

## Structural Change Location and Plant Operations

Industry consolidation involves more than changes in concentration and plant sizes. Other dramatic changes affect product and input mix, industry location, and the organization and compensation of workforces at slaughter plants.

Today's largest cattle slaughter plants operate in a limited geographic area: Nebraska, Kansas, eastern Colorado, and the Texas Panhandle. These plants typically slaughter 4,000 to 5,000 cattle a day, and also fabricate carcasses into smaller cuts, which are then distributed directly to wholesalers and retailers.

In the past, large hog plants also processed carcasses into hams, bacon, other cured products, and sausages. Today, they are more likely to simply slaughter hogs and cut up the carcasses, selling the meat to processing plants. Hog slaughter is not as geographically concentrated as cattle. New plants are tied to large hog feeding operations, and as those have spread through several rural areas of the country, so have slaughter plants.

### Product Mix

Twenty-five years ago, most cattle slaughter plants were "carcass" plants, selling whole or half carcasses to other meat processors or to retailers who then separated the carcasses into retail cuts of meat. Then as now, the whole animal was used. The plants shipped hides, blood, bonemeal, internal organs, and trimmings. These byproducts, separated from carcasses during slaughter, were used to make clothing, pharmaceuticals, sporting goods, animal feeds, and food products. But since the 1970's, slaughter plants have also moved into the further fabrication of carcasses, cutting them up into "boxed beef" and ground beef products.

In boxed beef production, carcasses are chilled at the slaughter plant for a day after slaughter, then moved onto a "fabrication" line where they are cut into wholesale and retail cuts of meat, vacuum-wrapped,

packed in boxes, and shipped. Increasing volumes are exported, usually to Asia. Boxed beef bound for Asian markets is usually shipped by truck or rail from the plants to West Coast ports for shipment.

Fabricated beef products (cut-up carcasses) accounted for only 9.3 percent of the value of shipments from beef slaughter plants in 1963, but represented over 56 percent of all shipments by 1992 (table 4-1). Large plants particularly drove this trend: boxed beef accounted for over 70 percent of large plant shipments in 1992, but less than a fifth of shipments from other plants. As a result, boxed beef production is noticeably more concentrated than cattle slaughter as a whole.

Twenty-five years ago, hog plants were far more complex operations than cattle plants. They slaughtered hogs, cut up the carcasses, and then processed the pork into bacon, hams, sausages, and other products. More recently, processing has shifted to specialist plants, and slaughter plants, like cattle, specialize mainly in slaughter and carcass cutting. Cut-up carcasses (the equivalent of fabrication at cattle plants) account for a growing share of hog slaughter plant shipments, more than half in 1992 (table 4-2). As with cattle, fabrication is far more prevalent, and increasingly so, at large slaughter plants.

**Table 4-1—Growing importance of boxed beef production at cattle slaughter plants**

Year	Boxed beef shipments as a share of total shipments		
	Industry average	Large plants <sup>1</sup>	Other plants
	<i>Percent</i>		
1963	9.3	8.1	9.8
1972	15.5	22.7	12.1
1982	39.5	51.9	26.6
1992	56.2	71.6	17.2

<sup>1</sup> More than 400 employees.

Source: Longitudinal Establishment Datafile, U.S. Census Bureau.

Many traditional brand-name processors no longer slaughter hogs, but instead purchase cut-up carcasses for processing into bacon, hams, and other branded products. In 1982, these specialist (nonslaughter) plants accounted for 43 percent of bacon, ham, and other cured pork shipments (that is, plants that didn't slaughter had 42.8 percent of shipments). By 1992, these plants handled almost two-thirds of the cured business (table 4-3), and even more of sausage products.

Meat processors, wholesalers, and retailers purchase boxed beef and cut-up pork because slaughter plants can fabricate carcasses at lower costs per pound. Fabrication also saves on transport costs compared with shipping whole or half carcasses. Processors, wholesalers, and retailers would often use only part of a carcass, shipping remaining parts out to other processors and to rendering plants. Slaughterhouses

**Table 4-2—Growing importance of cut-up carcass production at hog slaughter plants**

Year	Cut-up carcass shipments as a share of total shipments		
	Industry average	Large plants <sup>1</sup>	Other plants
<i>Percent</i>			
1963	27.5	30.9	20.8
1972	33.2	34.9	30.4
1982	34.9	36.7	31.2
1992	52.4	57.0	24.1

<sup>1</sup> More than 400 employees.

