

## **Shareholder Value and Industry Decline**

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### **Abstract**

We examine, from the point of view of shareholders' value, different strategies adopted by integrated steel firms in response to severe industry decline. We calculate the annual return generated from investing in integrated steel firms during the decline, assuming that all dividends paid out by a firm as well as any residual value left if the firm exited were invested in the S&P 500, and compare those cumulative annual growth rates to growth of an investment in the S&P over the same period. We find that firms that maintained or increased their investment in steel mostly generated lower returns, although conglomerate mergers in some cases cushioned the loss to shareholders. On average, corporations able to exit from steel entirely did best, particularly if they sold out earlier or if the steel assets were not the core business of the corporation.


**JEL Classifications:** G11, G33, G34, G39, L10

**Keywords:** Shareholder value, restructuring, diversification

### **1. Introduction**

Major industries in the United States such as coal mining, landline telephony, and cable TV, face existential threats due to industrial decline, a situation in which demand “shrinks absolutely for a prolonged period expected at best to plateau at a substantially lower level” (Harrigan, 1980). Researchers have studied episodes of industrial decline, for example the “rust-belt” of the 1980s, to see how firms respond, but there has been little systematic study of how shareholder value is affected by those responses. In this paper we seek lessons for firms currently experiencing severe industrial decline by examining how the different strategies adopted by integrated steel firms, which faced similar conditions, affected their shareholder value.

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Firms experiencing severe decline may try to survive or to exit. Attempting to survive may seem an attractive option for firms whose core is the affected business, particularly if exit barriers caused by durable capital, severance pay, and pension or environmental remediation liabilities, are high. Such a firm may invest more in its own facilities, or merge horizontally, to gain economies of scale or scope or to rationalize facilities. A firm may also try to survive by diversifying to gain a more stable cash flow with which to restructure; such diversification may also create shareholder value if the firm's losses bring tax advantages, if synergies are created, or if the purchased firm is for some reason undervalued. The more severe the decline, however, the more difficult survival will be as firms struggle for shares of the remaining market.

Exit, on the other hand, is difficult psychologically and financially for a firm whose core business is declining (Harrigan, 1980; Harrigan & Porter, 1983; Hill & Jones, 2001). One approach is to use its cash flow to "migrate" out of the industry, by nurturing or buying new businesses with the goal of eventually selling off or closing the declining business: doing so successfully allows the firm to preserve the "corporate asset" and avoid the costs of bankruptcy (Matsusaka, 2001). Another approach is for management to milk the original business, paying dividends as long as possible and then liquidating the firm, although this path requires considerable discipline (Harrigan, 1980). Exit may be easier for a firm whose core business is not in the declining industry, as it may more easily sell or spin off the affected assets. However, divesting a declining business may still be complicated by accumulated debt or by liabilities related, for example, to pensions. Allowing the firm to be acquired, should that possibility arise, may be the most effective way to extract shareholder value, but of course timing is key: if potential buyers correctly assess the difficulties in the industry shareholders will realize much less from the sale.

We study the returns generated by integrated steel firms as they chose amongst these different strategies. The integrated steel industry is an interesting case because it experienced a prolonged and severe decline in what was the core business of many of the firms. The firms' situation was made more difficult by uncertainty as to whether the decline was secular or cyclical, and by high exit barriers created by durable and specific fixed capital and high exit costs. Although there were relatively few firms, they had distinctly different responses to decline, allowing us to evaluate the impact on shareholder value of several different strategies.

We study the effect of the firms' actions by examining the return to an initial investment of \$1000 made in each firm in our sample before the steel industry began to contract, and comparing it to the return on a \$1000 investment in the S&P 500 (Stigler, 1965). We assume that management did their best to maximize shareholder value given their initial conditions, and follow their decisions to see which, if any, strategies proved more effective, always maintaining a focus on an initial investment in the original corporation. If, for example, a firm diversified out of steel, we follow the original corporation, continuing to evaluate the return to the shareholder in the new industry. We then compare the returns to see how strategic choices affected shareholder value.

We evaluate the initial investment over the years 1970-2006. We begin in 1970 because it marks the end of a significant period of investment by many firms, is just before United States steel consumption peaked in 1973, and precedes the first major dip in steel consumption. We end in December 2006 because the fate of the original firms was determined by that time and it was well before the onset of the Great Recession. This is a lengthy, 37-year period during which firms might have altered their strategies as they realized the likely scope of decline. In most cases, however, firms did not make dramatic changes in their efforts to either survive the contraction or to exit.<sup>1</sup>

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<sup>1</sup> We do not examine the internal evolution of strategic response in the firms as in, for example, Burgelman (1991; 1996), although we do find some confirmation of the hypothesized importance of the stance of the top management team in setting the basic direction of the firm (Noda & Bower, 1996).

Assuming that any dividends paid were invested in the S&P, and that if a firm exited any residual value left to shareholders was also invested in the S&P, we find that the cumulative annual growth rate of these firms over the 37 years was, on average, 10.14%, as compared to 11.23% for the S&P, reflecting the lost value of steel assets. Although there was great variation in performance among the firms, even at times among those that chose the same strategy, some generalizations can be made. Firms that maintained or increased their investment in steel generated the lowest returns and none survived, while diversifying but remaining in the industry had mixed success. Firms that exited from steel did better, but of these, we find that firms attempting to exit by migrating out of steel did relatively poorly. The strongest performances came from firms that sold out very early or that did not have steel as their core business.

In the next two subsections we briefly describe the industry and its decline, and discuss the different strategies chosen by steel firms. In section 2 we describe our method for calculating firms' growth rates in more detail, and in section 3 present our results. We conclude with a discussion of our findings.

