

## The Meat and Poultry Industry Economic Contribution Study: 2009

### Summary Results:

The Meat and Poultry Industry Economic Impact study measures the combined impact of the meat processing, poultry processing, hide and skin production and offal production industries (hereafter meat and poultry products). The industry is defined to include not only the production of meat and poultry based products, but meat distribution and retailing. The industry contributes about \$832 billion in total to the US Economy, or just under 5.8 percent of GDP and, through its production and distribution linkages, impacts firms in all 509 sectors of the US economy.<sup>1</sup> The production process (as defined in this study) begins in one of four ways. In the case of slaughtering, livestock (including cows, pigs, sheep, goats, etc.) are purchased from farmers and brought to slaughterhouses for conversion into raw meat sides. Meat and poultry packers use either live animals (like chickens) or slaughtered meat products and convert these to either fresh or packaged meat. Alternatively, hides and skins are purchased from slaughterhouses and converted to raw (untanned) leather or fur products. Finally, offal such as livers, pancreases, and intestines are purchased from farmers, packers or slaughterhouses and processed for food or medical uses. The 8,370 firms that convert livestock to useful products or directly import meat into the United States are denoted as producers.<sup>2</sup> All told, these firms employ over 524,500 people in production or importing operations, sales, packaging, and direct distribution.

Once meat and poultry products have been produced or imported, they enter the second tier of the industry – the wholesaling tier. We estimate that there are nearly 4,100 firms involved in the wholesale supply of meat and poultry products throughout the country (not including wholesaling operations directly owned and operated by the major packers).<sup>3</sup> Wholesalers are involved in the transportation of meat and poultry products from the producers or a bonded warehouse operated by importers, and the storage of products for a limited period of time. The wholesaling tier of the industry directly employs around 63,000 individuals in every state in the country.

Finally, the third tier of the industry directly sells products to the consumer. This can either be through on-premises sales (as in the case of a restaurant), or for off-premises consumption (grocery stores, butchers, etc.) For this analysis, the retail tier is assumed to consist of firms in the following industries: Restaurants and taverns, grocery stores, meat and fish markets, fruit and vegetable markets, dairy products stores, retail bakeries and miscellaneous food stores. While there are obviously other venues that may sell meat and poultry products to the public – street vendors, cruise lines, non-profit groups, etc. they are not included in the analysis due to limited data availability or the small amount of product that they handle. We estimate that there are approximately 1,227,600 employees whose jobs depend on the sale of meat and poultry products to the public.

Other firms are related to meat and poultry industry as suppliers. These firms produce and sell a broad range of items including livestock, fuel, packaging materials, sales displays or machinery. In addition, supplier firms provide a broad range of services, including personnel services, financial services, advertising services, consulting services or even transportation services. Finally, a number of people are employed in government enterprises responsible for the regulation of the meat and poultry industry. All told, we estimate that the meat and poultry product industry is responsible for 2,581,600 supplier jobs with these firms generating over \$377.7 billion in economic activity.

An economic analysis of the meat and poultry products industry will also take additional linkages into

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<sup>1</sup> Based on GDP of \$14.4 trillion. See: *Gross Domestic Product: Fourth Quarter 2008 (Final)*, News Release, US Department of Commerce, Bureau of Economic Analysis, March 26, 2009. Economic sectors based on IMPLAN sectors.

<sup>2</sup> Throughout this study, the term “firms” actually refers to physical locations. One packer, for example, may have facilities in 5 or 6 locations throughout the country. Each of these facilities is included in the 8,370 count.

