Economic Impact of the Mississippi Poultry Industry — 2007

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This publication examines the Mississippi poultry industry and provides information on the industry's structure, farms, processors, employment, feed purchases, and environmental stewardship. For more information, contact Dr. Kidd by telephone at (662) 325-3416 or by e-mail at mkidd@poultry.msstate.edu.
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Poultry Facts

- The poultry sector in Mississippi exceeded $2.2 billion in sales at the farm gate in 2005.
- Total sales of poultry products by Mississippi processors in 2005 exceeded $2.4 billion.
- Mississippi is home to the largest egg processor in the world.
- Mississippi produces 853 million broilers per year, or 1,622 broilers per minute.
- On any given day in Mississippi, there are 142 million broilers in broiler houses.
- Mississippi chicken weight ranges between 5 and 8.5 pounds when slaughtered, depending on the targeted market.
- Chicken feed is 68% corn and 26% soybean meal. (Mississippi chickens consumed 9.5 billion pounds of feed in 2005.)
- In 2005, 47 million bushels of corn were raised in Mississippi. Mississippi broilers consumed more than 116 million bushels of corn in 2005.
- Russia was the largest purchaser of U.S. poultry, with more than 1.5 billion pounds shipped in 2005. The Russian market is important for Mississippi because most chicken bound for Russia is shipped through ports in the southern U.S.
- The poultry industry in Mississippi employs more than 24,000 people directly, with another 23,000 jobs created as an indirect effect of the economic activity generated by the poultry industry.
- Mississippi wages and salaries paid to poultry employees exceed $1 billion. The poultry industry is responsible for creating approximately $730 million more in payrolls for other industries, due to economic activity generated by the poultry industry.

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Overview of the U.S. Poultry Industry

The U.S. poultry industry serves many markets. The first major market segmentation is between the domestic market and the export market. The American market prefers white meat, leaving most of the dark meat for export. The export market may be affected by conditions such as oil prices, wars, natural disasters, currency fluctuations, and other worldwide issues such as avian influenza (bird flu) that are beyond the control of the poultry integrator. Prices received in the domestic market are largely a function of poultry supplies, prices of competing meats, and the condition of the U.S. economy.

The broiler industry in 2006 faced low prices and a relatively slow growth in the production sector. In the two years before 2006, the broiler industry experienced increases in production by 3% to 4% in both 2004 and 2005. Although production was up at the end of 2005, demand began to fall as reports of bird flu surfaced in Asia and other parts of the world. Worldwide fear caused a drop in demand. With a decrease in demand, frozen poultry stocks increased and prices began to creep lower, forcing the broiler industry to slow production. In 2006, production expanded by a little less than 2.2%. This was the slowest rate of growth since 2003, when the industry was recovering from the Russian export crisis of the previous year. However, the USDA projects the export market to grow by 3.4% in 2007, nearly 2% greater than the increase from 2005 to 2006. Major U.S. export markets include Asia, Russia, and Mexico. Gains in these markets reflect those countries' strong economic growth and rising consumer demand for meats. Producers will face strong competition from other major broiler-exporting countries, particularly Brazil. Poultry exports from countries affected by avian influenza, such as Thailand and China, are expected to be limited to fully cooked products.

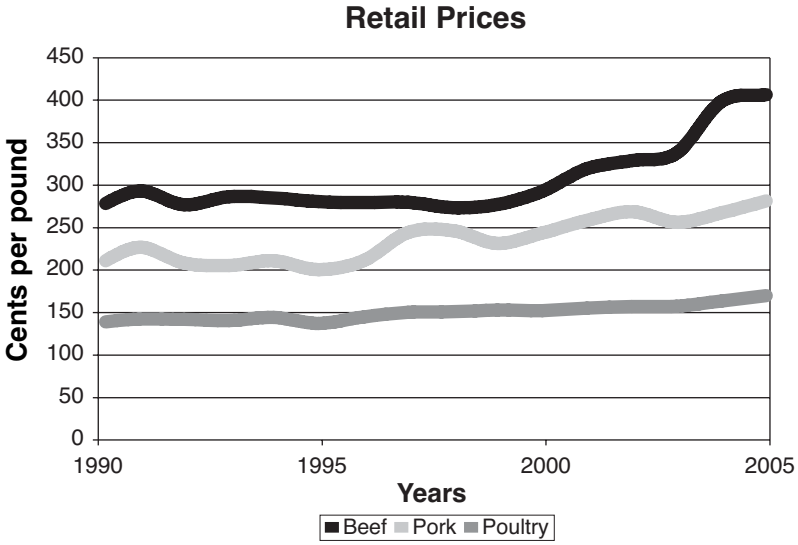

Figure 1. Average U.S. retail prices of meat.

The increase in the export demand along with slower domestic production should provide improvement in the coming year prices. However, all of the increase in prices will not be due to increase in demand. Increases in feed costs will surely affect industry profits. Corn and soybean prices are at their highest level in a decade. With the expansion of the U.S. ethanol industry, corn prices have surged higher. Higher corn prices in turn pull soybean prices along as less corn is available for livestock feeding. Domestic demand for poultry remains strong due to its lower cost relative to beef and pork. Figure 1 exhibits the relationship between average retail prices paid for beef, pork, and poultry products over the last 20 years. Poultry retail prices have remained almost constant, while beef and pork have experienced steady increases. Poultry remains a good value for the consumer.