Source: Longitudinal Establishment Datafile, U.S. Census Bureau.

**Table 4-3—Share of processed pork products by specialist plants**

Year	Share of processed pork shipments from nonslaughter plants	
	Bacon, ham, and other cured pork <sup>1</sup>	Sausage and similar products
<i>Percent</i>		
1982	42.8	55.9
1987	51.5	70.5
1992	63.1	77.0

<sup>1</sup> The "Bacon..." column reports the share of shipments in SIC codes 20116 (slaughter plants) and 20136 (nonslaughter) that are produced in 20136 plants. The "Sausage..." column reports 20137 shipments (nonslaughter) as a percentage of the sum of 20117 (slaughter plants) and 20137.

Source: 1992 Census of Manufactures, Industry Series, Meat Products. U.S. Census Bureau.

can more efficiently direct the parts of the carcass to the highest value users.

## Input Mix

In the 1960's, many large slaughterhouses handled multiple species—for example, many slaughtered cattle and hogs. Some, particularly those with cattle and hog slaughter capabilities, also operated processing lines, producing bacon, hams, and sausage products. Those plants have largely disappeared in favor of specialized operations. In 1963, species other than cattle accounted for almost half of animal inputs at large cattle plants (more than 400 employees)—effectively, most were multi-species plants. Hog and chicken slaughter plants also had significant shares of other species (table 4-4). By 1992, large plants specialized in single species. Now, plants even specialize within species; the largest cattle plants slaughter only steers and heifers, while cows and bulls are slaughtered in separate plants.

## Plant Location

Consolidation intensified geographic concentration in cattle slaughter, although not in hogs. For each Census year, tables 4-5 (cattle) and 4-6 (hogs) show regional shares of the value of shipments from slaughter plants (we use slightly different regional definitions in each table).

Cattle slaughter shifted strongly to the Great Plains from the rest of the country, mostly from the Corn

**Table 4-4—Share of animal input costs by primary species at large slaughter plants<sup>1</sup>**

Year	Cattle	Hogs	Chickens
<i>Percent of primary species in animal input costs</i>			
1963	52.5	84.5	d
1967	60.2	79.0	83.0
1972	67.6	90.9	96.5
1977	81.3	94.3	95.7
1982	92.1	93.4	99.6
1987	99.2	97.4	99.9
1992	100.0	98.9	99.0

<sup>1</sup> More than 400 employees.

d = cannot be disclosed in order to preserve respondent confidentiality.

Source: Longitudinal Establishment Datafile, U.S. Bureau of the Census.

Belt, which had accounted for the largest regional share of cattle slaughter in the 1960's (table 4-5). Shifts in slaughter location mirror the geographic shifts in cattle feeding described in chapter 2. In the 1960's and early 1970's, many cattle feedlots were located in the Corn Belt and West Coast as well as in the Great Plains. Since then, commercial cattle feeding has consolidated into fewer but larger operations, primarily in the Great Plains.

Hog slaughter remains concentrated in the Corn Belt, though shifting west within that region (table 4-6). Southeastern slaughter grew erratically from 1963 to 1992, while production in the Northeast and the rest of the country fell sharply.<sup>12</sup> Hog slaughter is also closely tied to the location of hog production, which is in a state of flux. The Corn Belt is the traditional site for hog production, on farms that typically combined crop production (corn, soybeans) with hog operations. Large hog slaughterhouses could locate in the Corn Belt, among a dense network of farms, and ensure themselves of steady supplies of hogs through cash purchases throughout the region. As noted in chapter 2, most hogs are now produced in large hog operations—those marketing more than 5,000 head/year accounted for nearly two-thirds of all 1997 marketings. Large hog operations are increasingly located in many different States.

<sup>12</sup> Southeastern slaughter has continued to grow rapidly since 1992.