<sup>3</sup> Physical locations.

account. While it is inappropriate to claim that suppliers to the supplier firms are part of the industry being analyzed<sup>4</sup> the spending by employees of the industry and those of supplier firms whose jobs are directly dependent on meat and poultry sales and production should surely be included. This spending on everything from housing, to food, to educational services and medical care makes up what is traditionally called the “induced impact” or multiplier effect of the industry. In other words, this spending, and the jobs it creates is induced by the production, distribution and sale of meat and poultry products. We estimate that the induced impact of the industry is more than \$226 billion, and generates 1,794,000 jobs, for a multiplier of about 3.4.<sup>5</sup>

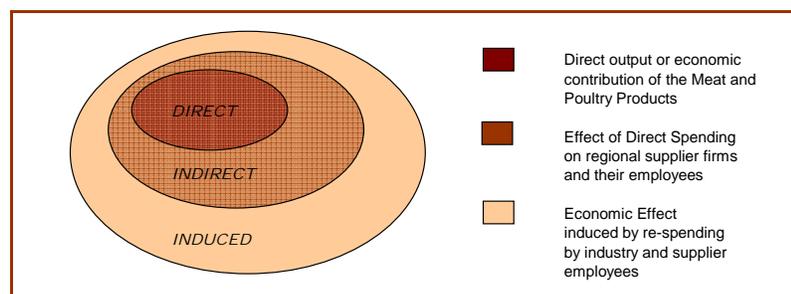
An important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the community. In the case of the meat and poultry products industry, this contribution comes in two forms. First, the traditional direct taxes paid by the firms and their employees provide over \$81.224 billion in revenues to the federal, state and local governments. In addition, the consumption of meat and poultry generates \$2.4 billion in state sales taxes.<sup>6</sup>

Table 1 below presents a summary of the total economic impact of the industry in the United States.

**Table 1: Economic Impact of the Meat and Poultry Products Industry**

| (\$ In Billions) | Direct     | Supplier   | Induced    |
|------------------|------------|------------|------------|
| Output           | \$ 228.590 | \$ 377.734 | \$ 226.080 |
| Jobs             | 1,816,940  | 2,581,580  | 1,794,110  |
| Wages            | \$ 45.522  | \$ 84.319  | \$ 69.851  |
| Taxes            |            |            | \$ 81.224  |

## Methodology



The Economic Impact of the Meat and Poultry Products Industry begins with an accounting of the direct employment in the various sectors. Meat and Poultry production encompasses slaughterhouses, packers, company-owned distribution and supply operations and importers.

Wholesaling includes the nationwide network of meat and meat product wholesalers and related warehouse and transportation operations. Retailing includes locations where meat and poultry are consumed “on-premise,” such as restaurants. “Off-premise” retail outlets are supermarkets, butchers, warehouse stores, and similar locations. The data comes from a variety of government and private sources.

It is sometimes mistakenly thought that initial spending accounts for all of the impact of an economic activity or a product. For example, at first glance it may appear that consumer expenditures for a product are the sum total of the impact on the local economy. However, one economic activity always leads to a ripple effect whereby other sectors and industries benefit from this initial spending. This inter-industry

<sup>4</sup> These firms would more appropriately be considered as part of the supplier firms’ industries.

<sup>5</sup> Often economic impact studies present results with very large multipliers – as high as 4 or 5. These studies invariably include the firms supplying the supplier industries as part of the induced impact. John Dunham and Associates believes that this is not an appropriate definition of the induced impact and as such limits this calculation to only the effect of spending by direct and supplier employees.

<sup>6</sup> Significant local sales taxes are also generated; however, as there are over 50,000 different taxing jurisdictions these are extremely difficult to calculate.

effect of an economic activity can be assessed using multipliers from regional input-output modeling.

The economic activities of events are linked to other industries in the state and national economies. The activities required to produce a can of packaged meat from butchering a hog, to packaging, to shipping generate the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services such as building materials from local or regional suppliers. Additional, induced impacts occur when workers involved in direct and indirect activities spend their wages in the region. The ratio between total economic and direct impact is termed the multiplier. The framework in the chart on the prior page illustrates these linkages.

This method of analysis allows the impact of local production activities to be quantified in terms of final demand, earnings, and employment in the states and the nation as a whole.