Per-capita consumption of poultry products has steadily increased every year since 1995. In 2005, the per-capita consumption of total poultry products reached an all-time high of 103 pounds. Per-capita consumption for all meats in the U.S. totaled 214 pounds in 2005. Consumption of poultry represents 48% of all meats consumed in the domestic market.

The U.S. market is further segmented into the demand for chicken to be consumed in the home and the demand for chicken to be consumed in restaurants, schools, and other institutions. Most of the white meat must be further processed. Away-from-home meals and snacks captured 48% of the U.S. food dollar in 2005, up from 44% in 1990 and 39% in 1980. The poultry integrators must provide further processed products specifically tailored for each market segment.

Natural Disaster and the Mississippi Poultry Industry

Hurricane Katrina caused catastrophic damage and economic losses along the Mississippi Gulf Coast in August 2005. Production and processing in Mississippi suffered greatly the last quarter of 2005 and into 2006 as the industry coped with the effects of Hurricane Katrina. The poultry industry was one of the hardest hit of all of Mississippi's agricultural industries. This impact was unfortunate for the state since poultry production is the state's largest agricultural industry (with a value of production more than $2 billion per year). While most poultry production is located far enough inland to avoid flooding problems, many poultry houses and operations suffered damage due to high winds and loss of electrical power. Some poultry houses were damaged so severely that they had to be demolished. The loss of electrical power and lack of fuel availability to run backup power generators on farms resulted in high mortality in many flocks due to the extremely hot conditions that followed the hurricane. Approximately 350 broiler houses were destroyed in the storm, and as many as 2,000 additional houses were estimated to have sustained lesser damage. The challenges to the broiler industry continued well after the storm had passed. Without electricity to operate critical ventilation, feeding, and watering systems, many growers sustained total losses within only a few hours. While most producers had generators, these backup systems were not designed to operate 24 hours a day, 7 days a week for an indefinite period of time, and generator failure was also a problem. Undoubtedly, loss of electric power contributed to additional losses in poultry production. Overall, including losses due to destroyed houses and losses due to loss of electric power, it is was estimated that 7 million broilers were lost. The value of on-farm losses in the poultry industry was estimated at around $81.5 million. For growers, the loss of 7 million birds represented lost potential income of between $2.5 and $3.5 million.

The loss of the port facilities at Gulfport, Mississippi, was another blow to the poultry industry, not only in Mississippi, but nationally. Collectively, the ports at Gulfport and Pascagoula handled 18% of total U.S. poultry exports before the storm. The loss of the port at Gulfport, along with storage and handling facilities for frozen poultry, greatly affected the U.S. poultry industry's ability to serve key export markets. These losses in the poultry sector include the replacement value of lost facilities and equipment, but they do not include losses incurred by downstream firms such as processors or the indirect impact of reductions in economic activity in related industries. As devastating as these losses were, they only reflect one sector of the industry; the full impact to the industry as a whole was much greater.

Structural Evolution of Mississippi's Poultry Industry

Mississippi's poultry industry began in the 1940s and 1950s. It evolved following the pattern of the first U.S. poultry enterprises on the eastern shore. This process was a study in economic efficiency, and in a number of instances, the evolution was driven by the need for economic stability for all parties involved. Poultry markets have always been cyclical; in other words, poultry is sometimes profitable and sometimes not. This cycle created problems for independent farmers and processors in the early years.

In the early days, independent farmers owned the chickens and bought feed from local mills. Farmers sold the live chickens to a processor. If the markets were good, the farmer, the feed mill, and the processor all did well. However, when the markets were bad and the farmers lost money, they generally lost interest in continuing to produce chickens. When farmers stopped raising chickens, feed mills lost their customers and processors had no birds to process and market.

The poultry business, under those circumstances, could not develop the stability necessary to grow and prosper. Therefore, the feed mills and/or processors learned that in order to keep farmers interested in growing poultry, it was necessary to reduce the effects of these cycles on the farmer. Thus, the practice of the processor owning the poultry (the farmer did not have to purchase young chicks) and supplying the feed (the farmer did not have to purchase feed) became common.

This effort to ensure a constant supply of poultry for processing plants was the first major step in a process referred to as "vertical integration." In this new structure, individual growers build houses and provide the labor under contract to poultry companies. The companies provide technical assistance, baby chicks, feed, medication, etc. They catch and transport the birds to the processing plant and then process, further process, and market the consumer products. In this system, each segment is responsible for doing its part, and each segment is dependent upon the other.

The process of vertical integration allowed the industry to have a consistent production pattern, and this was essential for the industry to grow, prosper, and become economically stable. This process created a situation allowing per-capita poultry consumption in the U.S. to grow from 8 pounds in 1950 to 103 pounds in 2005. This included 85 pounds of chicken and 18 pounds of turkey. No other food commodity has seen this degree of success. This unparalleled growth has been most apparent in Mississippi.

Unlike some agricultural enterprises, poultry production has shown consistent growth from year to year. In Mississippi, poultry and cotton are the only two agricultural commodities, by value, that have been in the top five every year since 1975. Poultry has been the top agricultural income producer in Mississippi at the farm gate for the past 13 years.