### 1.1. Industry Decline and Firms' Responses

In 1970 most steel in the United States was produced by integrated steel producers. Integrated steel producers refine iron ore into pig iron, which is then further refined into raw steel. The raw steel is cast into different semi-finished shapes (slabs, blooms, or bars) which are used to make such products as sheet steel, structural beams, plates, wire, and rebar. The largest steel firms were vertically integrated, satisfying some or all of their own raw materials and transport needs by owning and operating iron ore and coal mines, ships, barges, and railroads. Table 1 lists the 19 integrated steel producers, in order of their steel capacity in the early 1970s, and also shows their rank in the 1970 *Fortune 500*.

Most of the firms had existed for decades as independently traded firms, but several, Youngstown Sheet & Tube, Jones & Laughlin, CF&I, Lone Star, and Sharon, were acquired by conglomerates (Hogan, 1971; Sobel, 1984) during the conglomerate merger wave in the late 1960s and early 1970s. These firms are shown in Table 1 with their acquirer's name first, followed by the name of the steel firm.

During the 1960s many steel firms made large investments to develop new iron ore sources, to upgrade hot strip mills, and to replace open hearth with basic oxygen steel furnaces. As of 1970 firms had not realized the expected returns on these investments, but were expecting stronger results in the 1970s as forecasts for demand growth were optimistic (Hogan, 1971). Demand did not grow as expected, however; GDP became less steel intensive as manufacturers replaced steel with lighter metals, glass, and plastic. Apparent steel consumption in the United States (steel shipments – exports + imports) peaked in 1973 at 111 million metric tons, and did not achieve that level again until 1997, when consumption reached 114 million metric tons (United States Geological Survey [USGS], 2014).

Further, as demand growth stagnated, the market share of imports grew from 14% in 1970 to over 30% by 2006 (USGS, 2014). More importantly, the steel production of minimills<sup>2</sup> grew from 15% of domestic production in 1970, to 28% in 1980, to 37% in 1990, to around 45% in the early 2000s (American Iron and Steel Institute, *Annual Statistical Report*, various issues; International Iron and Steel Institute, 2007; USGS, *Minerals Yearbook*, various issues).

Consequently, the market share of integrated steelmakers shrank significantly. It is difficult to identify exactly when most firms realized that the decline they were experiencing reflected a secular trend rather than cyclical swings. Steel consumption dipped sharply in 1974, and some firms started closing plants and

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<sup>2</sup> Minimills, which are an alternative source of domestic steel production, operate small plants that produce steel by melting down recycled steel scrap. Early production was limited to lower quality steel for products like rebar, but technological innovation through the 1980s and 1990s allowed these firms to invade higher quality product niches (Basta, 1986; Hicks, 1992; Miller, 1984). Although some of the major integrated producers tried using this technology, their efforts came to nought, possibly because of the alien nature of the much smaller scale of production.

re-evaluating their business strategy, but the industry generally expected stronger sales in the late 1970s.<sup>3</sup> Another serious dip in 1982, however, was followed by more widespread restructuring that continued through the 1990s (Beeson & Giarratani, 1998). Firms attempting to survive closed plants and struggled to cut costs in their remaining capacity by bargaining with unions to reduce wages and benefits or to at least postpone scheduled increases, and by cutting dividends and managerial pay (DeAngelo & DeAngelo, 1991). Firms attempting to exit faced high exit costs from severance payments and pension liabilities.

**Table 1.** Integrated steel producers circa 1970

<b>Steel Firm</b>	<b>Share of Capacity Early 1970s</b>	<b>Fortune 500 Rank by sales 1970</b>
United States Steel	27%	12
Bethlehem Steel	18%	26
Republic Steel.	9%	84
National Steel	7%	92
Lykes/Youngstown Sheet & Tube	6%	132
Armco	6%	69
LTV/Jones & Laughlin Steel	6%	15
Inland Steel Co	6%	101
Wheeling-Pittsburgh Steel	3%	215
Kaiser Steel	2%	265
McLouth Steel	2%	446
Ford Motor Co/Rouge Steel	2%	3
NVF/Sharon Steel	1%	378
Crane/CF&I Steel	1%	173
Northwest Industries/Lone Star Steel	1%	232
Interlake	1%	309
International Harvester/Wisconsin Steel	1%	32
Alan Wood Steel	1%	-
Detroit Steel	1%	-

**Sources:** Hogan (1987); Institute for Iron and Steel Studies (1979).

## 1.2. Classification of Firms Based on Response

We classify the firms into five groups based on the strategy they pursued. Appendix Table A1 summarizes the information covered below, and includes years in which major events, such as mergers or bankruptcies, occurred.

<sup>3</sup>Forecasts of the demand for steel were lower by 1978-1980, but continued to over-estimate actual demand considerably for several years. See Deily (1998) for a description of expectations and forecasts for the steel industry in the 1970s and early 1980s, and see Office of Technology Assessment (1980), Table 66, for a summary of private and public projections at that time. As late as 1986, one writer cites differing views about the future of the domestic industry (Markusen, 1986).

Group I consists of firms that continued to specialize in integrated steel production. Several of these firms were small. Alan Wood reportedly survived in the industry from sales made when labor strife hit other firms, and went bankrupt after the industry eliminated strikes in the 1970s through an agreement made with the union in 1973 (R. Crosson, personal communication, December 1995; Social Networks and Archival Context, n.d.). McLouth Steel, which depended heavily on the auto industry, did not survive the recession of the early 1980s despite operating a steel mill with the latest technology (The New York Times, 1981; Williams, 1982). Kaiser Steel, which began a major modernization program in the mid-1970s, closed its steel facilities in 1983, with the other parts of the firm sold to private investors in 1984 (*Annual Report of Kaiser Steel*, 1975; Business Wire, 1985; Chavez, 1982; United Press International, 1981).