**Table 4-5—Shares of cattle slaughter output, by region and year<sup>1</sup>**

Year	Corn Belt	Great Plains	West	Rest of U.S.
<i>Percent</i>				
1963	41.7	27.1	16.2	11.5
1967	39.0	32.5	16.3	9.8
1972	30.9	45.4	14.1	8.1
1977	31.4	44.8	14.3	7.1
1982	24.3	59.1	10.5	4.2
1987	20.9	62.6	11.0	3.1
1992	17.1	68.1	10.4	1.9

<sup>1</sup> Great Plains includes TX, OK, KS, CO, NE, ND, and SD. Corn Belt States are MN, IA, MO, IL, WI, MI, IN, and OH. The West includes all States west of the Great Plains.

Source: Longitudinal Establishment Datafile, U.S. Census Bureau.

## Wages and Labor Force Characteristics

Industry consolidation has been accompanied by important changes in labor relations in meatpacking. In 1980, 46 percent of workers in the meat products industry were union members, a figure that had remained stable through the 1970's.<sup>13</sup> Most unionized slaughter plant workers belonged to the United Food and Commercial Workers (UFCW) union, whose base wage rate was \$10.69 an hour in 1982. In that year, many unionized firms began to press for large reductions in base wages,

<sup>13</sup> Unionization data come from questions asked in the Current Population Survey, which defines industries at the three-digit level. Meat products (SIC 201) includes red meat and poultry slaughter and processing. See Kokkelenberg and Sockell (1985) and Curme, Hirsch, and McPherson (1990).

**Table 4-6—Shares of hog slaughter output, by region and year<sup>1</sup>**

Year	Eastern Corn Belt	Western Corn Belt	Southeast	Northeast	Rest of U.S.
<i>Percent</i>					
1963	24.6	39.2	12.6	9.4	14.1
1967	21.4	41.4	14.3	8.0	14.9
1972	25.8	38.9	15.7	6.6	12.9
1977	26.1	39.5	16.8	4.8	12.8
1982	23.6	42.1	17.9	3.9	12.5
1987	20.4	49.6	19.6	2.0	8.5
1992	19.5	55.9	14.8	2.5	7.3

<sup>1</sup> Eastern Corn Belt is IL, IN, MI, OH, and WI, while Western Corn Belt is IA, KS, MN, MO, ND, NE, and SD. Southeast is FL, GA, KY, NC, SC, TN, and VA; Northeast is CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, and VT. Rest of U.S. therefore is AL, MS, LA, as well as the West and Southwest.

Source: Longitudinal Establishment Datafile, U.S. Census Bureau.

to \$8.25 an hour, consistent with what was being offered in non-union plants. The union at first acceded to wage cuts, but by 1984 adopted a strategy to vigorously contest them, in the view that large wage cuts at older unionized plants only postponed plant closings. Between 1983 and 1986, there were 158 work stoppages in cattle and hog slaughter plants, involving 40,000 workers. There were lengthy strikes, plant closings, and deunionizations at some ongoing and reopened plants.<sup>14</sup> By 1987, union membership had fallen to 21 percent of the workforce, and has remained at that lower level through the most recent data (1997); wage reductions were imposed in most plants, and wages have risen only modestly since then.

Declining unionization coincided with changes in slaughter plant demographics. Immigrants, primarily from Southeast Asia, Mexico, and Central America, make up large and growing shares of the workforces at both hog and cattle slaughter plants. This has led to striking transformations in the rural communities that must provide schooling and social services to the workers and their families (U.S. General Accounting Office, 1998).

Most plant workers today perform routinized tasks in either the slaughter or the fabrication department. Meatpacking work is hard and often hazardous; the use of knives, hooks, and saws in noisy surroundings on slippery surfaces presents the risk of cuts, lacerations, and slips. The nature of the work also creates the risk of repetitive stress injuries, and the plant environment can lead to pathogen-related illnesses. As a result, meatpacking has had the highest rate of occupational illnesses and injuries of all U.S. industries. During the late 1980's, on-the-job injury and illness rates in meatpacking rose sharply to a peak in 1991 of 45.5 for every 100 workers. Since then, worker safety statistics have improved, and the most recent Bureau of Labor Statistics data report that 30 out of every 100 employees were injured or sickened on the job in 1996.<sup>15</sup>

Perhaps because of the job hazards and workforce demographics, labor turnover in meatpacking is quite

<sup>14</sup> This summary draws on several articles appearing in the *Monthly Labor Review*, a publication of the Bureau of Labor Statistics of the U.S. Department of Labor.

