A Strange Sense of Deja Vu: The Packers and the Feds, 1915-82

Robert M. Aduddell and Louis P. Cain
Loyola University of Chicago

On 23 November 1981, the Packers Consent Decree of 1920 was terminated on the joint motion of the Justice Department and Swift Independent Packing Company. This ended a long legal battle that began shortly after the decree was signed. The decree, agreed to by the old Big Five (Armour, Cudahy, Morris, Swift, and Wilson), became progressively less effective as the meatpacking industry evolved. By 1956 conditions in the industry had changed so dramatically that the court should have set aside all of the decree's provisions upstream from packing (See [1 and 2]). Swift was the leader in seven attempts to modify the decree, and these attempts proved increasingly successful. In 1971, 1975, and 1980, major modifications were approved. As a result of the 1980 proceedings, the decree was scheduled to be dissolved in 1985 unless the Justice Department objected. Justice saw no reason to wait.

The old Big Five, which became the Big Four when Morris joined Armour in the 1920s, no longer comprise the top firms in the meat industry. Only Swift remains one of the four top firms, and only Swift remains in Chicago. Armour is a unit of Greyhound Corp. of Phoenix; Cudahy is a unit of General Host Corp. of Phoenix; and Wilson is now Wilson Foods Corp. of Oklahoma City. Swift Independent Packing Company was created in late 1980 from all the major fresh meats assets of Esmark, Inc. of Chicago. New firms, not restricted by the 1920 Consent Decree, have grown and replaced the old Big Five, the firms that the FTC claimed in 1917 were in a position to monopolize all the nation's food supply.

The new Big Four (Iowa Beef Processors, Swift, Missouri Beef, and Dubuque Packing) are now attracting the attention once received by their predecessors. A 1979 study released by the House Small Business Committee (the Williams report) argued that

the industry had a surplus of slaughtering capacity and a dwindling supply of cattle.[1] Such an environment would permit large, low-cost, predatory firms (particularly Iowa Beef) to injure smaller competitors; industry concentration would increase.

Iowa Beef, founded in 1969, pioneered large-scale processing facilities that reduced costs five to six cents a pound below those of existing plants. Even before the Williams report, the committee was investigating whether Iowa Beef uses its size unfairly or illegally. The themes developed in these investigations hearken back to the issues and rhetoric that led to the Consent Decree in 1920.

As one era wanes, as one of the most stringent decrees in US antitrust history is abandoned, the same rhetoric, the same emotions are being marshalled once again against the four leading meatpackers. The original decree, it was argued, was necessary because of the market power possessed by the industry's leading firms, and it was ended because the change in the market made the decree unnecessary. We have documented many of those changes elsewhere.[2] In what follows we will look at the demand and supply sides of the meat market, comment on the changes, then contrast the current situation to that in 1920. If it is true that we can learn from history, some public policymakers evidently can benefit from a cram course.

The demand for meat generally has increased from 1920 to the present. Per capita consumption rose from 136.0 pounds in 1920 to 184.5 pounds in 1978. Demand has been affected by depression, war, governmental policies, a changing age structure in the population, and a host of other variables. The changed composition of demand, however, is of greater interest than the fact that demand increased. The demand for beef increased relative to the demand for all other meats.

Table 1 documents this change with respect to both consumption and production. Unfortunately, the consumption statistics do not separate beef and veal before 1960. It is clear from the production data that veal declined relative to beef, as did lamb, mutton, and pork. There are several stories told about this change. One emphasizes the affluence of Americans in the post-Korean War years; parents and their booming babies migrated to suburbs where they bought beef for their backyard barbecue. Another emphasizes the greater affluence of the 1960s; parents took their rapidly maturing hordes for hamburgers at a fast food franchise. Most of these stories suggest that the basic change on the demand side is one of taste.

Table 2 presents relative prices and real per capita disposable income for the period 1920-78. There is no dramatic

decrease in the relative price of beef; no large upward jumps can be found in the income series. Nothing that mirrors the large upward jump apparent in the consumption/production data. Regression analysis was employed to check whether these perceptions were correct.