The others in this group, Bethlehem, Republic, and LTV, were among the largest steel firms. Bethlehem closed plants over time and eventually sold off parts of its upstream integrated chain, but continued to invest to produce higher quality products at its more efficient operations (Hogan, 1987; Strohmeier, 1994). The firm filed for Chapter 11 in 2001. LTV, which had acquired Jones & Laughlin Steel in the early 1970s and acquired Lykes (owner of Youngstown Sheet and Tube) in 1978, merged with Republic Steel in 1984, thus combining the remaining facilities of three of the eight largest steel firms (Hogan, 1971; Jones, 1978; Wall Street Journal, 1984). These successive combinations failed to produce a viable steel business, and LTV, after emerging in 1993 from a bankruptcy declared in 1986, declared a final bankruptcy in 2000 (LTV Steel, 2000). In sum, no Group I firm survived beyond 2003, although some of their steel plants continue to operate with different owners.

Group II consists of two firms that significantly diversified while remaining committed to the steel industry. Starting in the late 1970s and continuing during the 1980s and 1990s the United States Steel Corporation (USSC) closed a number of plants and negotiated lower wages — at one point in the mid-1980s going through a strike. Meanwhile, the firm made major acquisitions by purchasing Marathon Oil in 1982 and Texas Oil and Gas in 1986; revenues from these new subsidiaries allowed the firm to restructure while continuing to pay dividends (Warren, 2001).

USSC's diversification strategy was controversial (BusinessWeek, 1982). Employees thought the firm should invest instead in steel, while shareholders had doubts about the lack of any connection between oil and steel, and USSC had to compete with Mobil to buy Marathon. However, according to Sobel (1984), USSC shareholders, managers, and workers may have benefited from the determination of Marathon to avoid Mobil: although white knight USSC paid more per share than Mobil bid, the deal Marathon offered to USSC was still advantageous.<sup>4</sup>

In subsequent years, suggestions that the new firm, USX, separate into two entities continued to arise.<sup>5</sup> In response, USX in 1991 adopted a "tracking stock structure" — the two parts of the firm, USX-Marathon and USX-U.S. Steel Group, issued stocks that were listed and traded separately, while still remaining parts of the same parent corporation (Pound, 1992). In 2002 this arrangement ended and the two firms became independent. Throughout, USSC continued as an integrated steel producer and after significant restructuring, has subsequently re-expanded, purchasing steel assets from bankrupt firms in the United States and investing in steel assets abroad.

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<sup>4</sup> During the takeover USSC purchased 51 percent of Marathon's shares for \$125 per share. Once Marathon shareholders (including USSC) approved the merger, remaining shares were exchanged for 12.5 percent USSC notes, valued at the time at \$76-78, near the value at which Marathon stock was trading. Some Marathon shareholders were dissatisfied because the previous year, when Marathon was trying to fight off Mobil's a hostile bid of \$85 a share, consultants hired by Marathon estimated its liquidation value to be over \$200 per share (Cole, 1982; The New York Times, 1982).

<sup>5</sup> Analysis in 1991 showed that, following the merger, the steel part of the firm had been very well run, but the oil business had not (Pound, 1992).



We also include Sharon Steel in this category. Ownership of Sharon Steel was tangled: NVF gained control of formerly independent Sharon in a hostile takeover in 1969, but NVF was in turn part of the Victor Posner Group, and identifying a strategy vis-à-vis the steel industry is difficult. Posner used Sharon to launch additional takeovers throughout the 1970s, while Sharon continued to invest in and produce steel (*Annual Reports* of Sharon Steel, 1973, 1976; Reutter, 1991). However, Posner sold some of his Sharon stock in the mid-1970 and Sharon stock began trading again. We chose to start our investment in Sharon when stock price data became available in 1976 and examine how it changed as Sharon made additional investments. We place Sharon in this group because while it continued as a steel firm, its *Annual Report* of 1980 states that the firm had succeeded in diversifying its operations. Both Sharon and NVF were delisted in the mid-1980s for accounting irregularities, and both firms entered bankruptcy in 1987 (Cole, 1987). When Sharon emerged from bankruptcy in 1990, common stockholders lost all stake in the remaining assets (The New York Times, 1990).

The firms in Group III all underwent radical transformations in their migration from the business of producing basic steel. Interlake was the smallest of the steel firms in this group. Like other integrated firms, Interlake considered an expansion plan in the 1960s, but decided against it in 1967. Instead, Interlake began diversifying in 1968, and continued to do so through the 1970s and 1980s, turning itself into a firm that designed, produced, and distributed different engineered metal products, in addition to producing steel. Interlake shutdown and sold some marginal steel facilities in the early 1980s, but in 1986 the firm exited steel production completely by spinning off its steel plant as Acme Steel (Interlake, *International Directory of Company Histories*, 1994).

Like other major steel firms, Inland Steel invested in expanding its steel business during the 1960s, but it also began diversifying in the late 1960s and early 1970s. The firm had owned Ryerson, a large steel service center business, since 1935, and it now acquired firms in home building and in computers. As the steel business struggled in the 1970s and 1980s, Inland shed some of these businesses to generate needed cash, seeming to follow the strategy of Group I firms. Inland held on to Ryerson, however, and acquired J.M. Tull Metals in 1986. In that same year Inland reorganized itself into holding company with a steel production business and a service center business and eventually sold its steel production facilities, becoming instead Ryerson Tull Inc. (Inland Steel Industries, *International Directory of Company Histories*, 1998; Williams, 1984).