<sup>15</sup> The injury data refer to SIC 2011, all red meat slaughter plants.

high, and in some establishments can reach 100 percent in a year as workers move to other employers or return to their native countries. The frequent movement of immigrant workers among plants and communities limits union opportunities to organize, but also reflects immigration problems—district officials of the Immigration and Naturalization Service estimate that as many as 25 percent of the workers at meatpacking plants in Iowa and Nebraska were illegal aliens (U.S. General Accounting Office, 1998).

Declines in unionization and increases in the use of immigrant workers coincided with sharp declines in real wages (table 4-7). In 1977, mean wages rose steadily with plant size in cattle and hog slaughter plants (SIC 2011), a pattern typical for manufacturing (Brown, Hamilton, and Medoff, 1990). The largest (1,000 or more employees) plants' average hourly wages were 23 percent above the industry average, 30 to 45 percent above wages at small (less than 500 employees) plants, and more than double the wages of workers in poultry slaughter plants. Five years later, plants with 1,000 or more workers paid average wages of \$10 an hour, still 10 percent above the industry average, 20 to 40 percent above small plant wages, and almost twice the average wage in poultry plants. But by 1992, wages in large cattle and hog plants had fallen sharply in nominal terms and dramatically in real terms.<sup>16</sup> Moreover, the plant size differential had disappeared; the largest plants paid wages no different from those offered in any of the plants with 100 or more employees, and wages were only 17 percent higher than those earned in poultry slaughter plants.

<sup>16</sup> The Consumer Price Index (CPI) increased by 131 percent between 1972 and 1982, and by another 45 percent between 1982 and 1992. In 1992 dollars, large plant wages would have been \$17.89 an hour in 1972, and the real 1972-1992 decline would amount to over 50 percent, with most of that concentrated in 1982-92. The CPI is widely considered to overstate inflation; if that's true, then our adjustment overstates the size of the real wage decline, although it does not affect comparisons across plants or slaughter classes within a year. If we accept the Boskin Commission's estimate of CPI overstatement—1.1 percent per year—then the 20-year decline in real wages at the largest cattle and hog plants would have been 40 percent.

**Table 4-7—Average hourly wages in meatpacking, by year, industry, and plant size**

Industry and plant size (no. workers)	1967	1972	1977	1982	1987	1992
	<i>Dollars per hour<sup>1</sup></i>					
SIC 2011 (Red meat):						
0-19	2.50	3.74	6.26	5.35	6.06	7.17
20-99	2.70	3.71	5.69	6.88	7.79	8.23
100-249	2.90	4.01	5.96	8.23	7.77	8.77
250-499	3.29	4.36	6.33	9.43	8.40	8.46
500-999	3.45	4.82	7.06	10.13	8.90	8.76
1,000 or more	4.04	5.33	8.44	10.00	8.50	8.65
Industry average	3.36	4.51	6.86	9.06	8.27	8.56
SIC 2015 (Poultry):						
0-19	1.92	2.50	3.37	5.00	5.78	6.81
20-99	1.81	2.78	3.38	5.10	5.77	8.10
100-249	1.76	2.42	3.52	5.23	6.33	7.16
250-499	1.72	2.40	3.43	4.98	5.96	7.33
500-999	1.79	2.35	3.48	5.14	6.17	7.39
1,000 or more	n.a.	n.a.	3.74	4.91	6.30	7.38
Industry average	1.76	2.40	3.48	5.06	6.16	7.37

<sup>1</sup> Wages are production worker payroll divided by production worker hours.

n.a. = not available.

Source: Census of Manufactures, *Industry Series*, for relevant years.