Expected Regional Economic Impact of a New Hog Slaughtering Facility in Wright County

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Introduction
This short report estimates the expected economic impacts of a new hog slaughter facility in Wright County using the impact modeling tool, IMPLAN, as modified for this exercise. There are some initial assumptions about the new facility:

- Lacking detailed cost of production information, information from another hog slaughtering facility was used to specify the model. In this case, total output, labor income, and other elements of value added were derived from a model of the Buena Vista County economy which houses a large hog slaughter facility.
- As there is no hog slaughtering facility in the county, the new industry has been introduced to the Wright County economy. This analysis then uses the model’s default estimates of regional input purchases and the probability of households shopping in the county.
- It is assumed that a plant would not locate in the county unless the region had an adequate supply of hogs; consequently, the model does not allow the county hog farming economy to grow to satisfy the plant’s needs.
- Lastly, the model has been calculated using 1,000 jobs as the initial value. If the plant is larger or smaller when at full production, one merely divides the ultimate value by 1,000 to get the factor by which the subsequent results must be multiplied.

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* The proposing organization originally provided estimates of weighted average earnings per job; however, close scrutiny revealed the estimates were too high: 1) they assumed that average hours for their entire workforce, including administration, management and professionals were 52 hours per week, and all of which were receiving time-and-a-half for more than 40 hours. As salaried workers earning over $47,500 are not eligible for overtime pay so this inflated the average pay per worker; and 2) the average hours for all production workers nationally in slaughtering facilities was just under 43 hours in 2015: this firm proposed a 21 percent longer workweek than the national norm. Accordingly, this analysis relies on the observed values from an existing slaughtering facility in Iowa as the best average estimate of likely labor income to all employees. When I recalculated expected average earnings for the proposed facility using a 43 hour workweek and not allowing administration, management and professionals to receive overtime, I arrived at an expected weighted average compensation including wages, salaries, and benefits of $47,505. The numbers entered in the model were $47,809. There is no compelling reason to substitute the model numbers for the organization’s values, as recalculated.

There have been subsequent recalculations by the firm as to expected wages and weekly hours. The firm now anticipates a steady-state of 50 hours per week for each production worker and much of its other staff. Again, as the national average for firms like this is 43 hours per week, I am using the payroll and value added values in the modeling system from an actual Iowa county with a hog slaughtering facility, and not those estimated by the company, which is new to the business of slaughtering hogs.
Impact Terminology

Before looking at the results, it is useful to have a short primer on economic impact terminology. IO models produce an array of information for analysts. For our purposes, however, there are four types of data and four levels of data comprising a typical IO results table.

The types of economic impact data are

- **Output.** This is the value of industrial productivity over the course of a year. It represents the worth of what was produced whether it was sold or not. In this case the firm’s expected sales at full operation are used as output
- **Labor income.** These are wage and salary payments to workers, including the value of employer-provided benefits like health care and retirement. Management payments to proprietors are also counted as labor income payments. As this firm is a large family owned enterprise, it is assumed that the payments are not traditional proprietors’ incomes but are treated more like returns on investments.
- **Value added.** Value added includes all labor income (mentioned above) plus payments to investors (dividends, interests, and rents), and indirect tax payments to governments. Value added is the equivalent of Gross Domestic Product (GDP), which is the standard measure of economic activity across the states and for the nation.
- **Jobs.** There are many kinds of jobs. I-O models measure the annualized job value in different industries. Many industries have mostly full-time jobs, but many others have part-time and seasonal jobs. I-O models do not convert jobs into full-time equivalencies, but they do convert them into annualized equivalencies. As many people have more than one job, there are always more jobs in an economy than there are employed persons.

