THE UNITED STATES STEEL CONSOLIDATION: THE CREATION OF MARKET CONTROL*

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I. INTRODUCTION

THE history of the U.S. iron and steel industry has long been a source of disquiet to both those who place their faith in the market's power to eliminate non-competitive situations in the long run as well as those who place their trust in antitrust laws. This study attempts to put in perspective the nature of the restructuring of the industry, following the formation of the United States Steel Corporation in 1901, which permitted the industry to capture long term monopoly rents in the face of competitive forces and the Sherman Act. We present evidence that the U.S. Steel merger did, in fact, create a non-competitive market structure as well as indicate the industrial organization that the restructuring achieved.

A brief sketch of the industry prior to the 1901 consolidation might be useful in appreciating the structural changes that merger brought about. By 1890, the United States had overtaken the United Kingdom as the world's largest producer of iron and steel.[1] The iron industry at that time was quite fragmented with steel production somewhat less so, in part because of the existence of patent rights on the Bessemer process and improvements on it. The Carnegie Steel Company, dominant in technical know-how and organizational efficiency as well as sharing claims of volume leadership, produced 15 to 20 per cent of U.S. steel ingots in 1898 as the industry entered its merger flurry. Due to purchases of major coke interests in the early 1880's (in particular the H. C. Frick Coke Company) and of iron ore holdings on the Mesabi range in the mid-1890's through the Oliver Iron Mining Company, the Carnegie firm was well integrated backwards. The ore was delivered to furnaces in Pittsburgh largely over a Carnegie owned transportation system. Vertical integration preceded the 1901 consolidation.

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[1] J. C. Carr & W. Taplin, History of the British Steel Industry 164 (1962).

In September, 1898, Judge Elbert Gary, later to be the first board chairman of U.S. Steel, executed a consolidation with the financial assistance of J. P. Morgan and Company which created a firm of roughly comparable size and degree of integration to the Carnegie firm. The Federal Steel Company was created out of Gary's Illinois Steel, the Minnesota Iron Company (principally an ore producer), and a handful of fabricators and transporters. Federal Steel, therefore, was also well integrated vertically. At the same time, a large number of steel fabricators were consolidating, capturing large market shares in a number of product lines and at the same time reaching absolute sizes sufficient to consider backward integration in the production of steel.

It was in this environment that the U.S. Steel consolidation was executed. In form U.S. Steel was a holding company, effectively owning all outstanding stock in Carnegie, Federal, and ten other iron and steel related operating companies. Among these were the large Rockefeller ore and transport system holdings in the Lake Superior region as well as major steel fabricators. In 1902, the first full year of operation, U.S. Steel produced two-thirds of all U.S. semi-finished steel, similar percentages of all rails and tin plate, virtually all wire, and typically lower percentages of other fabricated products. The distribution of market shares in different product lines appears in Table 1 for two points in time, 1902 and 1910.

The financial effects of the consolidation suggest it was enormously profitable. A study undertaken by the Commission of Corporations in 1911 estimated the pre-merger capitalization of the firms involved some $700 million while the Corporation itself estimated its post-merger value at a

TABLE 1
PRODUCTION SHARES OF U.S. STEEL IN MAJOR PRODUCT LINES, 1902 AND 1910

	1902 (%)	1910 (%)
Pig Iron (Total)	44.7	43.3
Ingots and Castings (Steel)	66.3	54.7
Total Rolled Products	50.8	48.1
Bessemer Steel Rails	65.4	60.2
Open Hearth Steel Rails	0.0	57.4
Structural Shapes	57.9	51.3
Plates and Sheets	59.4	48.0
Wire Rods	71.5	67.3
Miscellaneous Rolled Items	31.1	37.6
Wire Nails	64.8	55.4
Tin Plate and Terne Plate	[a]	61.0

Source: U.S. Comm'ner of Corporations, Report on the Steel Industry pt. 1, at 364 (July 1, 1911).
[a] Data not available.

TABLE 2
COMMON STOCK INDEXES: STOCK PRICES INCLUDING REINVESTED CASH DIVIDENDS

Year	All Stocks	Industrials	Railroads	Utilities	Steel & Iron (excl. USS)	U.S. Steel
1901	100.00	100.00	100.00	100.00	100.00	100.00
1902	111.50	102.78	117.11	105.62	103.48	99.20
1903	99.53	88.30	105.49	95.28	72.09	72.52
1904	102.03	86.01	109.65	98.82	54.37	43.33
1905	135.39	125.94	146.78	109.76	101.78	100.50
1906	150.71	153.44	162.35	104.01	144.26	126.68
1907	127.26	128.48	139.65	77.62	108.58	105.62
1908	133.56	133.47	148.10	76.18	113.92	133.70
1909	174.81	185.27	191.39	95.96	172.33	236.91
1910	175.99	195.99	189.28	98.94	155.50	280.94
1911	182.40	198.04	195.62	109.15	144.90	280.24
1912	198.11	230.36	207.76	120.14	153.48	292.88
1913	186.59	219.31	195.75	114.39	138.75	269.11

Source: Cowles Commission for Research in Economics, Common-stock Indexes, 1871-1937 (Alfred Cowles 3rd & Ass. 1938). Column 1: *id.* at 168-69; Column 2: *id.* at 170-71; Column 3: *id.* at 172-73; Column 4: *id.* at 174-75; Column 5: *id.* at 222-23; Column 6: *id.* at 224-25. All indices adjusted to equal 100 in 1901.

staggering $1400 million or almost one quarter of 1901 gross national product. Of this sum, holders of Carnegie Steel stocks and bonds got almost $500 million with J. P. Morgan and associates receiving more than $100 million in underwriting fees.[2] This inflation of capital values apparently reflected real earning power and not simply promotional profits. Nelson estimated that U.S. Steel common stockholders earned a respectable 9 per cent return in dividends and higher stock prices over the first decade of incorporation.[3] Stigler found that U.S. Steel common stock performed as well as certain other steel company stocks over the first 24 years of its existence.[4] A common stock index constructed by Alfred Cowles and Associates suggests a similar conclusion. As Table 2 indicates, during the pre-World War I period (1901-1913) an initial investment in U.S. Steel common stocks with all subsequent cash dividends reinvested would have been more profitable than a similar investment program in a composite portfolio of all stocks, industrials, railroads, utilities, or steel companies other than U.S. Steel. The investment in other steel firms would have yielded only a 50 per cent appreciation over this period while a comparable investment in U.S. Steel appreciated more than 150 per cent. The series suggests, however, that remarkable differences in the appreciated values of the two steel portfolios did

[2] U.S. Comm'ner of Corporations, Report on the Steel Industry pt. 1, tab. 4, at 113-14 (July 1, 1911). (See *infra* at Table 11.)

[3] Ralph L. Nelson, Merger Movements in American Industry 98 (1959).

[4] George J. Stigler, The Dominant Firm and the Inverted Umbrella, 8 J. Law & Econ. 167 (1965).

not occur until 1908. An investor in the all stock portfolio would have been substantially better off than a U.S. Steel investor during the first years after the merger, particularly during the business downturn of 1904.

The issue confronted in the next section is the cause of this remarkable increase in profitability. Presumably the source could be the achievement of scale economies in production and distribution or anticipated good fortune, either of which would be consistent with the competitive model. Alternatively and, we argue below, more probably it may be due to the achievement of market control. An examination of pricing behavior reveals a sharp increase in prices during this period, even relative to prevailing world prices. Although such price behavior could result from differential demand growth in the United States or adverse domestic resource shifts, evidence of large and consistent price discrimination in the U.S. export trade indicates that domestic prices did not reflect real cost conditions.

Given the apparent long run success the industry had in maintaining its non-competitive position, the industrial organization created by the U.S. Steel consolidation becomes of critical interest. The ownership of iron ore deposits appears as a key factor in the slow rate of entry of new firms as U.S. Steel methodically attempted to foreclose high quality ore supplies. The evidence on U.S. Steel's control of iron ore supplies is presented in Section III. U.S. Steel only partially achieved this goal and substantial effort was devoted to controlling price cuts among major competitors, particularly during cyclical contractions when resource control is less binding. This topic is considered in Section IV. The main external threat to the resulting cartel was the expansion of much smaller entrants only partially hindered by scarce high quality ore. The acquisition of these uncontrollable small firms by Bethlehem and others seems to have been a major tool in maintaining the stability of the cartel. Finally in Section V we briefly explore the judicial logic which led to denial of dissolution in the face of what appears to be overwhelming evidence of the anticompetitive nature of the merger.

II. The Behavior of Prices and Foreign Trade Relationships

The Pricing of Pig Iron. The behavior of iron and steel product prices during this period is interesting. We begin with pig iron since it is a relatively homogeneous intermediate product actively traded in the world market. Pig iron is the initial stage in the processing of iron ore into usable iron and steel products. Although the bulk of total pig iron production during this period was ultimately converted into steel through the Bessemer or open hearth method, pig iron was also poured directly into castings and processed further into wrought iron.

Price trends for this crucial intermediate product over the period 1870 to 1913, presented in Table 3, column 1, reveal that prices rose abruptly in this

TABLE 3
PIG IRON PRICES AND PRODUCTION, 1870-1913

Year	(1) Domestic Pig Iron Prices[a]	(2) Deflated Domestic Pig Iron Price[b]	(3) Domestic Pig Iron Production[c]
1870	$36.02	$22.97	166.52
1871	38.00	25.38	170.68
1872	53.01	34.69	254.87
1873	35.80	23.65	256.10
1874	27.16	18.54	240.13
1875	23.67	16.85	202.37
1876	21.74	16.70	186.90
1877	20.60	16.88	206.66
1878	18.09	16.21	230.12
1879	22.15	20.83	274.19
1880	27.98	23.77	383.52
1881	22.94	19.70	414.43
1882	23.84	19.94	462.33
1883	19.04	16.30	459.55
1884	17.17	15.69	426.72
1885	15.27	14.92	399.41
1886	18.96	18.72	476.18
1887	21.37	20.95	609.49
1888	17.38	16.74	638.79
1889	18.00	17.34	713.12
1890	18.85	18.55	850.26
1891	15.95	15.81	801.03
1892	14.37	15.22	968.14
1893	12.87	13.33	895.02
1894	11.38	13.14	527.96
1895	12.72	14.41	802.70
1896	12.14	14.44	1033.50
1897	10.03	11.90	805.04
1898	10.33	11.78	1111.89
1899	19.03	20.16	1219.34
1900	19.50	19.22	1497.41
1901	15.90	15.90	1587.84
1902	20.65	19.57	1782.13
1903	19.00	17.63	1800.93
1904	13.75	12.74	1649.70
1905	16.35	15.04	2299.24
1906	19.55	17.49	2530.72
1907	22.85	19.38	2578.14
1908	17.10	15.03	1593.60
1909	17.40	14.23	2579.55
1910	17.20	13.51	2730.36
1911	15.70	13.38	2364.95
1912	15.95	12.77	2972.69
1913	17.13	13.57	3096.62

[a] Price per short ton. *Source*: see Appendix.
[b] $\frac{\text{Domestic Price}}{\text{Wholesale Price Index}} \times 100$ where the wholesale price index = 100 in 1901. *Source:* see Appendix.
[c] In 10,000 ton units. *Source*: see Appendix.

industry around the turn of the century. In 1898 domestic pig iron was selling for an average of $10.33 per ton, capping an almost continuous decline in price from the $40 per ton of the early 1870's. In 1899, perhaps incidentally the first full year after the major consolidation activities of 1898, pig iron sold for $19.03 per ton. With some fluctuation, prices remained at that level throughout the following decade. Deflating the price series by the wholesale price index does not alter these conclusions as Table 1, column 2 indicates. Trend lines fitted to two separate periods, 1870-1900 and 1901-1913, in Figure I illustrate this price shift, although it is intriguing that the time rate of decline in prices within the first and second period are comparable. The fact that these shifts are still observable after pig iron prices are deflated by a wholesale price index indicates that they are not simply reflecting trends in the general price level.

