<td>$10.9 mil</td>
<td>670</td>
</tr>
<tr>
<td>Construction &amp; Manufacturing</td>
<td>$166.3 mil</td>
<td>$45.1 mil</td>
<td>974.4</td>
</tr>
<tr>
<td>Trade Transport &amp; Utilities</td>
<td>$60.1 mil</td>
<td>$30.4 mil</td>
<td>973.9</td>
</tr>
<tr>
<td>Finance Real Estate Insurance</td>
<td>$87.9 mil</td>
<td>$49.4 mil</td>
<td>710.9</td>
</tr>
<tr>
<td>Business, Personal, and Other Services</td>
<td>$115.9 mil</td>
<td>$63.8 mil</td>
<td>3,282.9</td>
</tr>
<tr>
<td>Total Effects of the Industry</td>
<td>$1,627.4 mil</td>
<td>$375.2 mil</td>
<td>14,549.2</td>
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</tbody>
</table>