Mississippi's poultry industry is making progress with better communication among all of its facets, from growers through marketing. This advantage can only make the industry stronger and more responsive to current and new issues. Future successes for this industry will be directly proportional to its ability to improve internal communication and cooperation.

Broiler Companies Operating in Mississippi

Koch Foods

Koch Foods began in the early 1970s. Their corporate office is located in Chicago. The company is owned by Joseph Grendys. Koch Foods purchased B.C. Rogers, which was headquartered in Morton, Mississippi, in 2001. Additional operations are located in Illinois, Ohio, Tennessee, Alabama, and Georgia. Koch Foods has 2,700 employees and 650 growers in Mississippi.

Lady Forest Farms, Inc.

In 1939, Hugh Haralson Sr. began growing chickens and producing eggs in Forest, Mississippi. The birds were sold to other companies to be processed, and the eggs were sold throughout Mississippi and New Orleans. As the company grew, so did the Haralson family when Hugh Haralson Jr. joined the company. In 1959, Forest Packing Company built a processing plant and became a vertically integrated poultry company in Mississippi. Today, Forest Packing Company, also

known as Lady Forest Farms, is still family owned and operated by the third generation of Bill Haralson, Hugh Haralson, Jerry Haralson, and Zola Haralson. With the addition of the young fourth generation of the Haralson family already working and looking toward the future, Lady Forest Farms continues to maintain the high standards that began in 1939.

Marshall Durbin Company

Marshall Durbin Sr. began his business with a retail stand selling fish and chicken in downtown Birmingham, Alabama. In 1930, he first expanded into Mississippi when a bulk feed station was built in State Line. After the death of his father, Marshall Durbin Jr. took over leadership of the company and in 1973 spearheaded the acquisition of four Mississippi poultry firms. In addition to growth, the company increased its attention on quality when it became one of the first poultry companies in the nation to establish a science and technology center. Located in Jackson, the lab was dedicated to product safety and consumer health and was a significant investment for the company. In 1978, Marshall Durbin Jr. was inducted into the Alabama Poultry Hall of Fame, and the company built a new feed mill, hatchery, and fleet garage in Philadelphia, Mississippi. Durbin completed a new laboratory in Jackson and finished remodeling a rendering plant in Hattiesburg in 1979. Marshall Durbin Jr. was inducted in the Mississippi Poultry Hall of Fame in 1989. He died in 2001, and his daughters, Melissa and Elise Durbin, took control of the company.

Peco Foods, Inc.

John Herman Hickman started what is now Peco Foods in 1937, when he agreed to raise about 75 white leghorn chicks for a family member in Gordo, Alabama. Because of this decision, it was not long before he was knocking on doors and selling chickens to homemakers for Sunday dinners. He obtained incubators and hatching machines, and in 1938, he began to vertically integrate his business. In late 1989, the Hickman family expanded into Mississippi with the addition of the Bay Springs processing plant and feed mill. Today Peco Foods, Inc., has become the 10th-largest poultry company in the United States.

Sanderson Farms, Inc.

Sanderson Farms, Inc., a publicly held, vertically integrated poultry company, has more than a billion dollars in sales and has operations in Mississippi, Louisiana, Texas, and Georgia. Sanderson Farms ranks among the top five poultry producers in the country, currently employing more than 8,800 people and contracting with more than 600 independent growers. The company actually began as a farm supply business in 1947, selling seed, feed, fertilizer, and other farm supplies. In 1951, D.R. Sanderson Sr., D.R. Sanderson Jr., and Joe Frank Sanderson organized a partnership under the name of "Sanderson Brothers." During the next few years, poultry production was added to the business. Then, in 1955, Sanderson Farms was incorporated, and the company began its growth into a top-quality chicken producer, which today is publicly traded on the NASDAQ exchange.

Tyson Foods, Inc.

Tyson Foods is owned and operated by the Tyson family. Although headquartered in Springdale, Arkansas, John Tyson began selling chickens outside Arkansas in the 1930s. By purchasing incubators and building feed mills, he moved toward vertical integration. From the 1930s until the 1990s, Tyson Foods continued to grow. In 1995, Tyson Foods purchased McCarty Farms, which was headquartered in Magee, and expanded the company with the addition of large processing facilities located in Forest and Carthage. While it is still owned and operated by Don Tyson and his son John Tyson, Tyson Foods is a publicly traded company.

Wayne Farms, LLC

Wayne Farms is a division of ContiGroup Companies, which was founded in Belgium in 1813, and is one of the largest privately held companies in the United States. Wayne Farms, LLC, has been doing business since 1965 with the spin-off of the poultry division from Allied Mills, a former subsidiary of Continental Grain Company. With that spin-off, Wayne Farms was established with locations in Albertville and Union Springs, Alabama. Over the course of the past 30 years, the company has acquired several processing facilities, including a fresh plant in Laurel. The original facility in Laurel was constructed in 1957 and later acquired by Wayne Farms. The company now employs more than 1,000 workers in Laurel. Local employment spans across Clark, Covington, Forrest, Lamar, Jasper, Jones, Perry, and Smith counties in Mississippi and Choctaw County in Alabama. Wayne Farms is the fourth-largest vertically integrated poultry processor in the United States with annual sales exceeding $1 billion. Today, Wayne Farms employs 9,250 people in eight integrated complexes, comprising eight hatcheries, seven feed mills, eight slaughter-processing plants, and five further-processing plants.