Armco also remained in the basic steel business through the 1980s, but in 1989 it created the Armco Steel Co., L. P., a joint venture with Kawasaki Steel Corporation of Tokyo, comprised of Armco's basic steel works; each partner owned 50%. In 1994 the steel partnership was restructured and recapitalized, becoming AK Steel and issuing equity in an IPO. Armco's ownership share declined to less than 1 percent and then to zero when Armco sold the last of its shares of AK Steel in 1996. Meanwhile, Armco became a leading producer of specialty steels, acquiring Cyclops, a specialty steel producer in the early 1990s. In 1999, Armco was in turn acquired by AK Steel, the firm it had created from its basic steel works, when the two firms swapped stock (AK Steel Holding Corp., *International Directory of Company Histories*, 2001).

National Steel made some attempt at diversification in the 1960s, but continued to invest in basic steel. When the firm finally became serious about diversifying in the early 1980s, it renamed itself National Intergroup Inc. (NII), and purchased firms in new industries while reducing its steel holdings, selling one of its plants to its employees (Weirton Steel), and a half share in the remaining plants to Nippon Kokan Steel. While NII succeeded in reducing its investment in basic steel, its acquisitions were poorly chosen. The firm purchased several savings and loans banks as that industry was entering the savings and loan crisis in the early 1980s, an oil distribution firm just before oil prices fell, and a drug distribution business, FoxMeyer, in 1986, just before a price war broke out in that industry. NII sold much of its remaining stake in National Steel to Nippon Kokan in 1990, and during the 1990s went through corporate transformations and maneuvers that ended in litigation and bankruptcy in 2002 (National Steel Corp., *International Directory of Company Histories*, 1996; Miles, 1989).

Wheeling-Pittsburgh Steel began making significant investments to upgrade its steel production facilities in 1978, but entered bankruptcy in 1985, emerging in 1991 with control purchased by a New York financier. In 1994, the corporation reorganized, creating a holding company WHX, of which Wheeling-Pittsburgh was a subsidiary (The New York Times, 1994b). During the rest of the 1990s WHX attempted to acquire a firm with cash enough to reduce Wheeling-Pitt's pension liabilities, which would have made it easier to spin off or sell the steel assets. These different acquisition attempts failed, and when Wheeling-Pittsburgh went bankrupt again in 2000, WHX gave up its equity ownership when the Wheeling-Pitt emerged from bankruptcy in 2003. WHX itself went bankrupt in 2005, and holders of common stock lost all shares in the firm (Fidler, 2005; Wheeling-Pittsburgh Corp., *International Directory of Company Histories*, 2004).

Group IV consists of firms that managed to sell or spin off their steel assets. Steel was not the core business of any of these firms, and the divesting firms have survived (or ceased to exist for other reasons). International Harvester sold its steel division to Envirodyne Industries in 1977 (BusinessWeek, 1977).<sup>6</sup> The Ford Motor Company's steel operations were part of Henry Ford's original strategy of complete vertical integration. Ford changed Rouge from a division to a subsidiary in 1982, and tried to sell it throughout the 1980s, eventually succeeding in 1989 when it sold 80% to Marico Acquisitions, a group of private investors, and the remaining 20% stake a few years later (Associated Press, 1990; Automotive News, 1989; The New York Times, 1994a).

The other two firms were conglomerates. Crane, a firm that produced industrial valves, fluid control devices, and cement products, and Northwest Industries, which produced boots, batteries, underwear and other goods, both acquired steel firms in the late 1960s (CF&I and Lone Star Steel respectively), and both subsequently spun the steel firms off to shareholders in 1985 (AP, 1985; The New York Times, 1985; Leib, 1985). In the same year, Northwest Industries was purchased in a leveraged buyout, while the Crane Corporation still exists.

Group V represents firms that were acquired in the 1970s; all investors' shares were purchased and stock in these firms was no longer traded. These acquisitions occurred during the conglomerate merger wave of the 1960s and 1970s, and the earliest seem unlikely to have been driven by the foresight of managers expecting industry decline. Detroit Steel was acquired by Cleveland-Cliffs to prevent Detroit Steel, which owned part of Cleveland-Cliffs, from being used to attack Cleveland-Cliffs (Cleveland-Cliffs, *International Directory of Company Histories*, 2004). As noted above, CF&I was acquired by Crane, a process that began in 1969 but was not completed until 1971. The Jones & Laughlin Steel Corporation was acquired by Ling-Temco-Vought (later shortened to LTV), a process that started in 1969 and was completed in 1974. Lykes, which had acquired Youngstown Sheet & Tube in 1969, was acquired in turn by LTV in 1978. Thus, original investors in CF&I, Detroit Steel, Jones & Laughlin, and Lykes were all bought out before 1980.

## 2. Methodology

We evaluate the choices firms made in response to industry decline by "investing" \$1000 in each firm and calculating the cumulative annual return to that investment over the years of decline (Stigler, 1965). The number of shares "purchased" will vary by firm as it depends on the dollar value of each firm's stock at the start of our experiment.

We assume that markets are efficient so the advantages and disadvantages of each firm resulting from past decisions, e.g., plant locations, product line, raw materials availability, or diversification, are reflected in the individual share prices. Thus, each investor purchases stock at a price which fully reflects the

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<sup>6</sup> International Harvester expected to continue purchasing a significant portion of the steel firm's production, but a strike in International Harvester's core industry disrupted these plans and the steel firm went bankrupt.

expected flow of profit for a firm at the time of investment, given the information and expectations for the industry at that point.