A double logarithm specification was adopted. The quantity of beef demanded per capita was assumed to depend upon the price of beef, the prices of other meat products, real per capita disposable income, and tastes. In this specification the coefficients are elasticities, and thus comparable with work done by others.[3] The complete model is:

$$\ell nQ_B = \beta_0+\beta_1 \ell nP_B+\beta_2 \ell nP_{FP}+\beta_3 \ell nP_{CP}+\beta_4 \ell nY_D+\beta_5 DUMBB+\beta_6 DUMBM+\varepsilon$$

Since data on beef consumption alone do not exist prior to 1960, it is necessary to use production data. In the years after 1960, the production and consumption series are highly correlated. This is what is expected of a highly perishable product with a limited capacity for storage on the one hand, and annual data on the other. The dependent variable is beef production in millions of pounds of dressed weight divided by population.[4]

Four retail price series are available continuously back to 1920: round steak, chuck roast, center cut pork chops, and sliced bacon. The geometric mean of the first two was used as the price of beef. This should smooth out differences in preferences for different cuts of beef over space and time. The latter two were used as the price of fresh and cured pork, respectively. In recent years the prices of whole ham and sliced bacon have moved together, with ham being roughly a nickel a pound more expensive.

The income variable is simply disposable income divided by the GNP deflator and population. Census figures on real per capita disposable income only go back to 1929.

Two dummy variables were specified in an attempt to model changes in taste. The first dummy takes on the value "1" in the years 1964-78, testing whether there was a significant upward shift attributable to the development of the fast food industry.

Given the large amount of autocorrelation present, the Cochrane-Orcutt iterative process was used.[5] The results of the regression, with t-values in parentheses, are as follows:

$$\ell nQ_B = \underset{(12.65)}{6.44} - \underset{(-5.60)}{0.57}\ell nP_B + \underset{(4.54)}{0.76}\ell nP_{FP} - \underset{(-2.59)}{0.26}\ell nP_{CP}$$

$$+ \underset{(5.52)}{0.50}\ell nY_D + \underset{(3.23)}{0.13}DUHBB + \underset{(4.27)}{0.23}DUMBM$$

$R^2 = 0.976$
$D\text{-}W = 1.980$
$\rho = 0.553$.

The coefficient on the beef price term is negative as expected, and the value is consistent with that obtained in other studies. Fresh beef and fresh pork are identified as substitutes; fresh beef and cured pork, complements. Cured pork and fresh beef typically are served for different meals, so the complementary relationship is not surprising. Other studies have investigated the cross-elasticity between all beef and all pork and have found a low positive value. That is consistent with the net effect found here. The income elasticity is positive and less than one. This is in keeping with the normal finding for food products and with what others have identified for beef.

The positive coefficient on DUMBB indicates that consumption increased in the post-Korea, baby-boom years; we believe this is most likely the result of a change in taste. Similarly, the positive coefficient on DUMBM indicates an even larger upward shift attributable to the Big Mac and other gustatorial delicacies. An attempt to model this change directly, utilizing data on eating- and drinking-place store sales did not produce significant results.

In sum, the regression results are consistent with other studies and with the stories that have been told about why beef has become the dominant meat. They do not, however, prove that change is attributable to a change in taste. Whatever the reason, and taste is most likely, those firms that elected to specialize in beef production in the postwar years faced a rapidly growing market; those that concentrated on other parts of the meat industry faced stagnant, if not declining, markets.

The meat packing industry, SIC 2011, has become progressively less concentrated since the Consent Decree was entered in 1920. By 1975, the last year for which good data are available, the industry could scarcely be called an oligopoly on a national basis.[6] The story of the decline in concentration is quickly told. Table 3 tells the story in terms of the percentage of US commercial slaughter accounted

for by the four ranking firms in each of the four major species. There is a reduction in concentration in each species, but the reduction is most dramatic for cattle slaughter. The data suggest that the fall has been continuous, but was particularly precipitous between 1940 and 1960. In 1940 cattle slaughter had a four-firm concentration ratio of 43.1; by 1960 it had dropped to 23.5. In 1975 it had fallen to 19.3. The old big four have not been the largest four since 1957. At least one other firm has been included since then, with only Swift and Armour continuously represented. The story is similar for hog slaughter. In 1920 the ratio was 43.8; in 1975, 33.1. The high was 44.3 in 1940; the low, 29.8 in 1967. For calves, as well as for sheep and lambs, the four-firm concentration ratios have fallen generally, but not continuously, over the period.

The four-firm concentration ratios for all meat packing, measured in terms of value added, closely parallel the concentration of beef packing measured by commercial slaughter. This is not surprising given that beef consumption in 1975 was 66.9 percent of total red meat consumption. Table 4 presents figures for the four-, eight-, and twenty-firm concentration ratios for Census of Manufacturing years, 1947 through 1972. This data confirms the decreasing concentration found with respect to slaughter. Once again the first four firms in all cases since 1957 included at least one, and typically two, firms other than the original big four. This decline in concentration -- in all four species, but most pronouncedly for cattle and hogs, the two major species -- has been such that there is no longer a functional national oligopoly.