The levels of economic impact data are

- **Direct values.** These are the aforementioned data types for the industry that we are evaluating. In this study – the slaughtering facility.
- **Indirect values.** All direct firms require intermediate inputs into production. They must buy supplies, utilities, other manufactured inputs, transportation, and services, just to name a few.
- **Induced values.** When the workers in the direct industry (the hog slaughter factory) and those in the indirect industries (the supplying sectors) convert their labor incomes into household spending, they induce a third round of economic activity. Induced values are sometimes called the household values.
- **Total values.** The sum of direct, indirect, and induced activity constitutes the total economic effect that is being measured. In short it gives us the economic sums of the studied industry, its suppliers, and all affected households

Impacts

As just stated, the results are expressed per 1,000 jobs at the facility. At 1,000 workers, the plant would be assumed to have nearly $610 million in annual output and provide $47.81 million in labor income
payments to those workers. The plant would require, $12.8 million in regionally supplied inputs (remember, this excludes the existing hog supply), which would in turn require 86 jobholders earning $4.3 million in labor income. When the direct and the indirect workers converted their paychecks into household spending, they would induce another $12.14 million in regional output, which would require another 107 jobholders earning $3.9 million. Summed, the plant, per 1,000 employees, would generate $634.7 million in regional output, $96.9 million would be value added, of which $55.1 million would be labor income to 1,193 jobholders.

### Hog Slaughter Facility Economic Impacts Per 1,000 Jobs: Wright County

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Jobs</th>
<th>Labor Income</th>
<th>Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>1,000</td>
<td>47,809,151</td>
<td>83,923,102</td>
<td>609,769,870</td>
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<tr>
<td>Indirect</td>
<td>86</td>
<td>4,277,281</td>
<td>6,543,188</td>
<td>12,787,117</td>
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<tr>
<td>Induced</td>
<td>107</td>
<td>2,999,374</td>
<td>6,455,411</td>
<td>12,136,100</td>
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<tr>
<td>Total</td>
<td>1,193</td>
<td>$55,085,806</td>
<td>$96,921,701</td>
<td>$634,693,087</td>
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<tr>
<td>Total Multiplier</td>
<td>1.19</td>
<td>1.15</td>
<td>1.15</td>
<td>1.04</td>
</tr>
</tbody>
</table>

### Other Considerations

The multiplied through numbers suggest 1,193 growth in area jobs. Readers are cautioned to not assume that the county’s labor force will grow by that number. Workers will live in a variety of mostly nearby places, and Wright County residents have the luxury, too, of working in a variety of nearby places. Using data from the Census Bureau, for example, we know that just 56 percent of the employed people living in Wright County actually work in Wright County. Furthermore, of all job holders working in Wright County, just 53 percent are county residents – strong fractions of the county’s jobholders live outside of the county. Any new job in an area can be filled under the following circumstances:

1. An unemployed resident takes a job
2. A current outcommuter takes a job
3. A nonresident incommuter takes a job
4. A local resident enters the workforce and takes a job
5. A person moves to Wright County and takes a job

It is only the last instance that results in regional household growth.

Accordingly, one must be circumspect about regional residential growth. That growth will be tempered by several factors, the first of which has just been mentioned: the probability of a job in Wright County being filled by a Wright County resident is historically just a little more than 50 percent. Secondly, one must look at the total value of all of the jobs created under this scenario. If those jobs pay better than the area average, then we might see a boost in inmigration beyond historical values. If those jobs pay less than the area average for all jobs, then one would not expect inmigration levels to exceed historical experiences.
The average earnings for all multiplied-through jobs in this exercise were $46,180, just 81 percent of the countywide average of $57,053 for all jobs (remember earnings include wages, salaries, and the value of all received employment benefits like health care and retirement). This lower level of aggregate compensation across all job impacts will work to

- Potentially dampen in-migration
- Yield lower than probably expected housing needs
- Likely disperse the new workforce throughout the county as well as into neighboring areas
- Not produce net local government fiscal gains (via all taxes paid by the new workers). Net fiscal gains are assumed when multiplied-through pay per job exceeds the county average. In instances where the incomes per all jobs lag the area average, the average new household is expected to consume more local government services than it is able to support through local taxes.