

## Merger and Acquisition Activity

The ERS report, *Structural Change in the Meat, Poultry, Dairy, and Grain Processing Industries* (Ollinger et al., 2005), makes it clear that consolidation in the food industry over 1977-92 caused a major reduction in employment in seven of the eight food industries and a drop in the number of plants by about a third. Since the consolidation coincided with a wave of mergers and acquisitions, it appears plausible that food industry mergers caused job reductions and a decline in wages. Job reductions can come from closing plants and abolishing jobs or laying off workers at existing plants. First, we consider whether M&As caused plant shutdowns.

Table 1 shows an apparent linkage between M&As and industry contraction, indicating that twice as many M&As occurred over the 1977-81 and 1982-86—6.7 and 7.7 percent, respectively, of all plants (last row of first panel)—than over 1972-76 or 1987-91—2.5 and 4.9 percent, respectively. It also shows that the exchange of market share from seller to buyer amounted to about 20 percent over the 1977-81, 1982-86, and 1987-91 periods but only 7 percent over the first period, and there were 20- and 10-percent reductions in the number of plants over the two middle periods but only 6- and 3-percent reductions in the first and last timespans.

Now consider different perturbations of firm acquisition behavior. Firms can sell some plants and buy others or strictly buy, sell, or do neither. Tables 2 and 3 provide the disposition of three types of plants: acquired plants, plants owned by acquiring (buyer) firms, and plants owned by nonbuyer firms. The bottom row of each panel shows the total number of plants in that category, and the bottom row of the table shows the number of all plants owned by firms in each of the eight food industries. Since we are considering all plants owned by the firm, the number of plants owned exceeds the number of plants in the industry because firms may own plants outside their industry. For example, meatpacking firms owned 2,977 plants, but only 2,590 of them were meatpacking plants.

The first row of the top panel of table 2 shows the number of acquired plants that firms kept for the entire 10-year period (1977-87). The next two rows show the number of acquired plants that buyer firms either sold or closed over 1977-82. Firms kept about half the plants they acquired, closed about 25 percent, and sold about 25 percent. Although firms held and closed higher percentages of plants over 1982-87, the overall pattern remained similar (table 3). By contrast, those same buying firms kept 35 percent of the plants that they held in 1977, sold 30 percent, and closed the others; nonbuying firms kept about 40 percent of their plants, sold less than 10 percent, and closed the others (table 2). A similar pattern holds true for 1982-87 (table 3). Not surprisingly, the two industries with the greatest consolidation—meatpacking and fluid milk—had the highest rates of plant closures over 1977-82 (more than 60 percent). Overall, nonbuyer plants had plant closure rates greater than 50 percent. For 1982-87, only meatpacking, meat processing, and cheese had nonbuyer firm plant closure rates of 50 percent or more. These data suggest that acquired plants were bought and held for a longer period than the plants that either buyers or nonbuyers held at the beginning of the merger periods. However, these descriptive data do not provide conclusive evidence that M&As did not cause massive numbers

of plant shutdowns and worker dislocations over 1977-92 because a number of intervening factors, such as labor productivity, also have roles in plant shutdown decisions. Thus, we built an empirical model explaining plant shutdown decisions in eight food industries. Before we present our model, we discuss the source of the data and the unit of analysis.

Table 1

**Acquisitions and market shares during 5 years leading up to the census year in eight food industries, census years 1977-92<sup>1</sup>**