Egg Production in Mississippi

The world's largest company involved in the production, cleaning, grading, packaging, and sale of fresh shell eggs established its corporate headquarters in Hinds County, Mississippi, in 1963. At that time, the company employed about 200 people. Today, Cal-Maine Foods, Inc., employs more than 1,400 people and maintains facilities in 15 states. Under the leadership of Chairman and CEO Fred Adams Jr., Cal-Maine has experienced steady growth and now markets 683 million dozen eggs per year. These eggs are produced by some 23 million laying hens. The hens are predominantly Single Comb White Leghorns, the favorite breed for production of table eggs in the U.S.

Cal-Maine is a fully integrated producer and controls every aspect of production, processing, and distribution in its modern facilities, where the company carefully controls temperature, lighting, and humidity. At its in-line processing and distribution plants, Cal-Maine gathers, cleans, grades, and packages the eggs mechanically, so that no human hands touch them. On a normal day, the company processes about 7,225 cases (30 dozen per case) each hour.

To ensure freshness and quality, Cal-Maine has a large fleet of trucks that delivers eggs to customers in 29 states in the Southeast, Southwest, Midwest, and mid-Atlantic regions of the U.S. Cal-Maine is a quality Mississippi-based corporation, and it is determined to maintain its leadership position in the egg industry.

Table 1. Total Egg Production and Value.

Year	Avg. layers per year (thousands)	Eggs per layer	Eggs produced (millions)	Price per dozen	Value of production (thousands)
	head	*no.*	*no.*	*cents*	*dollars*
1990	5,979	240	1,434	87.8	104,921
1991	6,178	239	1,475	86.7	106,569
1992	5,825	242	1,408	82.1	96,331
1993	6,062	237	1,435	88.5	105,831
1994	6,413	236	1,513	96.9	122,175
1995	6,180	233	1,443	99.1	119,168
1996	6,456	236	1,523	121	153,569
1997	6,690	231	1,547	113	145,676
1998	6,776	230	1,555	122	158,092
1999	6,759	232	1,569	121	158,207
2000	6,709	236	1,581	118	155,465
2001	6,704	231	1,550	126	162,750
2002	6,795	234	1,588	124	164,093
2003	6,806	235	1,599	127	168,636
2004	6,923	232	1,606	129	172,166
2005	7,001	232	1,627	125	169,834

Source: Mississippi Agricultural Statistics Service.

An Industry Responsive to Consumers

As the poultry industry has responded to consumers, new technology, new roles in food safety, and the desire to be environmentally friendly and conserve energy, the face of the industry has changed.

Consumers

In the early years, the poultry industry was focused on providing whole dressed chickens for consumers. The most frequent product form was whole, ice-packed broilers. The industry as a whole produced whole dressed broilers as a commodity product for the consuming public. As demand for poultry increased, consumers demonstrated an increasing desire for more convenient forms of poultry products, and the industry became more focused on value-added products. Broiler companies today produce a vast variety of poultry products for a diverse market: cut up parts, fresh and frozen, cooked and raw, bone-in and boneless, breaded and battered, marinated, ground and reformed, and many others. Many companies no longer produce a single, whole, ice-packed broiler. Commonly, poultry companies are highly specialized. For example, a company may specialize in "mass producing boneless breast meat" sold to other food companies in bulk. Other companies may in turn supply one or more fast food chains. Some sell name-branded products, while others target the export market.

Technology

Specialization in the poultry industry forces processors and farmers to be more specialized to meet marketing goals. A specific size and type of chicken is required to meet a variety of product forms demanded by consumers in different market venues. Various sizes and strains of chickens are each suited for different final products. Marketing situations are continually changing, forcing companies to change market goals, and often the farmer and processor must adjust. Over the last two decades, the technology available to the farmer has increased dramatically. There are now broiler houses that are entirely computerized. The technology is truly "space age," and as those changes occur, so must the technical capabilities of the grower. Growers are almost as specialized as are the poultry companies.

Health and Food Safety

Consumers today are increasingly more educated about health and safety of the foods they consume. Consumers in the United States and around the world demand safer and more healthful food choices. Food safety has become a priority in the U.S. poultry industry. Food safety scares, such as the threat of Avian Influenza, can have devastating impacts on sales worldwide. The poultry industry has developed a multitude of practices designed to decrease opportunities for food-borne pathogens to survive in its products. Vertical integration allows for more control from the egg through the finished consumer-ready product. This adds to the sophistication required, not just in the processing plant, but also in the hatchery, feed mill, and chicken house. Communications related to food safety throughout production, processing, and distribution have become of critical importance and a priority of the industry.

Environmental Stewardship

Farmers are becoming more acutely aware of their central role in protecting the land and watersheds they influence. Mississippi poultry farmers now develop nutrient management plans consistent with recommendations of the USDA Natural Resources Conservation Service to ensure that the environment is protected during the disposal of litter and dead birds. Modern poultry farmers in our state accomplish these goals under permits from the Mississippi Department of Environmental Quality and the Mississippi Department of Agriculture and Commerce.