Although the price jump is consistent with a shift from competitive to monopolistic market structure, it is equally compatible with an upward demand shift or an adverse supply shift in a competitive market. The latter possibility, of course, is itself somewhat at variance with U.S. Steel's production economies claim. The period in question was one of rapid growth and the prices may simply represent demand disequilibrium effects. Prices, for example, did jump prior to U.S. Steel's formation. The growth rate in pig iron production in the years 1898-1900, however, was an extraordinary

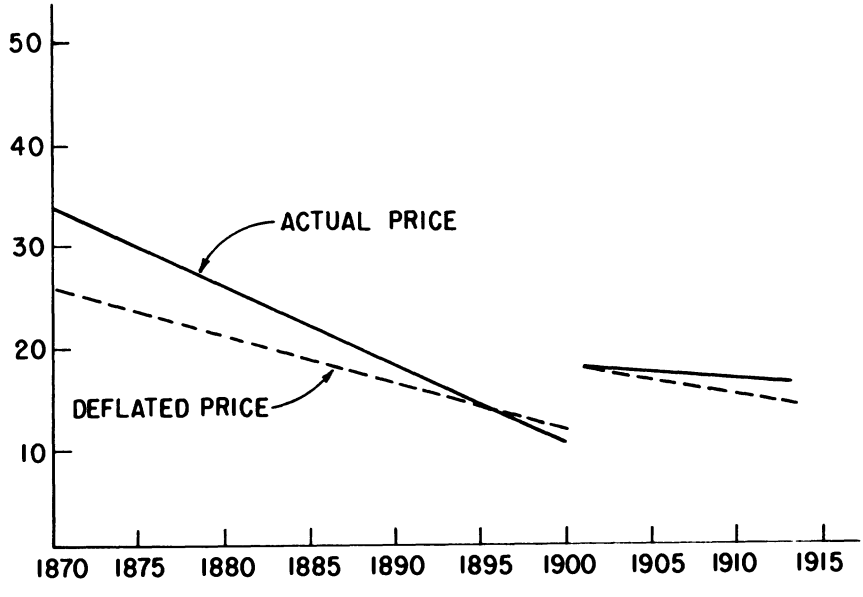

FIGURE I

25 per cent a year on average, while the average growth rate in the period 1901-1910 was lower than preceding decade averages.

An examination of the behavior of world market behavior indicates that the sharp rise in prices in 1899 and 1900, prior to the consolidation, may well have been the result of strong demand conditions. The price of pig iron at the major production point in Cleveland, England jumped almost 70 per cent from 1898 to 1900 as Table 4 indicates. In particular prices rose from $9.96 to $16.59 per ton during this brief interval. The strength of market demand internationally can be appreciated by the fact that the Cleveland price of $16.59 was exceeded only twice in the preceding three decades, both exceptions occurring in the early 1870's. By 1901, however, the Cleveland price had dropped back to levels comparable to those prevailing during the 1890's while the U.S. price remained 50 to 100 per cent above the 1897-1898 level for the entire pre-World War I period. As Table 4, column 4 suggests, domestic pig iron prices averaged 45 per cent more than the United Kingdom price over the period 1901-1913.

The price behavior in the post-consolidation period is consistent with a simple monopoly model. One might expect (and preliminary work on a supply-demand model not reported on here confirms) that domestic demand for pig iron is highly inelastic in the short run. There are few good substitutes for iron and steel products in the short-run, rails, structural beams, etc. being major uses at the time. The existence of the world market insures that the demand for domestic production is not as inelastic. As the domestic price exceeds the world price plus tariff, imports will partially replace domestic production in the domestic market. As the domestic price declines to the world price, exports become possible. Only in the interval between the world price and the world price plus tariff does the domestic industry face an inelastic demand. Graphically this reasoning suggests a demand curve facing the domestic industry of the form depicted in Figure II. With the domestic supply curve (or marginal cost curve to a monopoly) positioned so that equilibrium price was near the world price as illustrated by S in Figure II, a group that monopolized the industry would find it profitable to raise price to the world price plus tariff or higher since the kink in the demand curve results in a wide gap in the industry's marginal revenue curve (AB in Figure II). In the case shown, price would rise under the monopoly to P*. Table 4 allows comparison of the domestic price (column 1) and the U.K. price plus tariff on pig iron (column 3). Although by 1898 the U.S. pig iron price had converged with the U.K. price and therefore was almost $4 under the U.K. price plus tariff, only once during the period 1901-1913 did the domestic price fall below the U.K. price plus tariff. The lone exception was 1904, a year of severe contraction in the U.S. and even then price was only slightly below that level. During the later part of this period, namely 1909-1913,

TABLE 4
DOMESTIC AND FOREIGN PIG IRON PRICES AND PIG IRON EXPORTS AND IMPORTS

Year	(1) Domestic Price[a]	(2) United Kingdom Price[a]	(3) U.K. Price Plus Tariff[a]	(4) Domestic Price[b] / U.K. Price	(5) U.S. Imports[c]	(6) U.S. Exports[c]
1870	36.02	11.44	20.44	3.15	17.98	0.35
1871	38.00	11.49	19.49	3.31	18.80	0.37
1872	53.01	15.92	22.92	3.33	24.06	0.20
1873	35.80	23.96	30.26	1.49	21.69	0.28
1874	27.16	17.12	23.42	1.59	9.81	0.96
1875	23.67	13.03	19.54	1.82	6.17	1.58
1876	21.74	11.70	18.70	1.86	7.49	0.68
1877	20.60	10.23	17.23	2.01	7.16	0.32
1878	18.09	9.45	16.45	1.91	5.61	0.58
1879	22.15	8.52	15.52	2.60	9.00	0.30
1880	27.98	10.09	17.09	2.77	61.68	0.13
1881	22.94	9.27	16.27	2.47	53.04	0.37
1882	23.84	10.39	17.39	2.29	53.01	0.63
1883	19.04	9.72	16.44	1.96	43.23	0.41
1884	17.17	8.86	15.58	1.94	19.77	0.38
1885	15.27	8.18	14.90	1.87	8.87	0.46
1886	18.96	7.52	14.24	2.52	15.92	0.77
1887	21.37	8.04	14.76	2.66	26.82	0.78
1888	17.38	7.91	14.63	2.20	21.68	0.94
1889	18.00	9.32	16.04	1.93	8.67	1.20
1890	18.85	11.59	18.31	1.63	3.93	1.85
1891	15.95	9.84	16.56	1.62	2.73	1.34
1892	14.37	9.37	16.09	1.53	2.81	1.60
1893	12.87	8.38	15.10	1.54	1.32	2.00
1894	11.38	8.61	15.33	1.32	1.21	2.65
1895	12.72	8.62	12.62	1.48	0.67	2.25
1896	12.14	9.16	13.16	1.33	2.00	2.99
1897	10.03	9.74	13.74	1.03	0.95	16.99
1898	10.33	9.96	13.96	1.04	0.77	23.69
1899	19.03	12.93	16.93	1.47	0.78	29.96
1900	19.50	16.59	20.59	1.18	3.04	16.07
1901	15.90	11.52	15.52	1.38	1.48	8.12
1902	20.65	11.42	15.42	1.81	48.33	2.75
1903	19.00	11.37	15.37	1.67	41.50	1.04
1904	13.75	10.42	14.42	1.32	4.92	4.90
1905	16.35	11.32	15.32	1.44	9.31	4.92
1906	19.55	12.49	16.49	1.57	17.45	8.33
1907	22.85	13.56	17.56	1.69	32.87	7.37
1908	17.10	12.25	16.25	1.40	3.28	4.59
1909	17.40	11.86	15.23	1.47	5.78	6.20
1910	17.20	12.27	14.77	1.40	9.37	12.74
1911	15.70	11.79	14.29	1.33	3.87	12.08
1912	15.95	12.93	15.43	1.23	1.84	27.27
1913	17.13	14.61	16.49	1.17	2.36	27.76

[a] Dollars per short ton. *Source*: see Appendix.
[b] Column 1 divided by column 2.
[c] In 10,000 ton units. *Source*: see Appendix.

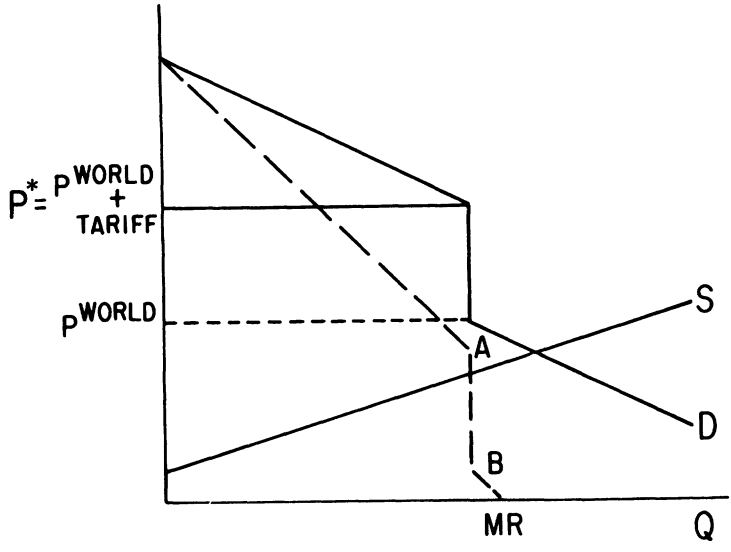

FIGURE II

when the tariff rate fell from $4 to $2.50 per ton, the percentage deviation of the domestic price from the U.K. price also fell. The behavior of prices during this period is consistent with a monopolist raising price through an inelastic part of the industry demand curve.