In the FTC investigation of 1917, the Big Five's ownership and operation of the major marketing network for live animals was cited as one of the most important factors contributing to their domination of the industry. In particular, the investigation focused on the network of railroad terminal markets. The importance of terminal markets as the major marketing channel for slaughter livestock of all species has been on the wane since the mid 1940s. As of 1975 only a small percentage of each species was purchased by all meat packers through the existing terminal markets, as Table 5 attests. It is important to note that the decline in importance of the old terminal markets is not slow and steady. It took place unevenly by specie and through time. It has been a change which has made it impossible for the old (or any new) big four to dominate the price of slaughter livestock on a national level through the domination of access to terminal markets, as was alleged in 1917.

By 1975 the local auction and packer-direct purchases (from farmers and other livestock producers at the producer's farm or ranch) had replaced terminal markets as the major marketing channel. Of these two, direct purchasing has been the more important, as can be seen in Table 6. The dominant position of the terminal market is a fact of a bygone age. The importance of direct purchasing is a reality. Has the decline in importance of terminal markets in and of itself reduced the potential for the attainment and exploitation of market power by a new four through a possible domination of the new market matrix for livestock? Has the livestock supplier benefited from the change?

If any meat packing firm or group of firms were to achieve domination of the pricing process for livestock, it would have to be achieved through control of a small number of terminal markets through which a high percentage of all livestock supplies pass. Domination of direct marketing is not a likely possibility.

It is probable that with the decline in importance of terminal and organized auction markets there has been a reduction in the amount of market information available, particularly the information required for a national market in each grade of each species. This, in turn, suggests a national market is not currently possible. On balance, it appears that local livestock suppliers may have lost a source of market data and have not gained any appreciable benefit. It can be argued that direct buying confers as much oligopsonistic buying power on the local packer as the old terminal markets did on the old big four national packers. In 40 of the 50 states, the intrastate four-firm concentration ratio is 65 percent or higher, with the exception of lambs, and that the average slaughter animal travels 100 miles or less on its way to slaughter.

It is most likely that extensive local or regional oligopsony has replaced the old national oligopsony which no longer exists. The livestock producer, facing a local oligopsonist, would see himself as being exploited by the local packer and as having fewer viable market alternatives than were formerly available. This is the situation that led Congressman Smith of Iowa and the House Small Business Committee to initiate a new round of meat packing investigations. New villains, but the same problems, livestock producers still are not receiving as high a price for their livestock as they feel is deserved, a price that compares favorably to what they would receive were they only selling in that abstraction of economists, the perfectly

competitive market. Whatever degree of market perfection the 1920 Consent Decree, the Packers and Stockyards Act, and other public policies sought, it was not obtained. A new group of problems has replaced the old. Livestock suppliers are still seeking redress of age-old grievances, and they are always given a hearing. [7]

There have also been changes in the location of slaughter livestock markets and in the manufacturing process that converts livestock into fresh and processed meat. These changes have flattened the average cost curve, making a wider range of firm and plant sizes competitive, thereby easing entry. They also have allowed greater locational decentralization and greater specialization by species. Iowa Beef was the leader in exploiting these changes, locating single-species slaughtering plants of a size dependent upon expected normal local livestock supplies. A second factor lowering Iowa Beef's costs was that they typically entered local surplus labor markets where, at the outset, their labor costs were, at least, 15 percent less than those of their rivals in established markets.

The abandonment of terminal markets as the predominant livestock source for packers led to the movement of packing plants to the production sites of meat animals, particularly for cattle and hogs. At present, the location of the packing industry is distributed roughly as is the geographic location of livestock supplies. More importantly, since 1950 the predominant type of packing plant is one that slaughters a single species. In such plants less than 20 percent of the slaughter is processed further than breaking the carcass into quarters. This meat is then shipped to sales points. The current trend in single-species plants is to sell scraps of meat, offal, and hides to specialized processors and to concentrate on slaughter and distribution alone. There are seemingly no easily exploitable economies (or diseconomies) of scale associated with meat processing or by-product utilization. [3] The firms specializing in both processed meats and by-product utilization do so for reasons of economies in marketing, not processing. For the meat packers alone, there are economies of scale in slaughter and the basic breaking down of the cattle and hog carcass into quarters. These economies do not extend to processing, thus the emphasis on single-species slaughtering plants. The plant scale economies are obtained at a modest level of operations, which facilitates entry and allows decentralization. The current estimates are that for the slaughter and basic processing of both cattle and hogs, without by-product work-up or