Energy Conservation

Mississippi poultry farmers use large amounts of energy in the form of electricity and gas. Baby chicks must be kept warm during the first weeks of life, so poultry farmers are greatly affected when gas prices surge. Severe winter temperatures create more demand for energy, resulting in increased cost of production. During the summer, farmers must run large fans to keep the larger chickens cool. Because energy costs are a major cost component in poultry production, energy conservation is a targeted research and extension program at Mississippi State University. Since 2004, many growers in Mississippi have participated in an energy loan program offered through the USDA Rural Development Agency to replace outdated energy equipment in poultry production houses. The new energy equipment packages make production houses more energy efficient.

Mississippi Poultry Industry Size and National Rank

The modern chicken industry began in Mississippi in the early 1950s. The 1954 Census of Agriculture reported that Mississippi farmers raised 35 million broilers. In 2005, Mississippi farmers produced more than 853 million broilers. Mississippi ranked fourth in the nation in 2005 based on the number of broilers produced.

Table 2. U.S. Broiler Production, 2005.

State	Head	Pounds
Georgia	1,321,200,000	6,738,100,000
Arkansas	1,214,300,000	6,314,400,000
Alabama	1,057,300,000	5,603,700,000
Mississippi	853,400,000	4,779,000,000
North Carolina	735,100,000	4,851,700,000
Texas	627,900,000	3,265,100,000
Kentucky	297,800,000	1,637,900,000
Delaware	282,300,000	1,835,000,000
Virginia	260,000,000	1,326,000,000
Maryland	256,000,000	1,228,800,000

Source: Agricultural Statistics Board, NASS, USDA.

Broiler Production in Mississippi

In 2005, Mississippi farmers grew 853 million broilers. Farmers contract with broiler companies, known as integrators, to raise broilers. Under this arrangement, the integrator supplies the chicks, feed, and veterinary supplies to the farmer at no cost. The farmer provides labor, utilities, and the broiler houses.

The total paid by integrators to Mississippi farmers exceeded $239 million in 2005, an average of 5 cents per pound live weight. Table 3 exhibits the growth of broiler production and value in Mississippi from 1990 through 2005.

Table 3. Mississippi Broiler Production and Value.

Year	Number produced (thousands)	Pounds produced (thousands)	Price per pound	Value of production (thousands)
	head	*no.*	*cents*	*dollars*
1990	413,100	1,693,710	31.5	533,519
1991	456,500	1,962,950	29.5	579,070
1992	487,400	2,144,560	31.0	664,814
1993	528,200	2,429,700	33.5	813,950
1994	602,600	2,711,700	34.0	921,978
1995	644,000	2,962,400	33.5	922,404
1996	675,900	3,109,100	38.5	1,197,004
1997	720,300	3,313,400	37.0	1,225,958
1998	722,400	3,467,500	39.5	1,369,663
1999	735,100	3,675,500	36.0	1,323,180
2000	739,900	3,699,500	33.0	1,220,835
2001	765,300	3,826,500	39.0	1,492,335
2002	769,500	4,078,400	30.0	1,223,520
2003	790,300	4,188,600	34.0	1,424,124
2004	827,800	4,387,300	44.0	1,930,412
2005	853,400	4,779,000	43.0	2,054,970

Source: Mississippi Agricultural Statistics Service.

A typical farmer has three or four houses averaging 23,000 birds per house. As a rule of thumb, one person can manage three houses if working full-time. A flock of chickens reaches market size in about 6 weeks, depending on the market the integrator has targeted. The replacement value of a modern broiler house (500 x 44 feet) is about $200,000.

Broiler production is concentrated in central Mississippi. In 2005, more than 2,000 farmers in 36 counties contracted with broiler integrators. The exact number is hard to determine because some contract farmers own many houses and hire family members or other individuals to manage groups of houses. The following table and map exhibit a breakdown of broilers produced by county in Mississippi and the concentration of production within the state.

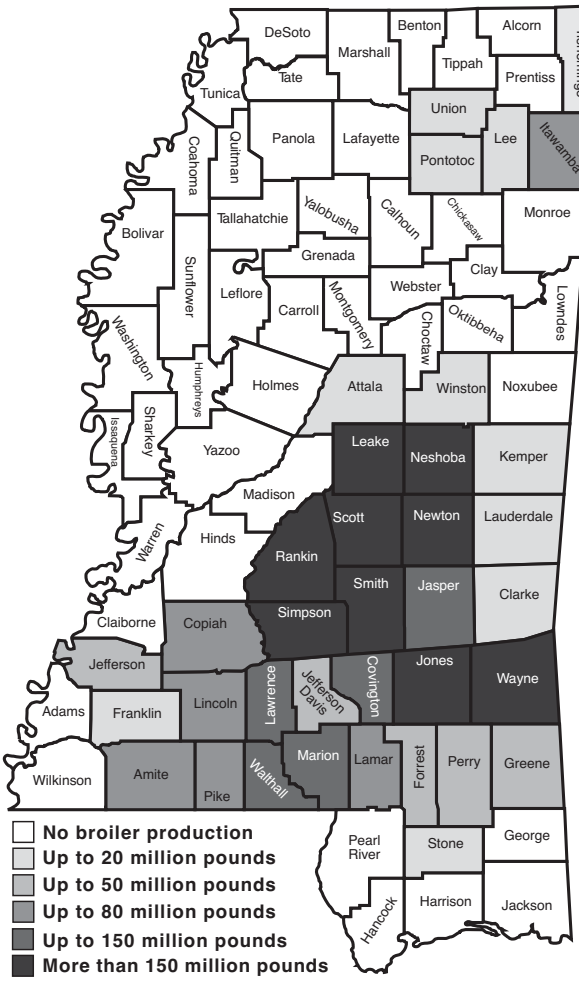

Figure 2. Number of Broilers Produced per County.