Industry	1972-76	1977-81	1982-86	1987-91	Total	Mean
<i>Number</i>						
Plants acquired:						
Meat packing	32	81	50	49	222	55.5
Meat processing	30	44	62	39	175	43.8
Poultry slaughter/processing	50	76	72	39	237	59.3
Cheese products	18	48	31	56	153	38.3
Fluid milk	40	138	100	54	332	83.0
Flour milling	19	27	33	22	101	25.3
Feed	45	82	165	75	367	91.8
Oilseeds	8	31	32	6	77	19.3
Total plants acquired	242	527	545	340	1,654	413.5
Total plants	9,874	7,858	7,053	6,841	31,626	7,906
<i>Percent</i>						
Mean percent of initial count	2.5	6.7	7.7	4.9	5.2	5.2
Market share of acquired plants:						
Meat packing	4.5	38.9	19.3	42.6	105.3	26.3
Meat processing	5.1	14.7	21.3	10.8	51.9	13.0
Poultry slaughter/processing	11.1	20.4	26.8	10.5	68.8	17.2
Cheese products	9.1	25.5	12.0	36.1	82.7	20.7
Fluid milk	4.3	21.6	22.1	11.7	59.7	14.9
Flour milling	8.5	D	13.4	D	21.9 <sup>2</sup>	10.9 <sup>2</sup>
Feed	3.5	7.0	18.6	7.2	36.3	9.1
Oilseeds	6.9	10.3	26.9	D	44.1 <sup>3</sup>	14.7 <sup>3</sup>
Total	53.0	138.4 <sup>4</sup>	160.4	118.9 <sup>5</sup>	470.7	126.8 <sup>6</sup>
Mean market share	6.6	19.8 <sup>4</sup>	20.0	19.8 <sup>5</sup>	66.2	15.9 <sup>6</sup>

Notes: Census year is the year the census is taken. These have occurred every 5 years since 1967—i.e., 1967, 1972, 1977, etc.

D = Not revealed due to potential conflict of confidentiality.

<sup>1</sup>The first panel gives the number of acquisitions by industry and Census year over 1977-92; the second panel gives their corresponding market share. The column headed by acquisitions in 1977 gives the number of acquisitions over 1972-76. The other columns headed by 1982, 1987, and 1992 give mergers and acquisitions over 1977-81, 1982-86, and 1987-91. Plants with no reported financial data were dropped. Industries include meatpacking, meat processing, poultry slaughter, fluid milk, cheese, flour milling, feeds, and the combined industry of soybeans, wet corn milling, and cottonseed.

<sup>2</sup>Based on the 3 years in which data are reported.

<sup>3</sup>Based on the 4 years in which data are reported.

<sup>4</sup>Based on seven industries for which data are reported.

<sup>5</sup>Based on six industries for which data are reported.

<sup>6</sup>Means and totals may not add up because of the way disclosure violations are handled.

Source: U.S. Department of Agriculture, Economic Research Service estimates based on census data.

Table 2

**Plant disposition over 1977-87 of plants existing in 1977 by ownership status in eight food industries**

Disposition of plants	Meatpacking	Meat processing	Poultry	Cheese	Fluid milk	Flour	Feed	Oilseeds	Total
Plants acquired by 1982:									
Plant kept 1977-87	118	70	157	119	197	178	215	170	1,224
Plant sold by 1987	56	66	94	43	99	38	106	55	557
Plant closed by 1987	77	42	61	59	109	67	118	66	599
Total acquired plants	251	178	312	221	405	283	439	291	2,380
Plants owned by buyer firms in 1982:									
Plant sold by 1987	209	*	135	*	278	*	275	*	897 <sup>1</sup>
Plant kept 1977-87	210	*	235	*	337	*	290	*	1,072 <sup>1</sup>
Plant closed by 1982	187	*	85	*	216	*	171	*	659 <sup>1</sup>
Plant closed by 1987	78	*	63	*	140	*	96	*	377 <sup>1</sup>
Total buyer plants	684	*	518	*	971	*	832	*	3,005 <sup>1</sup>
Plants owned by nonbuyer firms in 1982:									
Plant kept in 1982 but sold by 1987	35	197 <sup>2</sup>	26	52 <sup>2</sup>	37	266 <sup>2</sup>	37	143 <sup>2</sup>	793 <sup>2</sup>
Plant kept 1977-87	610	604 <sup>2</sup>	169	482 <sup>2</sup>	494	578 <sup>2</sup>	628	318 <sup>2</sup>	3,883 <sup>2</sup>
Plant closed by 1982	1,073	395 <sup>2</sup>	160	292 <sup>2</sup>	641	319 <sup>2</sup>	502	80 <sup>2</sup>	3,462 <sup>2</sup>
Plant closed by 1987	324	430 <sup>2</sup>	87	152 <sup>2</sup>	249	187 <sup>2</sup>	252	152 <sup>2</sup>	1,833 <sup>2</sup>
Total nonbuyer plants	2,042	1,626 <sup>2</sup>	442	978 <sup>2</sup>	1,421	1,350 <sup>2</sup>	1,419	693 <sup>2</sup>	9,971 <sup>2</sup>
Total plants	2,977	1,804	1,272	1,199	2,797	1,633	2,690	984	15,356