Once the direct impact of the industry has been calculated, the input-output methodology discussed below is used to calculate the contribution of the supplier sector and of the re-spending in the economy by employees in the industry and its suppliers. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of the American Meat Institute model, only the most conservative estimate of the Induced Impact has been used.

### **Model Description and Data**

This Meat and Poultry Industry Economic Impact Model (Model) was developed by John Dunham and Associates based on data provided by Dun and Bradstreet (D & B, Inc.), the US Department of Agriculture and various state agriculture departments. The analysis utilizes the Minnesota IMPLAN Group Model in order to quantify the economic impact of the meat and poultry products industry on the economy of the United States. The model adopts an accounting framework through which the relationships between different inputs and outputs across industries and sectors are computed. This model can show the impact of a given economic decision – such as a factory opening or operating a sports facility – on a pre-defined, geographic region. It is based on the national income accounts generated by the US Department of Commerce, Bureau of Economic Analysis (BEA).<sup>7</sup>

Producer employment is based on a census of federal and state inspected facilities as of 2009. The Federal government and 21 states inspect meat processors and slaughterhouses.<sup>8</sup> Data were gathered from the Federal and state agriculture departments, entered into a database and physically located in a geographic analysis system. All told, there were almost 8,500 plants identified (although there were some duplicates). These data provided the number of plants and the physical location; however, none of the government entities had employment data available. In order to estimate employment, data were gathered from Dun and Bradstreet for companies that reported a primary SIC of 2011 (establishments primarily engaged in the slaughtering of cattle, hogs, sheep, lambs, and calves for meat to be sold or to be used on the same premises in canning, cooking, curing, freezing, and in making sausage, lard, and other products; SIC 2015 (establishments primarily engaged in slaughtering, dressing, packing, freezing, and canning poultry, rabbits, and other small game, or in manufacturing products from such meats, for their own account or on a contract basis for the trade. This industry also includes the drying, freezing, and breaking of eggs; and SIC 2013 (establishments primarily engaged in manufacturing sausages, cured meats, smoked meats, canned meats, frozen meats and other prepared meats and meat specialties, from purchased carcasses and other materials. Products include bologna, bacon, corned beef, frankfurters (except poultry), headcheese, luncheon meat, pigs' feet, sandwich spreads, stew, pastrami, and hams

<sup>7</sup> The IMPLAN model is based on a series of national input-output accounts known as RIMS II. These data are developed and maintained by the U.S. Department of Commerce, Bureau of Economic Analysis as a policy and economic decision analysis tool.

<sup>8</sup> These states are: Alabama, Delaware, Illinois, Indiana, Kansas, Louisiana, Maine, Minnesota, Missouri, Mississippi, Montana, North Carolina, North Dakota, Ohio, Oregon, South Carolina, Texas, Virginia, Vermont, West Virginia, and Wyoming.

(except poultry). Prepared meat plants operated by packinghouses as separate establishments are also included in this industry.) These data were matched to the inspected location data where possible by company name, phone number, and physical location. For those establishments where a match could not be found econometric techniques were used to estimate an employee count. All told, the number of estimated employees was within 99 percent of estimates from the actual employment levels as found in the IMPLAN tables.<sup>9</sup>

Jobs were then assigned to meat or poultry processing and slaughtering based either on allocations provided by the departments of agriculture or based on the national percentage of jobs in each industry.<sup>10</sup>

For hides, skins and offal producers, employment at specific locations reported to D & B by the companies as of April 2009 for a number of Industries including some companies with a primary SIC code of 2833 - establishments primarily engaged in manufacturing bulk organic and inorganic medicinal chemicals and their derivatives, as well as some companies with the primary SIC 5159 this industry's products are animal hair, bristles, feathers, furs and hides, broom corn, raw cotton, hops, unprocessed or shelled-only nuts, tobacco leaf, raw silk, and bovine semen.<sup>11</sup> Data are as of April 2009.