While the evidence is consistent with the monopoly model, it is also consistent with a competitive model with adverse supply (cost) shifts. An examination of the behavior of the export trade provides insight into whether the relative "supply" contraction in the U.S. was real or artificial. The Corporation, the courts, and even the Government placed considerable weight on the systematic development of foreign markets by the U.S. Steel subsidiary, United States Steel Exporting Company, formed in 1904. The Exporting Company regularly accounted for 80 to 90 per cent of all unmanufactured iron and steel products.[5] When the Government conceded the usefulness of the Exporting Company, Mr. Justice McKenna for the Supreme Court majority rhetorically asserted, "We do not see how the Steel Corporation can be such a beneficial instrumentality in the trade of the world and its beneficence be preserved, and yet be such an evil instrumentality in the trade of the United States that it must be destroyed."[6]

[5] United States Steel Corporation, Hearings before the House Comm. on Investigation of United States Steel Corporation, 62d Cong., 2d Sess., 227 (1911) [hereinafter cited as Stanley Comm. Hearings].

[6] United States v. U.S. Steel Corp., 251 U.S. 417, 453 (1920).

The success of U.S. Steel in the export trade is puzzling under competitive assumptions given the apparently large adverse shift in domestic supply. The period would hardly seem opportune for the aggressive development of foreign markets since pig iron prices in the United Kingdom underwent no comparable rise. The enigma is resolved by the admission that the industry was no longer competitive after the consolidation. We present evidence below that U.S. Steel and other major producers were systematically price discriminating when possible, charging lower prices in the competitive world market. Before presenting this evidence, we examine a foreign trade item, pig iron, where price discrimination was not possible. Since the bulk of exported pig iron went to Canada and duties were relatively low on that product, the foreign and domestic market were not separable. In this case, as we shall see, the normal economic predictions hold: the adverse price shift reduced exports and increased imports.

Table 4 indicates that prices of domestically produced pig iron and that produced in England converged over the period 1870-1898. Imports of pig iron (excluding a specialty item, ferro-alloys) dropped from a peak of 616,800 tons or about one sixth of domestic production in 1880 to 39,300 tons or about 5 per cent of domestic production by 1890 and continued to decline through the 1890's. Since domestic markets were insulated from foreign competition by a substantial specific duty which declined over the period but was still $4 a ton in the late 1890's, pig iron exports remained negligible throughout most of the 1890's, even though imports had substantially stopped. By 1897, however, the domestic price of pig iron had fallen to within $0.30 of the United Kingdom price and exports climbed to 169,900 tons. To the extent the steel industry did establish itself in foreign markets, the trend had begun before any of the final consolidation efforts.

The sharp rise in domestic pig iron prices took some time to register on foreign trade flows, in part because of the prosperity of foreign markets forcing up the U.K. price of pig iron. By 1902, however, foreign prices had again declined and imports rose to levels comparable to that of 1880 or about 500,000 tons while exports plummeted to 27,500 tons or one tenth the level of 1899. Ignoring the recession years of 1904 and 1908, it was not until the period just prior to World War I that the export trade balance for pig iron was as favorable to the United States as it was in the 1897-1899 period.

To develop a more precise estimate of the value of the United States Steel Exporting Company, we develop below a simple export volume market which is estimated using data from the period 1901-1913. This export model is then used to make predictions about export volume in the years preceding the merger. If the consolidation in fact greatly assisted export activity, this predicted volume should be systematically higher than actual volume during this earlier period.

Since American exports of pig iron and foreign imports were relatively small compared to their respective markets, we assume that both domestic and foreign prices are not measurably influenced by the volume of pig iron exports. Therefore under the simplest sort of proposition, exports should be a function of the difference of domestic and foreign prices. This price differential lagged one year was also included since foreign transactions, in particular, are likely to be concluded only with some lag. Using annual data for the period 1901-1913, the following export equation was estimated:

$$E_t = \underset{(4.58)}{27.95} - \underset{(2.16)}{1.938}(P - P^{UK})_t - \underset{(1.51)}{1.382}(P - P^{UK})_{t-1} \qquad (1)$$

$$R^2 = 0.50$$
$$D.W. = 1.15$$

where

t-values are in parentheses

and

$E \equiv$ U.S. pig iron exports in 10,000 ton units,
$P \equiv$ U.S. price in dollars.
$P^{UK} \equiv$ United Kingdom price (at Cleveland) in dollars.

Using this estimated relationship, pig iron exports were predicted for the period 1896-1900. These predictions can be compared with actual export

TABLE 5
ACTUAL AND PREDICTED PIG IRON EXPORTS, 1896-1900[a]

Year	Predicted Exports	Actual Exports	U.S. Steel Effect
1896	16.51	2.99	+13.52
1897	23.27	16.99	+ 6.28
1898	26.83	23.69	+ 3.14
1899	15.62	29.96	−14.34
1900	13.88	16.07	− 2.19

[a] Exports in units of 10,000 tons. Predicted values from Equation (1). Data sources in Appendix.

volume in Table 5. Clearly there is no particular evidence that U.S. Steel radically altered the export mechanism in this commodity. While the U.S. Steel model does forecast exports above actual in the first years of the five year period, the reverse is true in the period just prior to the merger.

The Pricing of Steel Rails. The principal steel export commodity, however, was not pig iron but steel rails. Rails were subject to price increases over the period comparable to pig iron. Between November, 1898 and December, 1899, rail prices rose from $17 to $35 a ton and remained at $28 over most of the following period.[7] Rail exports hardly responded to that dra-

[7] American Iron and Steel Institute [Association], Statistical Report, 1899, at 39.

matic price fluctuation. Steel rail exports did fall from 293,592 tons to 271,272 tons between 1898 and 1899 but then recovered at 356,245 tons by 1900 and averaged 300,000 tons annually over the next decade.[8]

The maintenance of export demand with a sharp rise in domestic prices would seem very good circumstantial evidence of price discrimination. It would seem unlikely that foreign customers were paying domestic prices plus freight or sales would have surely suffered. We have no need for such evidence, however, as the steel companies involved freely admitted that price discrimination was standard policy. Charles Schwab testified on steel rail pricing, "We usually charge abroad what we can get" which "as a rule" was less than in the home market.[9] Separation of markets was no problem in steel rails. Not only was the tariff per ton almost double the pig iron rate of $7.84, but the sales markets were generally quite distant. In 1907, not an unusual year, about one third of all rail exports went to Japan and other Asian destinations and almost another third went to South America.[10]

The documentation on this price discrimination policy, charging lower prices in the more competitive foreign markets, is rather complete. At the Ways and Means Committee Tariff Hearings, Judge Gary testified that the average domestic prices in 1905 and 1906 were $27.37 and $27.52 respectively while the average foreign rail prices were $20.98 and $24.08.[11] The price differential, therefore, was $6.39 in 1905 and $3.44 in 1906 or discounts of 23 per cent and 12.5 per cent off the domestic price. During 1907, a very good year domestically until the November panic, the foreign price was $0.22 above the domestic price, although in 1911, at the Stanley Committee Hearings Gary admitted this was the only year since U.S. Steel's formation that that had occurred.[12] Moreover, at that time he estimated export sales were netting $2.50 or about 9 per cent less than the domestic price of $28.[13] Under questioning Gary admitted this practice was not characteristic of steel producers abroad;

Mr. Gary. . . . I think, so far as foreign manufacturers are concerned, they get higher prices from the South American countries and the other countries that you speak of, at times, at least, than they do in their own country.

The Chairman . . . . The rail makers in America do not do that sort of thing. We

[8] 2 William T. Hogan, Economic History of the Iron and Steel Industry in the United States 794 (1971).

[9] Tariff Hearings before the House Ways & Means Comm., 60th Cong., 2d Sess, at 1667 (1909) [hereinafter cited as Tariff Hearings].

[10] William T. Hogan, *supra* note 8, at 795.

[11] Tariff Hearings, at 1729-30.

[12] Stanley Comm. Hearings, at 95-96.

[13] Stanley Comm. Hearings, at 94.

TABLE 6
DOMESTIC AND EXPORT PRICES PER TON OF STEEL RAILS, 1898-1907[a]

Year	Domestic Price	Export Price	Export Discount
1898	$19.44	$17.61	1.83
1899	22.42	18.64	3.78
1900	29.84	26.06	3.78
1901	25.84	22.46	3.38
1902	27.72	22.17	5.55
1903	27.92	—	—
1904	27.44	17.98	9.46
1905	27.66	20.79	6.87
1906	27.93	23.42	4.51
1907	28.08	27.52	0.56
Average	27.13	21.43	5.70

Source: Tariff Hearings before the House Ways & Means Comm., 60th Cong., 2d Sess., Schedule C, at 1607 (1909).
[a] Figures are for Maryland Steel Company, a subsidiary of Pennsylvania Steel Company.

never treat foreign countries that way, and sell them for more than we sell at home.
Mr. Gary. I would not like to characterize it in that way, Mr. Chairman.[14]

The most extensive information on price discrimination came from E. C. Felton, president of Pennsylvania Steel Company, a subsidiary of the Pennsylvania Railroad and a major rail producer. Pennsylvania Steel was ultimately absorbed by Bethlehem Steel. At the tariff hearings, Felton provided net domestic and export prices for steel rails over a ten year period, 1898-1907 as well as the averages over the entire period. These net prices appear in Table 6. Over the decade about 25 per cent of steel volume for the company was from exports. The average difference over the period was almost $6 per ton and rose as high as $9.46 per ton in the depression year of 1904. It is interesting to note that the price discrimination preceded the formation of U.S. Steel, suggesting the ad hoc rail pools of that period were not completely ineffective. The price discrimination in the export trade provides perhaps the firmest single piece of evidence that the industry was not competitively structured. It is ironic, then, that the courts and even the Government should choose the development of the export trade as one of the Steel Corporation's main virtues.

The evidence generated by our discussion of the pig iron market and the foreign trade statistics, while valuable in determining the effect of the merger on competition, gives little insight into the form and substance of the non-competitive market form created. This deeper consideration is the subject of the next section.

[14] Stanley Comm. Hearings, at 95.

III. The Supply of Iron Ore

An understanding of the market organization in the steel industry and, in particular, its apparently durable non-competitive behavior requires examination of the control of resources.

The dramatic increase in iron and steel product prices and the enormous profits evidently captured by U.S. Steel in the process, would lead to massive entry in the standard market model. Why this did not occur is partly revealed in Charles Schwab's explanation of this apparent contradiction of claimed economies and higher prices before the Stanley Committee. Schwab explained, ". . . while we [the steel companies] have effected economies in certain directions by organizing, the costs in other directions have very much increased. . . ."[15] The nature of these cost increases can be gleaned from Schwab's more detailed testimony at tariff hearings in 1908 (which ultimately resulted in the Payne-Aldrich tariff). At that time he was forced to explain a letter he wrote in 1899 to H. C. Frick in which he asserted *steel rails* could be produced by Carnegie Steel for $12 a ton with good prospects for further cost reductions. He explained the failure of his expectations by breaking down production costs of pig iron in 1899 and 1908. These are presented in Table 7.