\*Buyers and nonbuyers are combined due to potential for disclosure violations.

<sup>1</sup>Does not include buyer plants in which there are disclosure violations.

<sup>2</sup>Includes buyers and nonbuyers for cells in which there were insufficient observations for one to stand alone and not be a disclosure violation.

Source: U.S. Department of Agriculture, Economic Research Service estimates based on census data. Industries include meatpacking, meat processing, poultry slaughter, fluid milk, cheese, flour milling, feed, and the combined soybean, wet corn, and cottonseed milling (oilseeds) industries.

Table 3

**Plant disposition over 1982-92 of plants existing in 1982 by ownership status in eight food industries**

Disposition of plants	Meatpacking	Meat processing	Poultry	Cheese	Fluid milk	Flour	Feed	Oilseeds	Total
<i>Number</i>									
Plants acquired by 1987:									
Plant kept 1982-92	145	190	184	75	142	268	273	297	1,574
Plant sold by 1992	21	99	94	50	77	81	**	49	371
Plant closed by 1992	60	92	76	50	114	131	129	107	759
Total acquired plants	226	381	505	175	333	480	402 <sup>1</sup>	453	2,804
Plants owned by buyer firms in 1987:									
Plant kept in 1987 but sold by 1992	*	99	*	*	*	*	*	*	99
Plant kept 1982-92	195	271	260	152	221	217	274	*	1,590
Plant shut down by 1987	63	137	154	*	170	*	121	*	645
Plant shut down by 1992	*	54	44	*	85	*	43	*	226
Total buyer plants	258 <sup>1</sup>	561	408	152 <sup>1</sup>	476	217 <sup>1</sup>	438	*	2,560 <sup>1</sup>
Plants owned by nonbuyer firms in 1987:									
Plant kept in 1987 but sold by 1992	45 <sup>2</sup>	18	97 <sup>2</sup>	92 <sup>2</sup>	169 <sup>2</sup>	62 <sup>2</sup>	62 <sup>2</sup>	129 <sup>2</sup>	674
Plant kept 1982-92	541	598	178	247	422	416	626	492 <sup>2</sup>	3,520
Plant shut down by 1987	479	355	120	254 <sup>2</sup>	271	265 <sup>2</sup>	350	205 <sup>2</sup>	2,299
Plant shut down by 1992	318 <sup>2</sup>	205	50	155 <sup>2</sup>	152	123 <sup>2</sup>	221	95 <sup>2</sup>	1,319
Total nonbuyer plants	1,383 <sup>2</sup>	1,176	445 <sup>2</sup>	748 <sup>2</sup>	1,014 <sup>2</sup>	866 <sup>2</sup>	1,259 <sup>2</sup>	921 <sup>2</sup>	7,812 <sup>2</sup>
Total plants	1,867	2,078	1,207	1,079	1,823	1,563	2,099	1,374	13,176

\*Buyers and nonbuyers are combined due to potential for disclosure violations.

\*\*Combined with acquired in 1987, closed by 1992 due to potential disclosure violation.

<sup>1</sup>Does not include buyer plants in which there are disclosure violations.

<sup>2</sup>Includes buyers and nonbuyers for cells in which there were insufficient observations for one to stand alone and not be a disclosure violation.

Source: U.S. Department of Agriculture, Economic Research Service estimates based on census data. Industries include meatpacking, meat processing, poultry slaughter, fluid milk, cheese, flour milling, feed, and the combined soybean, wet corn, and cottonseed milling (oilseeds) industries.