Table 4. Estimated 2004 Broiler Production and Value by County.

County	Broiler production	Farm gate value
	lb	*dollars*
Amite	75,363,636	33,160,000
Attala	8,409,091	3,700,000
Clarke	19,943,182	8,775,000
Copiah	57,761,364	25,415,000
Covington	127,290,909	56,008,000
Forrest	33,284,091	14,645,000
Franklin	4,663,636	2,052,000
Greene	41,697,727	18,347,000
Itawamba	62,300,000	27,412,000
Jasper	127,459,091	56,082,000
Jefferson	22,734,091	10,003,000
Jefferson Davis	37,934,091	16,691,000
Jones	330,129,545	145,257,000
Kemper	5,245,455	2,308,000
Lamar	70,302,273	30,933,000
Lauderdale	3,550,000	1,562,000
Lawrence	92,745,455	40,808,000
Leake	348,713,636	153,434,000
Lee	8,284,091	3,645,000
Lincoln	57,734,091	25,403,000
Marion	85,761,364	37,735,000
Neshoba	389,809,091	171,516,000
Newton	224,506,818	98,783,000
Perry	38,086,364	16,758,000
Pike	75,568,182	33,250,000
Pontotoc	11,629,545	5,117,000
Rankin	175,084,091	77,037,000
Scott	546,127,273	240,296,000
Simpson	363,725,000	160,039,000
Smith	505,920,455	222,605,000
Stone	5,138,636	2,261,000
Tishomingo	3,288,636	1,447,000
Union	6,384,091	2,809,000
Walthall	117,747,727	51,809,000
Wayne	289,195,455	127,246,000
Winston	11,413,636	5,022,000
Total	4,387,300,000	1,930,412,000

Source: Mississippi Agricultural Statistics Service.

Poultry Meat Processing and Further Processing

Most broilers grown in Mississippi are processed in one of Mississippi's 20 plants. Fifteen plants in Mississippi have slaughter operations. Very few broilers are sold as whole birds to the final consumer. Most undergo "further processing," which may include cutup, deboning, forming, marinating, breading, cooking, and specialty packaging.

Exact data on poultry sales by plants are not available because many companies are privately held. However, using the USDA 2005 estimate of pounds slaughtered in Mississippi, along with the USDA 2005 average wholesale price per pound (74 cents) for processed chicken, the total sales from Mississippi processing plants are estimated to be approximately $2.4 billion.

The largest broiler processing plant in the U.S. is located in Carthage. This state-of-the-art plant is capable of processing 2.5 million chickens per week.

One plant in the state processes spent hens. Spent hens are females used to lay eggs for broilers or for table eggs. Southern Hens, located in Moselle, Mississippi, was created to process the spent hens of a consortium of Mississippi poultry companies. By cooperating, these companies have a feasible plant for the processing of spent hens. In addition, there are many hatcheries and feed mills in the poultry-growing areas that are not shown in Table 5. The locations of processing facilities within the state of Mississippi are exhibited in Figure 3.

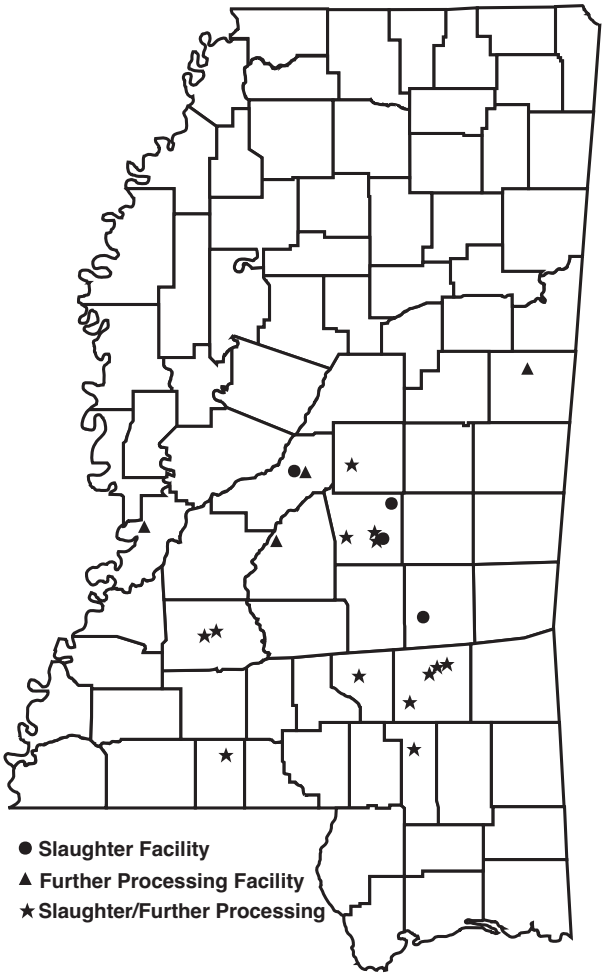

Figure 3. Locations of Mississippi Processing Plants.