The initial investment is made on January 1, 1970 because we consider it to be a time before anyone realized that the integrated steel industry was entering a period of prolonged secular decline. Subsequent changes in the value of the investment reflect both a firm's strategy decisions and the constraints that previous decisions placed on those choices. Some links between initial conditions and subsequent strategy choice are obvious: firms that were already diversified before the contraction began, for example, were likely in a better position to deal with the decline. But even those firms that were vertically integrated with steel as their core business differed on other dimensions, such as plant location and product mix, which may have limited their options.

We calculate an annualized growth rate to each investment up to a common endpoint, December 31, 2006, because although a few firms survived to that date, those that exited did so at different times. For firms that survived, we use the value of the stock at the end of 2006 plus the value of the dividends paid by the firm over the years assuming that those dividends were invested in the S&P at time of payment. For firms that exited, we use the remaining capital value of the original investment, if any, at the time the firm ceased to exist, investing it in the S&P, again adding the dividends paid by the firm over the years, again assuming that they were invested in the S&P at time of payment.<sup>7</sup>

For example, the total return for a firm that went bankrupt in 2000 would be any realized capital value at the time of bankruptcy, invested in the S&P until the end of 2006, plus dividends paid before 2000 invested at time of payment in the S&P until the end of 2006. If a firm was purchased, the annual return for shareholders would be the amount shareholders realized when the firm was sold, invested in the S&P until the end of 2006, plus any dividends paid before the sale invested at time of payment in the S&P until the end of 2006.

Six of the eight largest firms were independent in 1970; however, as noted above, two of them, and several smaller firms, were acquired during the conglomerate merger wave of the 1960s. For these cases, we follow the stock price of the firm owning the steel firm as long as it was listed on the New York Stock Exchange, NASDAQ, or AMEX.<sup>8</sup> However, we calculate the returns for both CF&I and its acquirer Crane, as well as for both Jones & Laughlin and its acquirer Ling-Temco-Voight, because although the acquisitions of the two steel firms started in 1969, their stock continued to trade until 1971 and 1974, respectively.

In those cases in which a steel business was sold or spun off, we presume that our investor participates in any payout or stock swap that ensued and that the investor continues to hold any shares in a spin-off or subsidiary, incorporating that as part of the original \$1000 investment. For example, the growth rate calculated for Interlake includes both the returns earned by Interlake and also those earned by the steel assets it spun off, as Interlake shareholders all received shares in the new firm Acme Steel.

### 3. Results

Table 2 presents the results for the firms ordered by annualized return. Column (1) shows the date when the corporation ceased to exist, if it did so. Column (2) shows the cash value of the original \$1000 invested on January 1, 1970 as of December 31, 2006,<sup>9</sup> either the stock value of a still existing firm or the

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<sup>7</sup> We assume moneys are reinvested in the S&P 500 at the beginning of the month following payment, so the returns are slightly understated or overstated. Assuming that investors did not reinvest their dividends in steel firms seems appropriate for the case of a declining industry.

<sup>8</sup> The exception is NVF and Sharon Steel, as we chose to follow Sharon rather than NVF. See discussion in section 1.2.

<sup>9</sup> Investment in Kaiser Steel starts on 12/14/1972 because price and dividend data is not available on CRSP prior to this date. Investment in Sharon begins 7/13/1976.



value left of any remaining investment at time of a firm's exit invested in the S&P from that point. Column (3) shows the value of dividends paid and then invested in the S&P. Column (4), the total value, is the sum of Columns (2) and (3), and the last column restates this in terms of a compound annual return. The matching return for an investment of \$1000 in the S&P 500 is shown in bold in the middle of the table, with firms that outperformed the S&P listed above, and those that underperformed listed below.

**Table 2.** Annualized return to \$1000 invested Jan1, 1970, as of December 31, 2006<sup>1</sup>

Firm	Exit Date (1)	Exit Value (2)	Dividends (3)	Total Value (4)	Annualized Return (5)
Northwest /Lone Star	7/31/1985	7041.46	293396.30	300437.75	16.67%
Crane/CF&I	--	57466.43	95285.31	152751.70	14.56%
Kaiser Steel <sup>2</sup>	2/29/1984	52547.87	24890.92	77438.79	13.61%
Interlake	2/10/1999	1251.34	98446.73	99698.07	13.24%
Jones & Laughlin Steel	11/22/1974	81353.74	11230.85	92584.59	13.02%
Ford Motor Co./Rouge	Still exists	2372.41	65452.58	67824.99	12.07%
Detroit Steel	12/11/1970	63496.57	0	63496.57	11.87%
CF&I	12/31/1971	48935.17	9794.84	58730.01	11.64%
<b>S&amp;P 500</b>	<b>12/31/2006</b>	<b>51238.39</b>	<b>0</b>	<b>51238.39</b>	<b>11.23%</b>
USX – Steel <sup>3</sup>	--	5279.93	38542.85	43822.78	10.76%
Inland Steel	--	904.14	41845.36	42749.50	10.68%
Bethlehem Steel	6/11/2002	14.33	31538.96	31553.29	9.78%
Lykes/Youngstown Sheet & Tube	12/5/1978	21308.58	9811.53	31120.11	9.74%
Armco	9/30/1999	459.72	29675.88	30135.60	9.64%
Int'l Harvester / Wisconsin Steel	--	127.96	29566.41	29694.37	9.60%
National Steel	1/29/1999	19.39	29076.99	29096.38	9.54%
Republic Steel with LTV Conv <sup>4</sup>	6/28/1993	24.42	27586.36	27610.78	9.38%
Sharon Steel <sup>2</sup>	6/27/1986	112.07	12080.30	12192.37	8.56%
McLouth Steel	1/11/1983	1185.25	14381.98	15567.23	7.70%
Alan Wood Steel	6/9/1977	4880.36	6352.27	11232.62	6.76%
Wheeling Pittsburgh	3/7/2005	7.29	6092.69	6099.99	5.01%
LTV	6/28/1993	11.82	1275.66	1287.48	0.69%

<sup>1</sup> Table shows cumulative return to an initial purchase of \$1,000 on January 1, 1970. After the firm exits (no longer traded), proceeds are invested in the S&P 500 until 12/31/2006. While the firm is still actively traded, dividends are invested in the S&P 500 on the 1<sup>st</sup> day of the month after they are received.