manufacturing, the minimally efficient scale-plant slaughters between 26 and 30 thousand head per year of cattle and a similar number of hogs.[8] While a firm exhausts all scale economies at a fairly low rate of operations, there are no factors that lead to increasing costs per unit as output rises from, say, 26,000 head per annum to 2,600,000 head per annum. All potential scale economies are achievable at this modest level of output, less than one ten-thousandth of industry output, and the average cost curve stays flat over a very wide range of output. Given such a pattern of production and distribution costs, very large and very small plants and firms can compete effectively. Neither survivorship nor profitability depend on size alone.

The low price, cross-, and income elasticities of demand for beef, and the likelihood that those for other red meats are similar, suggests livestock suppliers are never going to be able to avoid wide variations in price for their animals. Such variations have led, and undoubtedly will continue to lead, to livestock producers seeking a scapegoat for their problems. A traditional scapegoat is the meat packing industry, but there seems little reason to believe that the meat packing industry is the villain it may once have been. Whatever oligopsonistic power packers presently possess is at the local or regional level, not the national level as was more likely in 1920. To overcome an oligopsonistic price depression, livestock suppliers would have to accept market risks, such as longer and more costly transit to market. The costs associated with these risks are probably greater than the oligopsonistic price depression itself. The industry from livestock production through packing and final retail sales to consumers seems to be much more competitive than in 1920. Some of the changes we have discussed above and some elsewhere. Those changes are largely independent of the Consent Decree and the other public policies in force since 1920. It is indeed a strange sense of <u>deja vu</u> in which the same cast of characters (livestock producers, congressmen, meat packers) speak the same lines on the same stages about the same problems. Only the names have been changed -- and the market.

NOTES

1. The study by Willard F. Williams, professor of agricultural economics at Texas Tech, was issued 25 June 1979 by Rep. Neal Smith (D., IA), chairman of the House Small Business Committee.

2. These are argued explicitly in [1].

3. Many of these studies are cited in John H. McCoy, [6].

4. This study makes use of data available in [5 and 7].

5. An alternative specification with two additional variables to separate the time trend was estimated using ordinary least squares. The first was a dummy variable for the period 1920-27 that smoothed the series with respect to the large drop in quantity that began just before the depression. The second was the reciprocal of the year given the slow-rapid-slow growth path of the dependent variable. The results were quite similar to the Cochrane-Orcutt results reported in the text. In general, the coefficient estimates are slightly lower and the t-values much lower in the OLSQ regressions. The cured pork price coefficient is not statistically significant. The R2 for the OLSQ regression is slightly lower (0.966) and the Durbin-Watson statistic falls into the indeterminate range (1.494). Both time variables are statistically significant; the dummy for the 1920s was positive, and the reciprocal of time negative, both as expected. It should be noted that when this dummy is defined over the years 1920-28, the regression coefficients and t-values change very little, but the Durbin-Watson statistic falls into the rejection region. Given these differences, the interpretation of the two regressions is identical.

6. In order to have effective oligopolistic behavior, four-firm concentration ratios are generally required to be in excess of 30 percent in the market under discussion.

7. For an in depth analysis of this issue, see A. Aspelin and G. Engelman, [4].

8. Anthony and Egerston [3] make this point at many places in their study.

REFERENCES

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5. Historical Statistics of the US, Colonial Times to 1970.
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7. Small Business Problems in the Marketing of Meat and other Commodities, part I, Meat Marketing, Hearings before Subcommittee on S.B.A. and S.B.I.C. Authority and General Small Business Problems, Committee on Small Business, House of Representatives, 95th Congress, 2nd Session, 13 October 1977, p. 3.
8. Statistical Abstract of the U.S., 1979.