A comparison of the costs indicate that the major component of increase is in iron ore, the result of both higher prices per ton and lower iron content of the ore. The four dollar plus increase in ore costs accounts rather neatly for the four dollar plus increase in total direct costs. The largest single rise is in royalties on (or purchase of) mining rights from ten cents to one dollar. This alone accounts for almost half the rise, ignoring the fact that ore quality was degraded in iron content by some 20 per cent as well. Of some interest is the high level of transportation charges, close to 50 per cent of direct costs in these estimates. Such costs are, in fact, accounting charges in the main to U.S. Steel, since it owned its own transportation system. The testimony of Judge Gary largely confirmed Schwab's estimates for 1908 except for a higher charge for coke ($4.15 per ton pig iron versus $2.62 by Schwab's estimates).[16] To the extent the price rise from $10.33 per ton of pig iron in 1898 to $17.10 in 1908 can be "accounted for" by increased costs, one must conclude that the price increases were principally due to increases in delivered iron ore and coke prices. Aggressive purchase of ore deposits by U.S. Steel with a corresponding rise in market prices for ore sharply reduced the profitability of entry.

It should be pointed out that the sharp rise in iron ore prices cannot be explained by U.S. Steel's dominant position in the final product market. In

[15] Stanley Comm. Hearings, at 1332.

[16] Tariff Hearings, at 1680-84.

TABLE 7
PIG IRON PRODUCTION COSTS, 1899 AND 1908

	1899		1908		
Iron Ore	58% Iron		49% Iron		
Per Ton Ore					
Ore Mining Rights	.10-.15		1.00		
Mining (Surface)	.15-.25		.50		
Transport-to-Lake	.60-.70		.85		
" on-Lake	.70		.70		
" to-Pgh.	.70		1.00		
	2.40		4.05		
Ore Cost per Ton Pig	4.31		8.26		
Waste	.19		.50		
Total Ore Costs		4.50			8.76
Cost per Ton of Coke	1.75		2.35		
Manufacture	1.00			1.50	
Transport	.75			.85	
Coke Cost per Ton pig		1.75			2.62
Limestone per Ton pig		.35			.75
Mining	.25			.15	
Transport	.10			.60	
Other		1.65			1.30
Total Direct Production Cost		8.25			12.43

Source: Testimony of Charles Schwab, Tariff Hearings before the House Ways & Means Comm., 60th Cong., 2d Sess., Schedule C, at 1630-39 (1909).

fact, if U.S. Steel did manage to achieve a monopolistic restriction on iron and steel products and the ore industry itself were competitive, one would expect iron ore prices to be lower than with a competitive product market. To the extent U.S. Steel achieved monopsony power, the factor prices would be further reduced (or grow less rapidly). If iron ore prices were artificially high, U.S. Steel must have acquired control of iron ore supplies as well as a product market position. Below we attempt to determine the degree of iron ore control that U.S. Steel achieved.

A look at major developments in the iron ore industry suggests that Schwab, then president of Carnegie Steel, could be forgiven his optimism of an extended period of low raw material prices when he wrote in 1898. The discovery of the Mesabi range in Minnesota in 1890 resulted in a tremendous expansion of known high quality ore deposits. This one source was to provide more than one-half the ore needs of U.S. industry in the first 60 years of the present century. The completion of the Soo Canal and other necessary links in the transportation delivery system as well as technological changes in blast furnaces to handle the soil-like composition of the ore during the

1890's would certainly appear to promise dramatic expansion in the iron ore supply function. Shipments of ore from Minnesota in fact rose from 864,508 tons in 1889 to 15,137,650 tons in 1902 or about one-half of total U.S. ore production. During the first decade, the Pennsylvania Steel Company, later absorbed by Bethlehem, began development of what was claimed to be an equally rich field in Cuba. Cuban imports of ore reached a peak, however, in 1913 and never fulfilled that promise.

At the same time as known ore deposits were sharply rising, technological developments were greatly expanding the amount of usable ore. Open hearth methods of making steel, capable of producing steel considerably more fracture-resistant than the prevailing Bessemer process with no appreciable increase in cost, rapidly began to supplant the Bessemer process. The production of Bessemer steel requires the use of iron ore of low phosphorus content, while open hearth furnaces with alkaline wall lining could handle ores over a much broader range of phosphorus content. These industry trends do not prepare one for the rapid rise in iron ore prices that occurred over the period in question. Ore prices at the mine rose from about one dollar per ton in 1897-1898 to an average of over two dollars a ton during the 1900-1910 period. The price trends in ore and coke are presented in Table 8.

Long term control of ore prices requires control of favorable ore deposits. Estimation of ownership of ore deposits rather than ore production is, however, an uncertain task at best. The element iron in various forms is a substantial portion of the earth's crust and no individual or firm is likely to own a substantial share of it. Only a minor fraction of that iron is economically useful, however, and the measurement of iron deposits must consider the iron content of the ore, the nature of the material combined with it, proximity to major markets, etc. Even the notion of commercially exploitable ore is a slippery term; if resource supply is restricted with a corresponding rise in price, the amount of commercially exploitable ore will rise. U.S. Steel's escape from dissolution may be due in no small part to the elusive nature of the iron ore stocks.

Given these uncertainties, it might be useful to consider first the opinions of major figures in the consolidation on the subject. The candor of the remarks suggests a rather blithe disregard for the Sherman Act. Charles Schwab in an address to the Banker's Club of Chicago, December 21, 1901, had the following to say about ore supplies:

> The steel industry to date has drawn its ores chiefly from what is known as the Lake Superior district in the Northwest. In fact, I believe I may safely say that from 80 to 90 percent of all steel produced in the United States is made from ores in this district. It is the standard ore. . . . Geologists tell us that the possibility of future discoveries or new ranges is rather remote. The constituent companies of the United

TABLE 8
IRON ORE AND COKE PRICES, NOMINAL AND DEFLATED, 1880-1913

Year	(1) Iron Ore Price[a]	(2) Iron Ore Price Deflated[b]	(3) Coke Price[c]	(4) Coke Price Deflated[d]
1880	3.25	2.76	1.79	1.52
1881	3.25	2.79	1.63	1.40
1882	3.60	3.01	1.47	1.23
1883	2.75	2.35	1.14	.98
1884	2.75	2.51	1.13	1.03
1885	2.50	2.44	1.22	1.19
1886	2.80	2.76	1.36	1.34
1887	3.00	2.94	1.79	1.76
1888	2.50	2.41	1.19	1.15
1889	2.30	2.22	1.34	1.29
1890	2.50	2.46	1.94	1.91
1891	2.04	2.02	1.87	1.85
1892	2.04	2.16	1.83	1.94
1893	1.66	1.72	1.49	1.54
1894	1.14	1.32	1.00	1.15
1895	1.14	1.29	1.23	1.39
1896	1.42	1.69	1.90	2.26
1897	1.08	1.28	1.65	1.96
1898	1.14	1.30	1.55	1.77
1899	1.42	1.50	2.00	2.12
1900	2.42	2.39	2.70	2.66
1901	1.71	1.71	1.95	1.95
1902	1.84	1.73	2.37	2.23
1903	1.89	1.75	3.00	2.78
1904	1.56	1.44	1.75	1.62
1905	1.77	1.63	2.26	2.08
1906	2.11	1.89	2.75	2.46
1907	2.55	2.16	2.90	2.46
1908	2.27	2.00	1.80	1.58
1909	2.15	1.76	2.00	1.64
1910	2.47	1.94	2.10	1.65
1911	2.11	1.80	1.72	1.47
1912	1.88	1.50	1.92	1.54
1913	2.19	1.74	2.95	2.34

[a] Price per long ton. *Source*: Appendix.
[b] Column 1 divided by wholesale price index. *Source*: Appendix.
[c] Price per short ton. *Source*: Appendix.
[d] Column 4 divided by wholesale price index. *Source*: Appendix.

States Steel Corporation own, as nearly as we can estimate, from 75 to 80 per cent of all the known northwestern ores.[17]

In 1911, appearing before the Stanley Committee as president of Bethlehem Steel, Schwab made this illuminating reflection on the crucial role of ore ownership in the industry:

[17] Stanley Comm. Hearings, at 1282.

Mr. Schwab. I do not believe there will be any great development in iron and steel by new companies, but rather development by the companies now in the business.
The Chairman. Now, explain that to us.
Mr. Schwab. For the reason that the possibility of a new company getting a sufficiently large supply of raw materials would make it exceedingly difficult if not impossible.[18]

U.S. Steel's chairman of the board, Judge Gary, was no less optimistic and candid about U.S. Steel's ore position when he testified at the tariff hearings in 1908, as the following exchange suggests:

Mr. Gary. I think we have a commanding position in the [steel] trade. . . .
. . . .
Mr. Cockran. . . . Now, among the conditions that contribute to that situation, an important element is your ownership and control of the ore supply?
Mr. Gary. Yes, of course it is.
Mr. Cockran. You practically do control the ore supply of the country?
Mr. Gary. No; not now; not for the immediate future.
Mr. Cockran. Well, the ultimate supply?
Mr. Gary. Yes; I think so—that is, pretty nearly. It is not absolute control.[19]

Judge Gary three years later before the Stanley Committee, had second thoughts about his estimates and felt forced to admit a U.S. geological survey, which put its share at only 50 per cent of commercially usable ore deposits, was persuasive.

This perceived control of iron ore deposits did not accidentally fall upon the Steel Corporation. In the initial consolidation the ore properties of the major integrated concerns, Carnegie and Federal, were supplemented by Rockefeller holdings (Lake Superior Consolidated Iron Mines), among others. U.S. Steel estimated its initial ore holdings at 700 million tons or forty-four times its 1902 production rate. The firm continued aggressively to seek further ore holdings even though rather well endowed from the start.

In the first three years, U.S. Steel acquired two major integrated firms well endowed with raw material properties and mining rights. In December, 1902, U.S. Steel purchased the Union Steel Company which itself the month before had acquired the Sharon Steel Company. Together these firms had steel capacity somewhat less than 10 per cent of U.S. Steel's with roughly comparable resource rights.[20] In May, 1904, U.S. Steel purchased Clairton Steel Company and acquired thereby rights to some 7.5 million tons of Mesabi ore as well as undisclosed amounts of valuable Michigan ore land.[21]

[18] Stanley Comm. Hearings, at 1291.
[19] Tariff Hearings, at 1751-52.
[20] U.S. Comm'ner of Corporations, *supra* note 2, pt. 1, at 254.
[21] *Id.* at 255.

Whether these purchases were meant to firm up short run profits in the final product or to capture ore rights or, for that matter, simply to take advantage of undervalued property is unclear. Perhaps more important, during the same period, U.S. Steel leased from time to time an additional 200 million tons of ore, an amount sufficient to tide them over their first decade of operation.

U.S. Steel apparently still felt inadequately endowed with ore rights as the activities of 1907 saw it virtually triple its initial holdings. In January, 1907, the Corporation acquired a long term lease over a substantial portion of the ore holdings of the Great Northern Railroad. Known as the Hill Lease after J. J. Hill who controlled the Great Northern, the lease was conservatively estimated to cover 400 to 500 million tons of ore of a grade somewhat inferior to the original U.S. Steel properties. The terms were stiff, including transportation only over the Great Northern System, minimum tonnage requirements, an escalating price structure of 3.4 per cent a year, and no cancellation by U.S. Steel before 1915 and without two years' notice. The implicit royalty on 59 per cent ore was $0.85 per ton or almost the full mine price ten years before. As a competitive proposition at the initially high level and with the built in escalation, the venture would appear incredibly speculative. As an attempt to foreclose the last major holding on the Mesabi not owned by a steel firm, it may have made very good business sense.