<sup>2</sup> Investment starts 12/14/72 for Kaiser and 7/13/1976 for Sharon, the first dates prices are available for these two firms.

<sup>3</sup> Investment in USX consists of the value of both USX Marathon and USX Steel.

<sup>4</sup> Investment value is based on Republic Steel until 7/1984 when the firm converts to LTV.

Results varied enormously among the firms, with annual growth rates over the entire period ranging from 0.69 to 16.67. Eight firms show returns above the S&P and all these firms exited the industry. The

firms with returns below the S&P, on the other hand, were a mix of all strategy groups: many of these firms achieved their return because of the accumulated value of the dividends they paid.<sup>10</sup>

**Table 3.** Annualized Return by Strategy Group for \$1000 invested  
January 1, 1970 thru 12/31/2006

<b>S&amp;P 500</b>	<b>11.23</b>
<b>Group I: Remain in steel</b>	
Alan Wood Steel	6.76
Bethlehem Steel	9.78
Kaiser Steel <sup>1</sup>	13.61
LTV	0.69
McLouth Steel	7.70
Republic Steel (with LTV conv)	9.38
Average:	7.99
<b>Group II: Diversify</b>	
United States Steel	10.76
Sharon Steel <sup>1</sup>	8.56
Average:	9.66
<b>Group III: Migrate out</b>	
Armco, Inc.	9.64
Inland Steel	10.68
Interlake, Inc.	13.25
National Steel	9.54
Wheeling-Pittsburgh Steel	5.01
Average:	9.62
<b>Group IV: Divest/spin off</b>	
Crane Corp./CF&I	14.56
Ford Motor Company/Rouge	12.07
International Harvester/Wisconsin Steel	9.60
Northwest Industries/Lone Star Steel	16.67
Average:	13.23
<b>Group V: Firm Sold</b>	
CF&I Steel	11.64
Detroit Steel	11.87
Jones & Laughlin Steel	13.02
Lykes/Youngstown Sheet & Tube	9.74
Average:	11.57

<sup>1</sup> Investment made starting on 12/14/72 for Kaiser and on 7/13/1976 for Sharon, the first dates prices are available for these two firms.

<sup>10</sup> It is possible that some firms milked their steel assets by paying dividends before going bankrupt. However, we saw little or no evidence of this as a firm's deliberate choice.

Table 3 shows returns by strategy groups. While variations within each group exist, the averages suggest that trying to survive in the industry resulted in lower returns. Group I had the lowest average return and all firms except Kaiser went bankrupt. Although some of their steel plants continue to operate, the plants are owned by others, and none of these corporations exists today.

Performance of firms in Group II, firms that diversified but continued to operate in the steel industry, was also mixed. The annual return of USSC was within a percentage point of the S&P, a striking result given that they were the largest steel firm by a large margin in 1970. Sharon Steel's strategy choice, however, was driven by the acquisition policy of Victor Posner and shareholders did relatively poorly, with the firm going bankrupt in 1987.

The performance of firms in Group III, firms that attempted to migrate out of the industry, was also mixed. Interlake outperformed the S&P and Inland's return was within a percentage point of it. On the other hand, Armco and National, both originally amongst the eight largest steel firms like Bethlehem and Republic (Group I), achieved returns similar to theirs, despite their very different strategy. Wheeling-Pitt did quite poorly.

Firms in Group IV all owned steel plants in 1970, but steel was not their core business. Shareholders of the divesting firms did well on average, even in those cases where their return includes both the return to the former parent and the return to a spun-off steel firm;<sup>11</sup> International Harvester is the only one of this group with a growth rate below the S&P.

The firms in Group V, CF&I, Detroit Steel, Jones & Laughlin, and Lykes, were all acquired by other firms by 1978. Their annualized returns, on average 11.57 percent, are very close to the S&P 500 because the return to the original shareholders reflects the return to the S&P 500 for most of the period. It seems clear from this group that the earlier a firm exited steel the better for the shareholders, but there seems little to be learned from their example, except that it is good to be lucky or very farsighted. While we include these firms in our sample because their stock was trading in 1970, Lykes, acquired in 1978, was the only firm that might plausibly have adopted this strategy as a response to a declining industry, and it had the lowest return of the three, in line with those of other large steel firms in groups I and III.

We next examined the firms' performances in two other ways. We first looked at return by share of integrated steel capacity circa 1970 (Table 4). As one would expect, lower returns were earned by firms with larger investments in steel assets, while the highest were earned by those with smaller capacities that managed to exit the industry.

We then examined the returns to firms that voluntarily exited from the steel business, whether through sale of the entire firm or divestiture of the steel assets (Table 5). We expected that firms exiting voluntarily at an earlier date would have a stronger overall performance, but this was not necessarily the case. Firms exiting in the 1990s did have the lowest returns, as expected. However, even though they exited in the 1970s, both International Harvester and Lykes also did relatively poorly, and it was firms that exited in the 1980s that had the strongest overall performance. Two of these firms did not have steel as their core, and the third, Interlake, was completing its migration out of the industry. Nevertheless, the returns to shareholders invested in these firms included the (poor) returns earned by their equity in the spun-off steel firms, and still these shareholders did better.

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<sup>11</sup> The record of the divested assets was generally poor — similar to that of the firms in Group I. All of the resulting firms ended up bankrupt. See Appendix Table A2.