Table 1

Meat Consumption and Production, 1920-1978

	Apparent Civilian per Capita Consumption					Meat Production				
	Total (lbs., carcass) weight	Beef (%)	Veal (%)	Lamb & Mutton (%)	Pork (%)	Total (billion lb)	Beef (%)	Veal (%)	Lamb & Mutton (%)	Pork (%)
1978	184.5	65.1	1.6	0.9	32.4	38.6	62.8	1.6	0.8	34.7
1975	179.4	66.9	2.3	1.1	29.6	36.8	65.2	2.4	1.1	31.3
1970	186.3	61.0	1.6	1.8	35.6	36.2	59.8	1.6	1.5	37.1
1965	167.1	59.5	3.1	2.2	35.1	31.5	59.4	3.2	2.1	35.3
1960	160.9	52.9	3.8	3.0	40.3	28.2	52.2	3.9	2.7	41.1
1955	162.8	56.1		2.8	41.0	26.9	50.5	5.9	2.8	40.9
1950	144.6	49.4		2.8	47.9	22.1	43.2	5.6	2.7	48.5
1945	145.2	49.1		5.0	45.9	23.7	43.4	7.0	4.4	45.2
1940	142.4	43.8		4.6	51.6	19.1	37.6	5.1	4.6	52.7
1935	117.4	52.6		6.2	41.2	14.4	45.8	7.1	6.1	41.0
1930	129.0	42.9		5.2	51.9	16.0	36.9	4.9	5.2	53.0
1925	140.1	48.6		3.7	47.8	16.6	41.4	6.0	3.6	49.0
1920	136.0	49.3		4.0	46.7	15.3	41.1	5.5	3.5	49.9

Sources: Statistical Abstract of the US, 1979, #203, 1258
Historical Statistics of the US, Colonial Times to 1970 G881-83, K584-93

Table 2

Relative Prices and Income, 1920-1979

	$P_{beef}/P_{fresh\ pork}$	$P_{beef}/P_{cured\ pork}$	Real per capita Disposable Income
1978	0.724	0.808	$2959
1975	0.750	0.793	2710
1970	0.836	1.024	2510
1965	0.825	1.226	2205
1960	0.939	1.223	1882
1955	0.849	1.021	1834
1950	1.007	1.192	1698
1945	0.911	0.822	1886
1940	1.047	1.070	1301
1935	0.814	0.712	1079
1930	0.964	0.821	1228
1925	0.776	0.609	1215
1920	0.761	0.616	1027

$P_{beef} = (P_{round\ steak} \times P_{chuck\ roast})^{1/2}$

$P_{fresh\ pork} = P_{center\ cut\ pork\ chops}$

$P_{cured\ pork} = P_{sliced\ bacon}$

Real per capita disposable income = Disposal income/(GNP deflator x Population)

Sources: Statistical Abstract of the US, 1979, #2, 715, 728, 800
Historical Statistics of the US, Colonial Times to 1970, A7, E1, 189-92 FS, 9

Table 3

Percent of US Commercial Livestock Slaughter Accounted for by the Largest Four Firms by Species 1920 - 1975, Selected Years

Year	Species			
	Cattle	Hogs	Calves	Sheep Lamb & Goats
1920	49.0	43.8	34.4	61.8
1930	48.5	37.5	45.5	68.1
1940	43.1	44.3	45.6	66.1
1950	36.4	40.9	35.4	63.6
1955	30.8	40.6	36.6	61.0
1960	23.5	34.9	29.0	54.7
1965	23.0	35.2	32.4	57.8
1970	21.3	31.5	23.8	53.1
1975	19.3	33.1	24.3	57.5

Source: U.S.D.A. Report (1978C)

Table 4

Concentration Ratios for Meat Slaughtering and Processing Firms, Industry Basis, Census Years 1947 - 1972

Year	No. of Firms	Value Added (millions of dollars)	Percent Value Added for Largest Firms 1 - 4	1 - 8	1 - 20
SIC 2011 Meat packing plants					
1947	1999	977	41	54	63
1954	2228	1397	39	51	60
1958	2646	1749	34	46	57
1963	2833	1908	31	42	54
1967	2529	2220	26	38	50
1972	2293	2968	22	37	51
SIC 2013 Meat processing					
1954	1254	334	16	24	35
1958	1430	442	17	25	36
1963	1273	563	16	23	35
1972	1207	1099	14	26	38

Source: US Department of Commerce: Summary Statistics, Concentration Ratios in Manufacturing 1954-72

Table 5

Percent of Animals Purchased at Terminal Markets for Commercial Slaughter

	1923	1960	1975
Cattle	89.6%	45.8%	12.9%
Calves	86.1	25.4	7.7
Hogs	76.0	30.3	17.1
Sheep, Lambs and Goats	85.4	35.4	9.8

Source: U.S.D.A. Annual Reports

Table 6

Percent of Animals Purchased for Commercial Slaughter by Market Type, 1975

	Terminal	Auction	Direct
Cattle	12.9%	20.8%	66.3%
Calves	7.7	62.3	30.0
Hogs	17.1	11.5	71.5
Sheep, Lambs and Goats	9.8	15.0	75.2

Source: U.S.D.A. Annual Reports