In late 1907, the Steel Corporation acquired another 700 million tons of ore in the only other major field close enough to markets to raise the possibility of a major entry. Following the panic of 1907, U.S. Steel announced the purchase of Tennessee Coal, Iron, and Railroad Company. An integrated Alabama producer, Tennessee Coal and Iron's production of most major iron and steel categories was generally less than 5 per cent of total U.S. production.[22] It's holdings of both coke and iron ore properties, however, were enormous. U.S. Steel estimated its ore holdings at about 400 million tons proven plus 300 million probable.[23] Although tremendous in volume, the ore was of much lower grade than that on the Mesabi and much was not generally economic to produce and ship at prevailing prices.

The size of the purchase was subordinated in popular discussion by the byzantine nature of the purchase. Although the circumstances remain unclear in some essential ways, the undisputed fact is that one Grant B. Schley, a partner of a major brokerage firm, had used large amounts of Tennessee stock as collateral for loans, the proceeds of which he then lent to his own customers. During the panic, the banks demanded substitution of more secure assets and through the services of U.S. Steel director J. P. Morgan, Schley and his syndicate exchanged the stock for U.S. Steel bonds. Among

[22] *Id.* at 256.

[23] *Id.* at 257.

other claims made by U.S. Steel critics was the charge that J. P. Morgan's banks initiated the demand for substitution.

Judge Elbert Gary, U.S. Steel Board Chairman, described the purchase as an exercise in nobility during the Stanley Committee Hearings. At the insistence of J. P. Morgan, U.S. Steel had agreed to save the U.S. economy from the consequences of the collapse of a major brokerage firm.[24] Given the implied sacrifice in this act, it must have chagrined Gary somewhat that Schley rejected Gary's offer of $90 (par value bonds) per share. Apparently the chagrin was not sufficient to dissuade Gary from raising his bid to a successful $100. At that price he was allowed to save the country. The manner of the purchase is irrelevant to the question of market power, of course; these happenings affect the sharing of any expected monopoly rent. Gary was sufficently sensitive to antitrust considerations that he did ask for and receive the blessing of President Theodore Roosevelt. Roosevelt, concerned solely with the Panic, gave that blessing although he later could not remember the name of the firm acquired nor the brokerage firm "rescued."

What then was the iron ore position of U.S. Steel at the time of the inception of the law suit in 1911? The Commissioner of Corporations undertook its own investigation of the U.S. Steel merger at the request of President Roosevelt and concluded that U.S. Steel holdings were indeed as Schwab had estimated, about 75 per cent of all commercially exploitable deposits in the Lake Superior iron district (principally Minnesota and Michigan). Their estimates were, in part, based on a detailed tax schedule prepared by the Minnesota Tax Commission in 1907. At that time, U.S. Steel was estimated to have about 913,000,000 tons of ore deposits or 76 per cent of the total for the state. This did not include mining rights owned by the Great Northern Railroad which were put under long term lease to U.S. Steel in that year. This lease gave U.S. Steel control of over 90 per cent of Minnesota ore holdings according to the Bureau of Corporations.[25]

Given the hostility of the Commissioner's report to U.S. Steel, this estimate must be considered an upper limit to its control of the Mesabi and related ranges. Another consideration, however, makes U.S. Steel's control of the Mesabi Range almost total: transportation facilities. The original consolidation provided U.S. Steel with two of the three existing railroads in the Mesabi Range, the Duluth and Iron Range Railroad and the Duluth, Mesabi, and Northern Railway. The third line was operated by a subsidiary of J. J. Hill's Northern Pacific. As the Commissioner of Corporations reported:

[24] *Id.* at 125-35.

[25] *Id.* at 381.

The ore rates on these railroads are about 1 cent per ton mile. Their operating expenses are very low. That of the Duluth, Mesabi and Northern in 1910 being below 30% of gross earnings as against an average of 66% for all the railroads of the country. The net earnings of these railroads, which are chiefly from the ore traffic are phenomenal. This has the practical effect of reducing the Steel Corporation's net cost of ore to itself at upper Lake ports and, on the other hand, of increasing that cost to such of its competitors as are dependent upon the Corporations' railroads for transportation.[26]

Although it is not clear how this position reduces the net cost of its own ore deliveries, unless net cost means cost less profits on shipments by others, the implications for independent competition from other ore producers in the Mesabi seems all too clear. The richness of the discovery in this one local area very likely was a major contributor to the monopolization of this industry.

The provision of transportation from Lake Erie to Pittsburgh, which affected all Lake Superior ore and not only Mesabi ore, was also evidently less than competitive. U.S. Steel's subsidiary over this route, the Bessemer and Lake Erie, did face potential competition from the Pennsylvania and New York Central railroads, among others. Nonetheless the actual degree of competition must have been very slight as operating costs were 29 per cent of revenue for all traffic over this route while the average percentage of direct costs to revenue was 70 per cent for the major railroads.[27] Ore rates per mile for the comparable Cleveland to Wheeling route were one half the Pittsburgh route.

Other evidence confirms estimates of U.S. Steel's substantial holdings of ore and interpretations of its pivotal role in the industry structure. As U.S. Steel's share of semi-finished steel products dropped by roughly 40 per cent over the period 1902-1930, its share of ore production showed no trend at all. Whether measured as a share of domestic production or as a share of domestic use (domestic production plus imports), the competitive factors which were eroding U.S. Steel's product market share were not capable of similarly reducing its role in ore production (see Table 9). A Federal Trade Commission survey of 1948 ore conditions uncovered the fact that U.S. Steel was the only integrated steel firm to be a net seller of ore.[28] All the others depended to some degree on open market purchases. Bethlehem, for example, purchased fully a third of its use from completely independent firms and had only partial control of much of the remainder.[29]

[26] *Id.* at 60.

[27] Stanley Comm. Hearings, at 2159.

[28] Federal Trade Commission, Report on the Control of Iron Ore (1952).

[29] *Id.* at 39.

TABLE 9
U.S. STEEL PRODUCTION OF IRON ORE AS A PERCENTAGE OF DOMESTIC PRODUCTION AND USE, 1902-1930

Year	Percentage of Domestic Production[a]	Percentage of Domestic Use[b]
1902	45.3	43.82
1903	44.0	42.78
1904	38.0	37.32
1905	43.4	42.65
1906	43.2	42.30
1907	46.4	45.33
1908	46.4	45.29
1909	45.8	44.35
1910	44.2	42.28
1911	45.4	43.56
1912	47.8	46.11
1913	46.4	44.44
1914	41.1	39.85
1915	42.5	41.50
1916	44.5	43.66
1917	42.2	41.70
1918	40.6	40.17
1919	41.8	41.34
1920	40.0	39.20
1921	56.5	55.86
1922	46.3	45.17
1923	44.8	42.98
1924	45.7	44.04
1925	45.3	43.68
1926	43.2	41.61
1927	41.4	39.78
1928	42.8	41.14
1929	41.8	40.17
1930	41.9	39.88

Source: Appendix. Ore Imports: American Iron and Steel Institute [Association], Statistical Report (1902-1930).

[a] $\frac{\text{U.S. Steel Ore Production}}{\text{U.S. Ore Production}} \times 100\%$.

[b] $\frac{\text{U.S. Steel Ore Production}}{\text{U.S. Ore Production plus Ore Imports}} \times 100\%$.

One indication of U.S. Steel's unique position in production costs and, one might suppose, in factor prices was its predominance in foreign trade. U.S. Steel was the only steel company capable of competing substantially in foreign markets, suggesting it had considerably lower real costs than other domestic firms. As Table 10 indicates, during its first decade of operation, 1902-1911, U.S. Steel's share of the export trade never fell below 75 per cent. Even in the depression years of 1904 and 1908, when rivals had substantial excess capacity, its share held firm at more than 80 per cent.

Turning briefly to the other major specialized raw material, coke, the Steel Corporation's control of coking coal was apparently much less than its control of iron ore. Since coal is relatively abundant and has a large number

TABLE 10
EXPORTS OF IRON AND STEEL PRODUCTS, 1902-1911

Year	Total Exports of Iron and Steel from the U.S. Gross tons	Total Exports of Iron and Steel by the U.S. Steel Corp. Gross tons	U.S. Steel Exports as a Percentage of Total U.S. Exports
1899	942,689		
1900	1,154,284		
1901	700,857		
1902	372,399	275,833	74.07
1903	326,590	350,824	107.42 [a]
1904	1,167,674	1,001,716	85.79
1905	1,010,255	928,899	91.95
1906	1,325,740	1,049,717	79.18
1907	1,301,979	985,041	75.66
1908	964,242	775,345	80.41
1909	1,239,709	985,474	79.49
1910	1,537,943	1,195,465	77.73
1911	2,187,725	1,708,487	78.09

Sources: U.S. Exports: American Iron and Steel Institute [Association], Statistical Report (1899-1911). U.S. Steel exports: Arundel Cotter, The Authentic History of the United States Steel Corporation 228 (1916).

[a] Discrepancy possibly due to January delivery of December sales.

of uses other than pig iron and steel production, the resource was much less vulnerable to market control. In 1909, for example, only 13.3 per cent of bituminous coal production went for coking.[30] Not all bituminous coal is suitable for coking, however, since impurities in the coal and coke, particularly sulfur, will reduce the quality of the pig iron.

U.S. Steel did hold large quantities of the very best coking coal land. An independent authority reported at the Stanley Committee Hearings that U.S. Steel owned 75 per cent of the coal lands in the Connellsville, Pennsylvania field, legendary for the quality of its coking coal as well as the thickness of its coal veins, ease of mining, and proximity to Pittsburgh.[31] These properties were principally the legacy of Carnegie and Frick. Shortly after the consolidation, the Corporation leased another tract of size comparable to its Connellsville holdings. As the Commissioner of Corporations reported,

> In December, 1901, it secured a lease of 50,000 acres of desirable coking-coal and fuel coal property in the Pocahontas coal region. The preliminary report of the Steel Corporation for that year stated that with this acquisition it was estimated that there was controlled by the subsidiary companies "a sufficient quantity of the best and cheapest coking coal to provide, on the basis of present consumption, for the necessities of all the furnaces of these companies during the next sixty years."[32]

[30] U.S. Bureau of the Census, 13th Census of the U.S., vol. 11 Mines and Quarries, 1909, at 194 (1913).

[31] Stanley Comm. Hearings, at 788.

[32] U.S. Comm'ner of Corporations, *supra* note 2, pt. 1, at 263.