Wholesale employment consists of the number of jobs by facility as reported to Dun & Bradstreet by companies with a primary SIC code of 5147. This industry consists of wholesale distributors of fresh, cured, and processed (but not canned or frozen) meats and lard. Data are as of April 2009.

Data on the retail sectors are all based on data from Dun & Bradstreet as of April 2009. Data on total employment by zip code was obtained from Dun & Bradstreet's Zapdata system for establishments with the following primary SIC codes:

- 5411 Grocery Stores
- 5812 Eating Places
- 5813 Drinking Places
- 5421 Meat and Fish Markets
- 5431 Fruit and Vegetable Markets
- 5441 Candy, Nut, and Confectionery Stores
- 5451 Dairy Products Stores
- 5461 Retail Bakeries
- 5499 Miscellaneous Food Stores

Employment figures were then multiplied by the percentage of sales of meat in each store type as calculated by the US Department of Commerce Bureau of the Census.<sup>12</sup> The resulting figure was then adjusted to remove seafood sales from the calculation. The resulting figures were then allocated to states and congressional districts based on the percentage of total establishments in each zip code falling within the particular boundary.

Once the initial direct employment figures have been established, they are entered into a model linked to the IMPLAN database. The IMPLAN data are used to generate estimates of direct wages and output in each of the three sectors: production, wholesaling and retailing. IMPLAN was originally developed by the US Forest Service, the Federal Emergency Management Agency and the Bureau of Land Management. It was converted to a user-friendly model by the Minnesota IMPLAN Group in 1993. The

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<sup>9</sup> IMPLAN employment levels are based on county employment data as reported by the US Department of Labor, Bureau of Labor Statistics.

<sup>10</sup> Based on the input output accounts of the United States as compiled by IMPLAN.

<sup>11</sup> Not in both cases only companies engaged in manufacturing and selling animal products were included in these data.

<sup>12</sup> See: *Table 2.4.5U. Personal Consumption Expenditures by Type of Product*, US Department of Commerce, Bureau of Economic Analysis, Revised October 31, 2008.

IMPLAN data and model closely follow the conventions used in the “Input-Output Study of the US Economy,” which was developed by the BEA.

- ❖ **Wages:** Data from the US Department of Labor’s ES-202 reports are used to provide annual average wage and salary establishment counts, employment counts and payrolls at the county level. Since this data only covers payroll employees, it is modified to add information on independent workers, agricultural employees, construction employees, and certain government employees. Data are then adjusted to account for counties where non-disclosure rules apply. Wage data include not only cash wages, but health and life insurance payments, retirement payments and other non-cash compensation. It includes all income paid to workers by employees. Further details are available from the Minnesota IMPLAN Group at <http://www.implan.com>.
- ❖ **Output:** Total output is the value of production by industry in a given state. It is estimated by IMPLAN from sources similar to those used by the BEA in its RIMS II series. Where no Census or government surveys are available, IMPLAN uses models such as the Bureau of Labor Statistics Growth model to estimate the missing output.
- ❖ **Taxes:** The model includes information on income received by the Federal, State and Local Governments. The model produces estimates for the following taxes at the Federal Level: Corporate Income, Payroll, Personal Income, Estate, Gift, and Excise Taxes; Customs Duties; and Fines, Fees, etc. State and Local tax revenues include estimates of: Corporate Profits, Property, Sales, Severance, Estate, Gift and Personal Income Taxes; Licenses; Fees; and certain Payroll Taxes.
- ❖ **Indirect Taxes** paid due to the consumption of meat and poultry products in each state are also included in the analysis. This is based on estimates of sales by states developed by the impact analysis. These figures – while mostly separate from the reported taxes paid – contain very small double counts. This is because individuals employed by the industry or its suppliers purchase meat and poultry products and the sales taxes paid on these purchases are already included in the direct taxes section.