Table 5. Mississippi Poultry Processing Plants.

Company	Location	Type
D.G. Foods	Hazlehurst	FP
Koch Foods	Forest	S,FP
Koch Foods	Morton	S,FP
Lady Forest Farms	Forest	S
Marshall Durbin	Hattiesburg	S, FP
Peco Foods	Bay Springs	S
Peco Foods	Brooksville	FP
Peco Foods	Canton	S
Peco Foods	Canton	FP
Peco Foods	Sebastopol	S
Sanderson Farms	Collins	S, FP
Sanderson Farms	Hazlehurst	S, FP
Sanderson Farms	Laurel	S, FP
Sanderson Farms	McComb	S, FP
Sanderson Farms	Flowood	FP
Southern Hens	Moselle	Spent Hens
Tyson Foods	Carthage	S, FP
Tyson Foods	Forest	S, FP
Tyson Foods	Vicksburg	FP
Wayne Farms	Laurel	S, FP

S = slaughter; FP = further processing.

The Mississippi broiler industry affects many groups in the state. Small farmers who contract with integrators grow broilers in Mississippi. Broilers are processed in Mississippi facilities. Corn grown on Mississippi farms is a major ingredient in broiler rations. Mississippi construction workers are employed building broiler houses and processing plants. Broiler exports, especially through the ports of Gulfport and Pascagoula, create jobs for Mississippi truckers and dock workers and generate income for stevedoring firms and state-owned ports. The broiler industry has a significant direct impact in more than half of Mississippi's counties. In 2004, integrated poultry firms in Mississippi directly employed more than 24,000 people in growing, processing, feed manufacture, and hatchery operation.

Table 6. Economic Impact of Poultry Industry in Mississippi, 2004.

Sector	Employment	Income	Value-added
	no.	*dollars*	*dollars*
Poultry and egg production	7,353	623,355,136	824,107,776
Poultry processing	17,253	454,067,744	468,203,264
Spillover effect	23,585	729,509,935	1,227,140,215
Total impact	48,191	1,806,932,815	2,519,451,255

An input-output model is designed to capture the financial linkages among the many participants residing within a regional economy. The "IMPLAN Professional TM Version 2.0 Social Accounting and Impact Analysis Software" package was used to evaluate the economic impacts of the poultry industry in Mississippi using financial transaction data for the calendar year 2004. The IMPLAN (IMpact analysis for PLANning) model was first developed by the USDA Forest Service to assist in land and resource management planning. The current version allows the user more flexibility in selecting methods and assumptions when computing social accounts and input-output multipliers. As mentioned previously, changes in the economic activity of any one industry will result in changes throughout the whole economy. The magnitude of these "spillover" impacts should increase as the degree of interdependence within the economy increases. If an industry purchases many of its inputs from other local industries and creates many local jobs, then the spillover impacts within the local economy should be relatively large. Conversely, if the industry relies on imported inputs, produces commodities that are exported, or is not very labor intensive, then the spillover impacts would be relatively small. There are two sources for spillover impacts: (1) "indirect" impacts reflect the many interindustry relationships involved in "upstream" production processes; and (2) "induced" impacts are generated by the extra spending of households stemming from the additional income that is generated through direct and indirect impacts on production.

A concept related to income is value added, which is defined as a firm's revenue from selling its products minus the amount it paid for intermediate goods and services that it purchased from other firms. For example, a firm purchases a "raw product" for $7 from one "upstream" firm, purchases other inputs for $3 from other "upstream" firms, uses other factors of production (e.g., labor and capital) to transform the raw product into a finished product, and then sells the finished product for $15 to a "downstream" buyer. The production activities of this firm resulted in a value added of $5, which is computed as $15 less $7 less $3. The firm

Table 7. Economic Impact of Poultry Industry, Scott and Smith Counties, 2004.

Sector	Employment	Income	Value-added
	no.	*dollars*	*dollars*
Poultry and egg production	1,224	133,035,120	182,940,272
Poultry processing	4,968	133,807,704	138,046,464
Spillover effect	2,337	61,494,906	118,798,569
Total impact	8,529	328,337,730	439,785,305

will then distribute its value added ($5) to cover expenses in the form of (1) payments to its factors of production (labor and capital), (2) indirect business taxes, and (3) profits. If value added is computed for each firm in every stage in the supply chain, the total value added throughout the supply chain will be equal to the sales value of the final (consumer) product.

The economic impact of the poultry industry in Mississippi is presented in Table 6. The Mississippi poultry industry directly employs an estimated 24,606 people engaged in the production and processing of broilers and eggs. Wages and salaries paid to these employees totaled more than $1.07 billion. Spillover, or the economic activity generated in other industries due to the indirect and induced economic effect, accounted for another estimated 23,585 jobs with payrolls of $729.5 million. The total direct, indirect, and induced economic impact of the poultry industry in Mississippi is an estimated 48,191 jobs with $1.8 billion in income and $2.5 billion in value-added.

The poultry industry is the number-one agricultural commodity produced in Mississippi and has a tremendous economic impact on the state. However, the Mississippi poultry industry is concentrated in the south-central area of the state. This concentration creates an even greater economic impact on the local communities where the farms and firms are located. Table 7 exhibits the local economic impact for the top two poultry production counties in the state. The poultry industry in Scott and Smith counties is responsible for 44% of the total employment and 48% of payrolls generated in these counties.