TABLE 11

THE VALUE OF STOCKS ACQUIRED AND ISSUED BY U.S. STEEL IN 1901[a]

(1) Company Stocks Regularly Quoted	(2) Amount of Stock Acquired by U.S. Steel Corp. (Par Value)	(3) Average Market Price of Stock in 1899-1900 (% Par Value)	(4) Value at Average Price	(5) Value at Par of U.S. Steel Corp. Stocks Issued in Exchange
Federal Steel Co.				
Preferred	53,260,200	76.38	40,680,141	60,445,568
Common	46,483,700	50.04	23,260,443	49,969,978
American Steel and Wire Co.				
Preferred	39,999,000	89.41	35,763,106	46,998,237
Common	49,981,400	48.26	24,121,024	51,149,448
National Tube Co.				
Preferred	40,000,000	94.20	37,680,000	53,511,241
Common	40,000,000	48.72	19,488,000	49,921,750
National Steel Co.				
Preferred	26,996,000	91.16	24,609,554	33,740,250
Common	31,970,000	41.67	13,321,899	39,962,250
American Tin Plate Co.				
Preferred	18,325,000	84.77	15,534,103	28,505,250
Common	28,000,000	34.77	9,735,600	34,993,750
American Steel Hoop Co.				
Preferred	14,000,000	77.34	10,827,600	13,997,500
Common	19,000,000	32.11	6,100,900	18,995,000
American Bridge Co.[b]				
Preferred	31,357,600	93.10	29,193,926	34,482,800
Common	30,946,400	43.88	13,579,280	32,493,720
Shelby Steel Tube Co.[b]				
Preferred	4,776,100	56.48	2,697,541	1,791,038
Common	8,018,200	10.90	873,984	2,004,550

TABLE 11 (*Continued*)

(1) Company Stocks Regularly Quoted	(2) Amount of Stock Acquired by U.S. Steel Corp. (Par Value)	(3) Average Market Price of Stock in 1899-1900 (% Par Value)	(4) Value at Average Price	(5) Value at Par of U.S. Steel Corp. Stocks Issued in Exchange
Stocks not actively quoted:				
American Sheet Steel Co.				
Preferred	24,499,600	65.88[c]	16,140,336	24,497,700
Common	24,499,600	19.00[c]	4,654,924	24,498,800
Lake Superior Consolidated Iron Mines				
Preferred	29,413,905	75.00[d]	22,060,429	39,708,771
Common				39,708,771
Carnegie Co.				
Bonds	159,450,000	105.00	167,422,500	303,450,000
Preferred				98,277,120
Common	160,000,000	100.00[e]	160,000,000	90,279,040
Oliver Iron Mining Co.				
1/6th interest (Common)	200,000			
Pittsburgh Steamship Co.				
1/6th interest (Preferred)				9,250,000
" " (Common)	221,700		9,250,000[f]	9,250,000
Total	881,398,000[g]		686,995,000	1,191,882,532

Source: Columns (1)-(4) appear in U.S. Comm'ner of Corporations, Report on the Steel Industry pt. 1, at 170 (July 1, 1911); Column (5) appears *id.* tab. 4, at 113-14.

[a] Stocks issued to the syndicate in exchange for stocks and cash valued at $25,177,000 amounted to 130,000,605. Underlying bonds of constituent companies equaled $59,091,657 and mortgage and purchase money of constituents totaled $21,872,023. The grand total of securities issued was therefore $1,402,846,817.

[b] No quotation in 1899.

[c] Mean of highest and lowest prices in Pittsburgh in 1900, weekly quotations not being available.

[d] Asked price in 1900, does not include lower prices recorded in 1900.

[e] Only 13 shares known to have been traded.

[f] Not based on stock quotations but amount of U.S. Steel Corporation preferred stock issued thereof at par.

[g] Does not include $535,407 unacquired stock in constituent and subsidiary concerns.

Although the Corporation purchased and leased coking coal rights from time to time after that period, particularly in Illinois and Indiana to reduce coke transport costs to its new Gary works, we would conclude that the Commissioner of Corporations was correct when he asserted, "Indeed, in so far as the steel industry is of monopolistic character it is chiefly through its control of ore holdings and the transportation of ore."[33] This conclusion is supported in part by the comparison of market value of stock values of constituent firms before and after the consolidation. The estimates for these stock values made by the Commissioner of Corporations appears in Table 11. The value of Lake Superior Consolidated Iron Mines jumped from $22 million to almost $80 million with the consolidation. A one-sixth interest in the Oliver Iron Mining Co. and Pittsburgh Steamship Co. was valued at $18.5 million. The other five-sixths were owned by Carnegie Steel and presumably account for almost $100 million of the value of that corporation to U.S. Steel.

IV. Collusion in the Market for Iron and Steel Products

The U.S. Steel merger included a number of steel fabricators as well as the major semi-finished steel producers, indicating a substantial interest in their final product market position. The American Steel and Wire Company brought to the merger a market share in wire products of about 75 per cent. As Table 11 indicates a number of these firms increased sharply in value with the above consolidation. Market shares in a number of major product lines are presented in Table 7.

Stigler (1965) argues that U.S. Steel exploited this position by choosing a profit-maximizing price and output based on a residual demand curve derived by substracting the sales competitors wish to make at each price from the market demand curve. This "dominant firm" model with U.S. Steel in a passive market organization role explains rather neatly the secular decline in U.S. Steel's market share.

An examination of the historical evidence, however, suggests that the "dominant firm" hypothesis is incomplete in a number of critical respects, particularly in its depiction of U.S. Steel's passive relationship with the other major steel producers. The sharp, cyclical fluctuations in iron and steel demand made it important that U.S. Steel not bear the brunt of cyclical lows alone. In the contractions of 1904, 1908, and 1911, U.S. Steel's share of basic steel production was not seriously out of line with long term trends, and in the major contraction of 1921 when steel production dropped by 50 per cent, its share actually increased by ten percentage points (See Table 12). Given that prices were apparently quite stable for most steel products, the logic of

[33] *Id.* at 60.

TABLE 12
SHARES OF STEEL INGOT AND CASTING PRODUCTION:
U.S. STEEL, BETHLEHEM, AND COMBINED, 1902-1929

	Share of Output		
Year	U.S. Steel	Bethlehem Steel	Combined
1902	65.4	—	65.4
1903	63.0	—	63.0
1904	60.8	—	60.8
1905	60.5	0.5	61.0
1906	58.0	0.8	58.8
1907	57.5	0.7	58.2
1908	56.0	2.5	58.5
1909	55.8	2.1	57.9
1910	54.5	1.8	56.3
1911	54.0	2.5	56.5
1912	54.2	2.1	56.3
1913	53.3	2.4	55.7
1914	50.5	2.6	53.1
1915	51.0	2.3	53.3
1916	49.0	3.9	52.9
1917	45.1	5.1	50.2
1918	44.1	5.2	49.3
1919	49.6	4.8	54.4
1920	45.8	4.8	50.6
1921	55.4	3.5	58.9
1922	45.2	6.4	49.6
1923	45.2	10.6	55.8
1924	43.5	11.7	55.2
1925	41.7	11.8	52.5
1926	42.0	12.8	54.8
1927	41.2	12.5	53.7
1928	39.0	12.6	51.6
1929	38.9	13.0	51.9

Sources: Total steel ingot and casting production: U.S. Bureau of the Census, Historical Statistics of the U.S., Colonial Times to 1957 (1960). U.S. Steel production: U.S. Steel Corporation, Annual Report (1950); Bethlehem production: Bethlehem Steel Company, Annual Report (1950).

the passive dominant firm model would lead to predictions of dramatically lower shares for U.S. Steel in such circumstances.

Apparently U.S. Steel managed to coordinate an agreement, implicit or explicit, to restrict price cutting, a major cartel concern as Stigler has emphasized.[34] Since short run demand is price inelastic, price warfare would lead to a simple wealth transfer from the industry as a whole to consumers, so all firms had a stake in the maintenance of steel product prices. Although we argue above that U.S. Steel did establish partial control of critical resources, particularly iron ore, the leverage from "partial" control is obviously weakest in these periods of low demand. Apparently the major pres-

[34] George J. Stigler, A Theory of Oligopoly, 72 J. Pol. Econ. 44 (1964).

sure to forego secret price cutting was the risk of the collapse of the cartel to the disadvantage of all producers. The threat of such an enforcement mechanism drops systematically the smaller the firm, of course, since the major producers are hardly going to forego substantial monopoly rents simply because a small producer is caught price cutting. In that respect the industry might be more properly characterized as a "dominant cartel."

A cartel is feasible, of course, only if a few firms other than U.S. Steel were large relative to the remainder of the market. An examination of basic steel capacity figures in this period, presented in Table 13, reveals that a large part of the remaining steel production capacity was controlled by a small number of additional firms. The four largest firms after U.S. Steel controlled 17.39 per cent of the market, for a five firm concentration ratio of 71.91 per cent in 1903. The largest eight controlled 79.19 per cent and the largest twenty controlled 89.47 per cent of all steel capacity. Clearly other firms in the industry were sufficiently large to make collusive pricing feasible. The stress U.S. Steel placed on full information among members of the steel industry on others' prices, presumably to reduce secret price cutting, was quite apparent in testimony by major figures before Congress during the early post-merger years. Judge Gary explained the long maintained $28 a ton price of steel rails in the following manner. "The adherence to that price, in my judgment, is the result of knowledge and information on the part of all in regard to the business of each. In other words, publicity of each one's business."[35] The same emphasis on full information among competitors flavors the following remarks by Judge Gary,

> Now, I would think, if I should meet you, a competitor of mine, on the street, and ask you what prices you are charging and to what extent you are running your mills, and I should tell you what I was doing, both of us being perfectly frank and neighborly and then I should leave you and go to one of your customers and offer to sell him goods at a less price than you told me you were selling at, that would be most dishonorable conduct on my part, and that I would have a reason to expect, as honorable men, you and I having told one another what we were doing, that we would not go and do something to the contrary of that to the prejudice of either one, without telling him so frankly.[36]

The consequences of unordered markets are made clear by Gary as well. In his testimony, he points out the fruits of this cooperation among competitors,

> But we have, by this friendly intercourse, prevented demoralization—sudden, wild, extreme fluctuations—destructive competition that would drive large numbers of them entirely out of business, and that would be ruinous to the customers of the

[35] Tariff Hearings, at 1726.

[36] Stanley Comm. Hearings, at 266.

steel people who had large stocks of goods on hand from time to time and which would spread to other lines of industry.[37]

Gary minced few words on his idea of the value of price competition. His assessment of the policies of Andrew Carnegie is somewhat enlightening on this point,

> The general policy of Mr. Carnegie, no doubt, whatever may be shown in exceptions, if there were any, was to keep his mills busy, and if he could not keep them busy by selling at one price he sold at another price, and at times he sold at prices which were ruinous to his competitors, because down to about his cost was very much below the cost of others. In my opinion, that was a very bad policy.[38]

By this Gary meant that it was bad policy for the industry as a whole if not the Carnegie Works individually.