**Table 4.** Annualized return by firm's share of integrated capacity, circa 1970

	<b>Annualized Return (%)</b>
<b>S&amp;P 500</b>	<b>11.23</b>
United States Steel	10.76
Bethlehem Steel	9.78
Republic Steel	9.38
National Steel	9.54
Lykes/Youngstown	9.74
Armco	9.64
Jones & Laughlin Steel	13.02
Inland Steel Co	10.68
Wheeling-Pittsburgh Steel	5.01
Kaiser Steel	13.61
McLouth Steel	7.7
Ford Motor Co./Rouge Steel	12.07
Sharon Steel	10.56
Crane/CF&I Steel Corp	14.56
Northwest Industries/Lone Star Steel	16.67
Interlake, Inc.	13.25
International Harvester/Wisconsin Steel	9.6
Alan Wood Steel	6.76
Detroit Steel	11.87

**Source:** Table 2.

**Table 5.** Annualized return by date of voluntary exit from steel industry

	<b>Year exit from steel completed</b>	<b>Annualized Return (%)</b>
Detroit Steel Company	1970	11.87
CF&I	1971	11.64
Jones & Laughlin Steel Corp.	1974	13.02
International Harvester	1977	9.60
Lykes/Youngstown	1978	9.74
	Average:	11.17
Crane Corp	1985	14.56
Northwest Industries	1985	16.67
Interlake, Inc.	1986	13.25
	Average:	14.82
National Steel Corp/NII	1990	9.54
Ford Motor Company	1992	12.07
Armco, Inc.	1996	9.64
Inland Steel Company	1998	10.68
	Average:	10.48

**Source:** Table 2.

Finally, we recalculated the return on a \$1000 investment in each firm starting from years later in the contraction, 1980, 1985, 1990, 1995, and 2000, to see if the returns to different strategies changed as surviving firms persisted in their strategy choices while realization of the size of the industry decline became better understood.<sup>12</sup> The results in Table 6 show that, generally, investors did much worse by investing in any of these firms compared to the S&P, suggesting that managers able to extract shareholders' value from their firm, following whichever strategy they chose, mostly accomplished this before 1980. Results for the Group III migrating firms, on the other hand, are interesting because they suggest that diversifying out of the industry completely was not a panacea. Most of these firms were not successful enough in their new industries to compensate for continuing losses from remaining steel assets (or from spun off firms).

Finally, the results in Table 6 are surprising in that we would have expected share prices for the surviving firms to have adjusted enough, by 1990 at least, to more accurately reflect the earning power of the firm's remaining steel assets. Instead, results for firms in Groups I and III in particular indicate that even in 1995 most were overvalued by the market.

**Table 6.** Annualized return to \$1000 invested at various start dates, through 12/31/2006

	<u>1970</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
<b>S&amp;P 500</b>	11.23	13.03	12.57	11.3	11.52	1.87
<b>Group I: Remained in steel</b>						
Alan Wood Steel Co.	6.76	----	----	----	----	----
Bethlehem Steel Corp.	9.78	7.26	-2.44	-7.60	-27.36	-35.51
Kaiser Steel	13.61	12.72	----	----	----	----
LTV	0.69	3.15	-14.54	-7.78	----	----
McLouth Steel Corp.	7.70	3.46	----	----	----	----
Republic Steel Corp. (with LTV conv)	9.38	6.91	----	----	----	----
Average:	7.99	6.70	-8.49	-7.69	-27.36	-35.51
<b>Group II: Diversify</b>						
United States Steel Corp.	10.76	12.16	10.74	9.93	13.40 <sup>a</sup>	18.67 <sup>a</sup>
Sharon Steel	8.56	-6.12	5.42	----	----	----
Average:	9.66	3.02	8.08	9.93	13.40 <sup>a</sup>	18.67 <sup>a</sup>
<b>Group III: Migrate out</b>						
Armco, Inc.	9.64	6.70	1.22	-0.02	2.62	----
Inland Steel Co.	10.68	7.23	4.32	0.50	-1.39	4.96
Interlake, Inc.	13.25	14.75	11.34	-2.52	14.21	----
National Steel Corp.	9.54	6.59	-5.01	-14.37	-21.41	----
Wheeling-Pitt	5.01	-16.40	-18.98	-22.99	-27.97	-39.46
Average:	9.62	3.77	-1.42	-7.88	-6.79	-17.25
<b>Group IV: Divest/spin off</b>						
Crane Corp./CF&I	14.56	13.38	14.70	9.69	12.00	11.21
Ford Motor Company/Rouge	12.07	14.40	12.25	5.80	1.78	-20.22
International Harvester/Wisconsin Steel	9.60	1.67	-3.95	-1.23	6.41	-4.49
Northwest Industries/Lone Star Steel Co.	16.67	12.90	12.32	14.81	17.31	8.99
Average:	13.23	10.59	8.83	7.27	9.38	-1.13

<sup>12</sup> Group V firms are not included because all exit before 1980.



## 4. Discussion and Conclusions

In this paper we examined, from the shareholders point of view, the exit strategies used by integrated steel firms during that industry's long decline. Following these firms over such a long period allows us to see the full effects of their strategic choices on shareholder value in the long run, something we believe is unusual in the literature.

We find that remaining specialized in steel was a relatively unsuccessful strategy. Shareholders of firms that adopted this strategy, whether because management was unable or unwilling to do otherwise, lost the most: average annual returns among firms in Group I were the lowest of all groups, and none of the firms survived. Further, horizontal mergers (Lykes-Youngstown with LTV/J&L, and LTV/J&L with Republic) were not successful in creating a collection of steel assets that could survive, or that could earn a return comparable to some of the other firms.