Major Poultry-Producing Countries

Because Mississippi's poultry industry is a major player on the world poultry market, events occurring in foreign countries affect the state's industry. The U.S. led the world in poultry production with more than 16.1 million metric tons in 2006. China was second to the U.S., and its production is increasing. While China is a relatively poor country, its population is more than 1 billion, and its people eat chicken whenever it is available. Even small increases in per-capita consumption in China cause large changes in demand for chicken.

Brazil, which is the third-largest poultry producer, is a major player in the world poultry market. It has the needed grain production to feed chickens and has an ample supply of labor to grow and process the birds. It also has access to the same technology found in U.S. plants.

Table 8. Total Poultry Meat Production by Country.

Country	2002	2003	2004	2005	2006
United States	14,467	14,696	15,286	15,869	16,162
China (PRC)	9,558	9,898	9,998	10,200	10,350
Brazil	7,449	7,645	8,408	9,350	9,280
European Union	7,788	7,512	7,627	7,736	7,425
Other European Countries	6,882	6,035	6,064	6,516	6,758
Mexico	2,157	2,290	2,389	2,498	2,610
India	1,400	1,500	1,650	1,900	2,000
Argentina	640	750	910	1,030	1,210
Japan	1,107	1,127	1,124	1,166	1,195
Russian Federation	500	560	650	900	1,080
Thailand	1,275	1,340	900	950	1,050
Canada	932	929	946	977	970
Total	54,155	54,282	55,952	59,092	60,090

These figures represent thousands of metric tons of ready-to-cook (RTC) equivalent products.
Source: USDA Foreign Agriculture Service.

U.S. Broiler Exports

The U.S. consumer usually prefers white chicken meat. Dark chicken meat is often sold on the export market. During 2006, the United States exported more than 5.2 billion pounds of poultry products throughout the world with an export value greater than $2.8 billion.

Since 2004, Russia has led the world as the number-one buyer of U.S. poultry. In 2006, China dramatically increased its poultry purchases, nearly doubling their purchases from the previous year.

Table 9. U.S. Broiler Exports, Ready-to-Cook.

Year	Russia	CIS (excludes Russia)	Mexico	Caribbean	China	Canada	Total
2004	1,502,329	572,777	431,037	312,852	263,727	214,740	4,783,454
2005	1,681,338	384,994	522,454	342,841	347,659	229,537	5,202,730
2006	1,599,019	329,550	457,647	345,417	640,618	237,904	5,272,034

These figures represent thousands of pounds.

Poultry Exports from Mississippi Ports

In 2004, 140,814 tons of poultry were exported through Gulfport, and 310,447 tons were exported through the port of Pascagoula. In August 2005, Mississippi ports were devastated by Hurricane Katrina. Before the hurricane, 2005 poultry exports totaled 456,198 tons for both ports combined. Most of this poultry was consolidated in Mississippi from other states for export.

Hurricane Katrina destroyed the cold-storage facilities at the port of Gulfport and severely damaged facilities at the port of Pascagoula, disrupting distribution and temporarily shifting poultry exports through other port facilities. Before the hurricane, approximately 18% of all poultry exported from the U.S. moved through Gulfport or Pascagoula. This is significant when one considers that Mississippi produced 9% of U.S. broilers in 2005.

The port facilities began rebuilding as soon as possible after the storm. The port of Gulfport continues with construction of new cold-storage facilities and will begin poultry exports as soon as these facilities are operational. The port of Pascagoula completed repairs and expanded cold-storage facilities in 2006. The port of Pascagoula began poultry exports again in 2006 and handled 185,078 tons of poultry exports in the latter part of 2006. Mississippi port facilities are working hard to regain full operational status and should soon reach and surpass pre-Hurricane Katrina levels of export tonnage.

Ancillary Industries

Other industries benefit directly from the Mississippi poultry industry:

- Freezers and refrigerated warehouses that store poultry;
- Trucking firms that transport finished product;
- Railroads and trucking firms that haul corn and other feed ingredients;
- Vendors of farm equipment and plant equipment;
- Vendors of packaging; and
- Construction contractors building plants, plant additions, and chicken houses.

Mississippi State Serves the Poultry Industry

- The Department of Poultry Science offers bachelor and master of science degrees with several areas of specialization. The department also offers a Ph.D. in agriculture with emphasis in poultry science. The department conducts research on issues faced by Mississippi growers and integrators. Workshops are regularly offered to address specific problems affecting the industry and to keep poultry professionals current on the latest advances in poultry science.

- The USDA South Central Poultry Research Laboratory works closely with Mississippi State University and is providing extremely valuable information on management inside broiler houses to improve production. In addition, the laboratory is providing useful information on environmental influences on production and has a premier program in Mycoplasma research that has the potential to save the poultry industry millions of dollars in losses related to this disease.

- The College of Veterinary Medicine conducts research on diseases affecting poultry flocks and provides assistance to poultry professionals when problems arise. They also conduct workshops to benefit the industry.

- The Department of Food Science, Nutrition, and Health Promotion conducts research to assist the processing sector. They also conduct workshops to benefit the industry concerning food safety issues and regulatory compliance.