Judge Gary was further willing to admit the famous Gary dinners were, in part, meant to function as a device for holding together this matrix of open information and threats of "destructive competition." At the Stanley Committee hearings he pointedly remarked,

> These meetings were calculated to influence people to maintain their prices. There is no doubt of that but as I understand the vice of the law is in obligating people to maintain prices. . . . It was intended to influence people so far as we legitimately could to maintain fair prices, each one for himself using his best judgment, after full knowledge of the business of all.[39]

His candor in discussing the technique U.S. Steel used to control market prices was no doubt the result of his interpretation of the legality of this approach of implicit agreement under the Sherman Act. As Gary testified,

> . . .[B]ut I think that if two or three of us should come together and say, "We will tell you what we are doing all the time, we will not agree, but we will not change it, and if we change we will notify you. . . . We think it is for the best interests of all concerned, ourselves and our employees and customers, to maintain fair prices and to prevent resort to tricks in the trade calculated to unfairly and indecently get business away, which always results in destructive competition. . . ." I think that is all perfectly legitimate in view of the Sherman antitrust law.[40]

Judge Gary's assertions that U.S. Steel together with others could effectively maintain orderly markets was no idle boast. As proof we turn to the testimony of Schwab, president of one of U.S. Steel's main rivals. Schwab gave his explanation of why rail prices never fluctuated from their $28 level in the first years of U.S. Steel's existence:

[37] Stanley Comm. Hearings, at 265.
[38] Stanley Comm. Hearings, at 197.
[39] Stanley Comm. Hearings, at 279.
[40] Stanley Comm. Hearings, at 279.

TABLE 13
ANNUAL STEEL INGOT AND CASTING CAPACITY, 1904 AND 1908

Rank	Company	1904		1908	
		Capacity (1000's of Gross Tons)	Percentage of Total U.S. Capacity	Capacity (1000's of Gross Tons)	Percentage of Total U.S. Capacity
1	U.S. Steel Corp.	13,734.2	54.52	16,316.2	47.79
2	Pennsylvania Steel Co. of New Jersey	1,168.0	4.64	1,404.2	4.11
3	Jones & Laughlin Steel Co.	1,112.0	4.41	1,425.0	4.17
4	Lackawanna Steel Co.	1,095.0	4.35	1,345.0	3.94
5	Cambria Steel Co.	1,005.0	3.99	1,245.0	3.65
6	The Colorado Fuel and Iron Co.	800.0	3.18	1,000.0	2.93
7	Republic Iron and Steel Co.	535.0	2.12	500.0	1.46
8	International Harvester Co.	500.0	1.98	500.0	1.46
9	Tennessee Coal, Iron and Railroad Co.[b]	362.0	1.44	682.0	2.00
10	LaBelle Iron Works	300.0	1.19	390.0	1.14

TABLE 13 (*Continued*)

Rank	Company	1904 Capacity (1000's of Gross Tons)	1904 Percentage of Total U.S. Capacity	1908 Capacity (1000's of Gross Tons)	1908 Percentage of Total U.S. Capacity
11	Crucible Steel Co. of America	291.0	1.16	345.6	1.01
12	American Steel Foundaries	250.5	0.99	234.0	0.69
13	Lukens Iron and Steel Co.	250.0	0.99	300.0	0.88
14	Worth Brothers Co.	230.0	0.91	300.0	0.88
15	Bethlehem Steel Co.[a]	198.0	0.79	205.0	0.60
16	Wheeling Steel and Iron Co.	190.0	0.75	190.0	0.56
17	The Phoenix Iron Co.	150.0	0.60	200.0	0.59
18	Alan Wood Iron and Steel Co.	140.0	0.56	230.0	0.67
19	Inland Steel	125.0	0.50	100.0	0.29
20	Central Iron and Steel Co.	100.0	0.40	100.0	0.29
	Youngstown Sheet and Tube Co.			600.0	1.76
	Total U.S. Capacity	25,190.3		34,140.5	

Source: Directory of Iron and Steel Works of the United States (American Iron & Steel Ass'n, 1904 and 1908).

[a] In 1904 Bethlehem Steel was known under the name of The United States Shipbuilding Co.

[b] The U.S. Steel Corp. acquired the Tennessee Coal, Iron and Railroad Co. in 1907.

Mr. Hill. How does it come about that steel rails have for the last five years remained at $28 without any collusion with anybody else.

Mr. Schwab. I will tell you. Take the present times as the best illustration. There is not a manufacturer of steel rails in the United States today—I, for example, as a rail manufacturer, feel that if I were to vary that price of $28 for rails, which seems to have been recognized by all rail manufacturers as a fair price, and giving a fair profit—if I were to vary that 10 cents a ton today I would precipitate a steel war, to use such a word or expression that would result in running my works without any profits. Everybody, by tacit and mutual understanding feel the same way about that. I would not vary the price of my rails under any circumstances, not if I knew it was to get 100,000 tons in orders, for the reason that my competitor next door would put the price down to $1 a ton, or half a dollar a ton even, and we would be running without any profit at all.[41]

Steel rails were more open to this form of cooperation than other commodities because of the fewness of buyers as well as sellers. Furthermore, there were intimate management and ownership links between the major steel and rail firms, making secret price cutting unlikely. Moreover, both were major buyers of the others products. Railroads apparently made little effort to press for lower prices as the following exchange between Representative Clark and Schwab demonstrates:

Mr. Clark. You say that the railroads do not object to your charging this high price—I will call it that for my own satisfaction—for steel rails?

Mr. Schwab. No.

Mr. Clark. They just simply load the cost of the steel rails off onto their patrons, do they not?

Mr. Schwab. Quite true.[42]

Beyond the rather closely entwined relationship of the two industries, other factors suggest the railroads might have had little desire to reduce rail prices. In a flurry of publicity and under public and ICC pressures the railroads had stopped rebating to the large steel firms. At the same time, however, the Pennsylvania Railroad began distributing sales orders on the basis of freight furnished by each mill which obviously would serve the same function if profit margins on rails were excessively high and the allocation not too mechanical.

This community of interest between railroads and steel producers was a long standing relationship. As Temin describes the debate over the 1870 tariff on steel rails, "The peculiarity of the tariff is that it was supported, not opposed, by the purchasers of steel rails. The railroads were actually in favor of increasing the duty on rails, and they demonstrated this by a letter

[41] Tariff Hearings, at 1650-1951.

[42] Tariff Hearings, at 1669.

to Congress asking for a higher duty."[43] The stress on open pricing (with the threat of cartel collapse and subsequent price collapse) apparently met with success in other product lines as well. The industry was to cling for some fifty years to the Pittsburgh Plus pricing system innovated by U.S. Steel to assist in ordering their markets.

The threat of new entrants into the industry eroding the cartel's market share was reduced on the one hand by the systematic acquisition of exploitable iron ore reserves by U.S. Steel and on the other hand by the acquisition of these new entrants by existing members of the cartel. The consolidations of smaller firms, particularly during the 1920's, sharply reduced the potential competition in the industry for the same reason. Bethlehem's rapid growth during the 1920's (Table 12) was largely the result of its aggressive purchase of rivals. Bethlehem's December, 1921 steel ingot capacity of 6.04 per cent of total U.S. capacity was rapidly augmented in 1922 with the acquisition of Midvale Steel and Ordinance (5.74 per cent) and Lackawanna Steel (3.65 per cent).[44] During the same year Youngstown Sheet and Tube (2.97 per cent) acquired Steel and Tube Co. (1.78 per cent) and Brier Hill Steel Co. (1.19 per cent). Only litigation which delayed a proposed 1928 merger of Bethlehem and Youngstown into the depression kept Bethlehem and Youngstown independent.

One might speculate these mergers played an important role in controlling price cutting and capacity expansion. While U.S. Steel's share of basic steel production was declining between 1902 and 1929 from 65.4 per cent to 38.9 per cent, Bethlehem's share rose from zero to 13 per cent so the two firms' share remained over 50 per cent (See Table 12).

Two major studies have documented the importance of acquisitions in the growth of the major steel firms. Schroeder has calculated that 28 per cent of the growth of gross fixed assets of major steel companies from their formation to 1950 was directly attributable to acquisitions.[45] The three firms with the largest dollar value of acquisitions increased their additions to gross fixed assets by 28.7 per cent (U.S. Steel), 28.6 per cent (Bethlehem Steel), and 50.0 per cent (Republic Steel). Weston has calculated that 40 per cent of additions to steel ingot capacity by major firms through 1948 is attributable to acquisition.[46] In comparison, the role of acquisition in addition to assets in the motor vehicle industry was 16.5 per cent, in cigarette manufacturing 7 per cent, and in petroleum refining 20.9 per cent. Although these measures may underestimate the importance of acquisition, since acquisition of market

[43] Peter Temin, Iron and Steel in Nineteenth-Century America 173-74 (1964).

[44] 3 William T. Hogan, *supra* note 8, at 902.

[45] Gertrude G. Schroeder, The Growth of Major Steel Companies, 1900-1950, at 93 (Johns Hopkins Univ. Studies in Hist. & Pol. Sci., ser. 70, no. 2, 1952).

[46] J. Fred Weston, The Role of Mergers' in the Growth of Large Firms, 23 (1953).

share (with the implicit assumption each unit would grow internally over time) seems more appropriate, the figures are already sufficiently high to indicate the importance of acquisition in the industry, even after the 1901 merger.

The irony of the development of U.S. Steel's control of steel product pricing is that the technological trends of steel production had only recently made wholesale competition possible.[47] The Bessemer process which allowed inexpensive steel production for the first time was a large scale process and the number of possible entrants in the early years was limited. Moreover, in 1877 the eleven existing steel firms agreed to restrict their patents to each other and formed a company to hold these patents. The patents included one on the basic process (the result of an accommodation among two major competing claimants) and others on a string of patents improving this process by Alexander L. Holley, who dominated technical developments in the first years. These firms attempted at regular intervals to form pricing pools, particularly in steel rails, but the agreements just as regularly collapsed.

The end of any possibility of long term agreement and control seemed likely with the introduction of the open hearth method. The open hearth process could be carried out on a much smaller scale than the Bessemer process and no controlling set of patents were owned by one group. One might conjecture that collusion of the major competitors alone could have only slowed this trend toward competition were it not for U.S. Steel's aggressive iron ore acquisition policy.

A Digression. A dramatic example of the behavior and rewards to the smaller, uncontrolled firms is the history of National Steel during the 1930's. Accounting for about 2.5 per cent of ingot capacity in 1930, National's ingot capacity expansion was one-fourth of the industry total expansion during the 1930's.[48] It was the only major steel firm not to suffer an accounting loss during that period. The difference in percentage utilization of capacity between National (or more precisely its steel production subsidiary, Weirton Steel) and the industry as a whole was striking. As Table 14 indicates, in many years Weirton's utilization rate was almost double the industry average. As a company such as National prospered and grew, its size automatically made such "irresponsible" action as price cutting more of a threat to the stability of the cartel and therefore its own prosperity.

V. Judicial Assessment of the Evidence

The evidence accumulated here suggests that the U.S. Steel consolidation was an enormously profitable merger for monopoly control. The restructur-

[47] See Peter Temin, *supra* note 43, at ch. 8.