A strategy of diversification may hold more promise for reducing shareholder losses, but is no guarantee. Sharon ended up bankrupt. USSC was fortunate in that Marathon was looking for an alternative to Mobil's acquisition attempts, but USSC management had to be prepared to take a very large risk and to act swiftly when their chance arose.

Migrating out of the industry completely by nurturing new businesses or acquiring firms in new industries also holds promise, but the record shows it was also difficult to do successfully. The skill with which firms managed their migration, that is, the choice of industry to enter and the speed with which they attempted to migrate, mattered. Bethlehem and Republic, both Group I firms, had returns comparable to several Group III firms. Of the two most successful firms in Group III, Interlake started diversifying early, and Inland moved into a related industry in which they had already operated for many years.

Firms whose core was not steel were at an advantage. Overall, and with the exception of Jones & Laughlin Steel, which was acquired very early, investing in any firms with significant steel assets generated less value than investing in the S&P 500.

Our study is limited in its concentration on a single industry. We pay no attention to the internal process of strategy determination in these firms, but rather assume that a firm realizes the industry is undergoing serious contraction at some point, and then decides on a strategy for responding to that decline. In reality, firms may have only slowly come to understand the full scope of the contraction, and when they did understand it may have tried and failed at different strategies in their attempts to cope with the disaster. Yet our findings suggest that, although there is no clear path to maximize shareholder value for firms, whose core business is facing severe decline, trying to survive without significant diversification is unlikely to be successful.

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## Appendix

**Table A1:** Strategy groups

### **Group I: Remain in steel**

#### Alan Wood Steel

- Bankrupt in 1977

#### Bethlehem Steel

- Bankrupt in 2001

#### Kaiser Steel

- Steel plant closes in 1983
- Firm sold to private investors in 1984

#### LTV (Jones & Laughlin Steel)

- Acquires Lykes (owner of Youngstown Sheet & Tube) in 1978
- Merges with Republic Steel in stock swap in 1984
- Bankrupt in 1986; reemerges in 1993
- Final bankruptcy 12/29/2000

#### McLouth Steel

- Bankrupt in 1981

#### Republic Steel

- Merges with LTV in 1984

### **Group II: Diversify**

#### United States Steel

- Buys Marathon Oil in 1982; Husky Oil in 1984, Texas Oil and Gas in 1986; becomes USX
- USX separates into USX-Marathon and USX-United States Steel Corporation in 1991
- USX-Marathon and USX-United States Steel become independent firms January 1, 2002

#### Sharon Steel

- Delisted, July 1986
- Bankrupt April 1987

### **Group III: Migrate out**

Armco, Inc.

- Isolates basic steel assets as separate partnership with Kawasaki Steel forming AK Steel
- Sells last shares in 1996
- Retains specialty steel assets; becomes specialty steel producer
- Corporation no longer exists; acquired by AK Steel in 1999

Inland Steel

- Sells steel plant in 1998
- Merges with its 87% owned subsidiary, Ryerson Tull, operating metal and industrial plastics service centers which operates metals and industrial plastics service centers.
- Firm now named Ryerson

Interlake, Inc.

- Acquires different firms in engineered metal products
- Spins off steel assets in 1986 as Acme Steel
- Corporation acquired by GKL PLC in 1998

National Steel

- Renamed National Intergroup in 1983 with goal of reducing dependence on steel
- Sells one plant (Weirton) to employees in 1983
- Sells majority share of other plants (named National Steel) to Nippon Kokan Steel, 1984
- Acquires insurance, savings & loans, and drug distribution businesses, 1980s
- Firm renamed FoxMeyer, then Avatex (which sells remaining National Steel stock to National Steel in 1997), then Xetava
- Bankrupt in 2002

Wheeling-Pittsburgh Steel

- Bankrupt 1985; emerges 1991
- Corporate reorganization creates holding company WHX in 1994
- WHX gives up equity ownership in Wheeling-Pittsburgh Steel when the latter emerges from second bankruptcy in 2003
- WHX bankrupt in March 2005

**Group IV: Divest steel business**

Crane (CF&I Steel Corp.)

- CF&I spun off to shareholders in 1985

Ford Motor Company (Rouge Steel)

- Ford changes Rouge from a division to a subsidiary in 1982
- Sold 80% to Marico Acquisitions in 1989, and remaining 20% in 1992

International Harvester (Wisconsin Steel)

- Sold steel division Wisconsin Steel to Envirodyne in 1977

Northwest Industries (Lone Star Steel)

- Spins off Lone Star Steel to shareholders in 1985
- NWI acquired in a leveraged buyout in 1985

**Group V: Steel firm sold**

CF&I

- Acquisition by Crane begun in 1969, completed in 1971

Detroit Steel Company



- Acquired by Cleveland-Cliffs in 1970; steel plant given to shareholder Cyclops

Jones & Laughlin Steel Corporation

- Acquisition by Ling-Temco-Vought (later LTV) begun in 1969, completed in 1974

Lykes-Youngstown Sheet & Tube

- Acquired by LTV in 1978

**Table A2:** Annualized return for divested or spun-off steel assets

Rouge Steel		
Sold by Ford	Chapter 11 in 2003; sold	-16.07%
CF&I Steel Corp		
Spun off by Crane	Chapter 11 in 1990; sold	-5.97%
Acme Metals Inc.		
Spun off by Interlake	Chapter 11 in 1998; liquidated	-3.18%
Wisconsin Steel		
Sold by International Harvester	Chapter 11 in 1980; liquidated	na
Lone Star Steel		
Spun off by Northwest Industries	Chapter 11 in 1989; re-emerged 1991	8.46%

**Sources:**

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