[48] 3 William T. Hogan, *supra* note 8, at 1246.

TABLE 14
COMPARATIVE RATES OF CAPACITY UTILIZATION,
WEIRTON STEEL AND INDUSTRY AS A WHOLE,
1930-1937

Year	Weirton Steel (%)	Whole Industry (%)
1930	72.9	62.5
1931	65.3	37.6
1932	38.9	19.5
1933	57.1	33.1
1934	66.2	37.4
1935	96.9	48.7
1936	96.1	68.4
1937	96.3	72.5

Source: 3 William T. Hogan, Economic History of the Iron and Steel Industry in the United States 1245 (1971).

ing of the industry into a less competitive system apparently created an instrument for profit roughly double its value in a competitive environment. Given the absolute size of the industry and its pivotal position in the manufacturing sector, one might well speculate that this was the most socially damaging of all mergers in U.S. history. The failure of the Sherman Act to stop this activity is clearly disquieting. In this section we assess the reasoning of the Supreme Court majority in rejecting the Government's case for dissolution (by a four to three margin).

Certainly the explanation lies, in part, in the weakness of the Government's presentation of the evidence. Mr. Justice McKenna for the majority quotes and later affirms the district court's finding of facts as follows:

> [The Corporation] did not secure freight rebates; it did not increase its profits by reducing the wages of its employees—whatever it did was not at the expense of labor; it did not increase its profits by lowering the quality of its products, nor create an artificial scarcity of them; it did not oppress or coerce its competitors—its competition, though vigorous was fair; it did not undersell its competitors in some localities by reducing its price there below those maintained elsewhere, or require its customers to enter into contracts limiting their purchases or restricting them in resale prices; it did not obtain customers by secret rebates or departures from its published prices; there was no evidence that it attempted to crush its competitors or drive them out of the market, nor did it take customers from its competitors by unfair means, and in its competition it seemed to make no difference between large and small competitors.[49]

In part, the Court's decision is also no doubt due to the Government's difficulty in objectively measuring iron ore control. The possibility of long term market control would seem to lie with control of this resource, yet conclusive evidence of iron ore deposit shares can fluctuate dramatically

[49] United States v. U.S. Steel Corp., 251 U.S. 417, 441 (1920).

with the estimator's perception of economically useful ore supplies. Much of the Government's case, therefore, had to rest on evidence from the product market where, scale economy claims aside, U.S. Steel had no apparent advantage in production over its competitors. The evidence in this paper clearly indicates the principal monopoly distortion was not at this level, so startling evidence of the exercise of monopoly power was more difficult to uncover.

The weaknesses in the Government's case, however, can be overemphasized. The Court majority was certainly susceptible to the Steel Corporation's arguments. The basic logic of the Court's decision was that a petition filed for dissolution under Section 4 of the Sherman Act requires a continuing offense or threat of offense. The Court cited the evidence of pooling agreements and the price fixing flavor of the Gary dinners (which were found to be violations of the Sherman Act) as evidence that the Steel Corporation lacked power to control prices. This deduction is clearly strained, requiring that partial or incomplete market control is not possible.

But then the Court made the judgment that the Gary dinners were ended, as they were in 1911 some months before the suit, because of the futility of trying to fix price in this industry. How the Court could know such a fact is hard to determine. Certainly the Commissioner of Corporations' report to the President that U.S. Steel had obtained monopoly control through ownership of ore (which came out earlier in 1911) would make anyone more circumspect. A simultaneous, lengthy and frequently hostile investigation by a special House of Representatives' Committee could hardly have been ignored, nor, one might suspect, was news of the antitrust suit itself likely to have been a complete surprise to the Steel Corporation.

That the Steel Corporation was not oblivious to appearances was made clear when it announced in 1911 that it would terminate its option on the Hill lease at the earliest time possible (1915) even though contractually it need not have made that decision for two more years. The Federal Trade Commission attributed much of the entry and expansion of rivals of U.S. Steel to the deposits thrown on the market by U.S. Steel's termination of the Hill lease.[50] National Steel, for example, became self-sufficient in ore supplies at the time of its formation in 1929 by absorbing the M.A. Hanna Company, an independent ore merchant which had bought heavily after U.S. Steel cancelled its lease on the Hill deposits. This result suggests the antitrust laws had an effect before the courts even ruled.

With the twin decisions that the Gary dinners were an admission of incomplete market control and that the termination of those dinners constituted proof of the impossibility of collusion, the way was clear to argue that no continuing violation was occurring and therefore that dissolution was not

[50] Federal Trade Commission, *supra* note 28.

justified. Judge Gary surely must have been surprised at the ultimate value of his dinners to U.S. Steel. The only other overt act with the appearance of evil, the purchase of Tennessee Coal, Iron, and Railroad Company was dispatched with similar ease: Roosevelt approved it. As Justice McKenna wrote,

> There is, however, an important circumstance in connection with that of the Tennessee Company which is worthy to be noted. It was submitted to President Roosevelt and he gave it his approval. His approval did not make it legal, but it gives assurance of its legality, and we know from his earnestness in the public welfare he would have approved of nothing that had even a tendency to its detriment.[51]

One can, however, also overemphasize the importance of personal tendencies on the Court. In fact, a reading of the decision suggests that behind the veneer of governmental inadequacy and judicial predilications was a more basic difficulty. The Court was simply uncertain of the application of the Sherman Act when less than complete monopoly was attained by legitimate business practices. The consequences of partial control of a market were apparently unclear to the Court and the absence of morally corrupt overt acts did not give it any clues of the distoritions possible from such a structure. The Court made clear that competition was not an end in itself. As Justice McKenna wrote, "It [the Sherman Act] does not compel competition nor require all that is possible."[52]

Without a theoretical structure to guide its thinking, the Court could legitimately require some evidence of social damage before undertaking such a major step as restructuring of the steel industry.[53] Justice McKenna responded to the wave of competitors and customers who testified to U.S. Steel's virtue and the absence of countervailing Government witnesses by asserting, "We may wonder at it, wonder that the despotism of the Corporation, so baneful to the world in the representation of the Government, did not produce protesting victims."[54] The search for victims is, in fact, the reason courts have tended to protect competitors and not competition: the "victims" of competition are frequently quite vocal and not hard to find. It is more than ironic, therefore, that in the district court opinion, the virtue of the Steel Corporation was contrasted with the behavior of Andrew Carnegie, the arch competitor. To quote that opinion,

> The policy of the Carnegie Company (and in that respect it was the same as others) was to keep the mills going, no matter what price they got for their product, or no matter whether their getting such orders meant the complete stoppage of their com-

[51] 251 U.S. 446.

[52] 251 U.S. 451.

[53] The district court rejected a simple price data approach as indicating prices generally dropped from 1901, ignoring the extraordinary demand increases of the three prior years, United States v. U.S. Steel Corp., 223 F. 55 (1915).

[54] 251 U.S. 449.

petitors' mills. Practically applied, this policy meant a fierce, ruthless price-cutting trade war. . . . Mr. Schwab . . . testified: That the destruction of the small and weak (competitors) was a practice not unknown in the old days . . . . There were more gravestones than live competitors.[55]

The "victims" of the U.S. Steel organization of the steel industry were largely ignorant of the damage they suffered. The customers of U.S. Steel were not the ultimate consumers of that steel. It is the purchasers of automobiles, riders of railroads, and occupants of skyscrapers who were the major source of J. P. Morgan's $125 million underwriting fee.

APPENDIX

Data Sources: A number of these series have been compiled and reported in Bennet Black & Edward Ray, Tariff Policy and Comparative Advantage in the Iron and Steel Industry: 1870-1929, 11 Explorations in Econ. Hist. 3 (1973).

Production of Pig Iron (All kinds)

1870-1871: Statistical Abstracts of the United States 1888, at 138.
1872-1899: American Iron and Steel Institute [Association], Statistical Report 1899, at 41 [hereinafter cited as A.I.S.I.].
1900-1904: A.I.S.I. 1912, at 36.
1905-1913: A.I.S.I. 1930, at 7.

Production of Ferro-Alloys

1872-1899: A.I.S.I. 1899, at 46.
1900-1904: A.I.S.I. 1912, at 63.
1905-1913: A.I.S.I. 1930, at 7.

Domestic Price of Pig Iron (Excluding Ferro-Alloys) (P)

1870-1872: We used the price of Philadelphia Foundry Pig Iron, A.I.S.I. 1878, at 48.
1873-1913: We used the price of Gray Forge Pittsburgh; Frank Taussig, Some Aspects of the Tariff Question 160,403 (1924).

United Kingdom Price (P^{UK})

The dollar price of Cleveland in Great Britain was calculated using our estimated exchange rate and the pound price of Cleveland found in B. R. Mitchell & Phyllis Deane, Abstract of British Historical Statistics 493-94 (1962).

Exports (ALL Kinds) (E)

1870-1871: Statistical Abstracts of the United States 1888, at 138.
1872-1881: Statistical Abstracts of the United States 1891, at 208.
1882-1900: Statistical Abstracts of the United States 1901, at 367.
1901-1912: A.I.S.I. 1912, at 68.
1913- —: A.I.S.I. 1916, at 14.

[55] United States v. U.S. Steel Corp., 223 F. 55, 93 (1915).

Exchange Rate

1870-1912: 10-95 The Commercial & Financial Chronicle (New York, 1870-1913).
1913-1929: U.S. Bd. of Governors of the Federal Reserve System, Banking and Monetary Statistics (1943).

Specific Duty on Pig Iron and on Ferro-Alloys

1870-1883: Charles H. Evans, Imports-Duties from 1867-1883, Inclusive, H.R. Misc. Doc. No. 49, 48th Cong., 1st Sess., at 262 (1884).
1894-1907: William W. Evans, Imports and Duties 1894-1907, H.R. Doc. No. 1504, 60th Cong., 2d Sess., at 490 (1909).
1907-1930: Foreign Commerce and Navigation for the United States for respective years.

Wholesale Price Index (W)

U.S. Bureau of the Census, Historical Statistics of the U.S., Colonial Times to 1957, tabs. E1-12, E13-24 at 115-116 (1960). Adjusted to equal 100 in 1901.

Capital

Daily capacity per blast furnace was obtained 1880-1890: U.S. Dep't of Interior, Census Office, Report on Manufacturing Industries, 11th Census: 1890, at 410 (1895).
1899, 1904, 1909, 1914: U.S. Bureau of the Census, Abstract of the Census of Manufactures, 1914, at 98 (1917).
A linear trend was assumed for daily capacity per blast furnace between Census Reports.
Total daily capacity was found by multiplying this daily capacity per blast furnace by number of furnaces completed, 1880-1912, A.I.S.I. 1912, at 67.

Iron Ore Prices

1880-1889, 1892-1913: U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957, at 351-53 (1960).
1890, 1891: Series above adjusted by fluctuation in price of Lake Superior Ore, A.I.S.I. 1919, at 87.

Coke Prices

1880-1913: A.I.S.I. 1919, at 64.