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# The Irrational Escalation of Commitment and the Ironic Labor Politics of the Rust Belt

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Most studies of labor politics in the United States focus on those politics as they are embedded within larger electoral and national party politics. In this article, we investigate how the relationship between the United Steelworkers of America (USWA) and steel-manufacturing firms shaped the political economy of the Rust Belt. We show that the 1959 steel strike and subsequent collective bargaining agreements between the USWA and the ten largest steel manufacturers in the United States reshaped institutional labor politics and led to a greater emphasis on negotiated pension and unemployment benefits. In turn, these institutional commitments profoundly shaped deindustrialization. Pension and severance benefits motivated firm managers to sustain relatively large, antiquated steel plants and to close smaller plants in order to avoid enormous legacy liabilities. Using theoretical insights from economic studies of auctions, as well as historical and quantitative data, we show how the labor agreements shaped the choices concerning, and the timing of, mill shutdowns. We conclude that these choices help explain important variance in the fortunes of steel towns in the Rust Belt.

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When I joined the company, the boss told me the steel business is a highly cyclical industry on a 10-year wave. What he didn't tell me was that the wave goes up for 6 months and then crashes down for 9 1/2 years!

—Weirton Steelworker, 2000

Political economists have tracked the deindustrialization of U.S. industry and analyzed its effects on employment, wages, income distribution, and industrial organization.<sup>1</sup> Far less attention has been paid to the way in which the institutional political economy between labor unions and firms shaped the process of deindustrialization.<sup>2</sup> In this essay, we analyze the institutional commitments between steel manufacturers and labor unions representing U.S. steelworkers. We argue that the commitments between steel firms and steelworkers' unions, primarily the United Steelworkers of America (USWA), profoundly shaped the deindustrialization process. Commitments to laborers' pension and severance benefits motivated firm managers to sustain relatively large, antiquated steel plants and to close smaller plants in order to avoid enormous legacy liabilities.

Traditionally, the decline of steel towns has been understood as the product of international economic competition, a failure to modernize plants, and market deteriorations.<sup>3</sup> In reality, however, the fortunes of steel cities vary dramatically and are characterized by puzzling patterns. For example, Bethlehem Steel sustained its relatively antiquated and inefficient structural-product mill in Bethlehem until the late 1990s in the face of indications that it should have closed the plant by the mid-1980s. Despite the final closing that slashed four thousand jobs, the community successfully shifted to an economy based on small manufacturing and financial and health services. Three hundred miles west, the community of Weirton, West Virginia, used resources embedded in its collective bargaining agreements to finance an employee purchase of the National Steel Works Weirton Division. The community has maintained its basic industry, but its economy continues to decline and it struggles to

1. See, for example, Irving Bluestone and Bennett Harrison, *The Deindustrialization of America: Plant Closings, Community Abandonment, and the Dismantling of Basic Industry* (New York, 1982).

2. For a similar analysis in which steel plants, and not firms, are the units of analysis, see Mary E. Deily, *Exit from the U.S. Steel Industry* (Cleveland, Ohio, 1987).

3. Donald F. Barnett and Robert W. Crandall, *Up From the Ashes: The Rise of the Steel Minimill in the United States* (Washington, D.C., 1986), 10–13; Paul A. Tiffany, *The Decline of American Steel: How Management, Labor, and Government Went Wrong* (New York, 1988).



A view of the blast furnace complex, Bethlehem Steel, Bethlehem, Pa., from 4th Street. Photograph taken by Glenn Beamer, Oct. 1994.

retain employment opportunities and population. In general, many unproductive mills stayed open longer than one would have predicted from their labor costs, location disadvantages, and manufacturing processes.

To understand the economic and political challenges facing steel towns and their local institutions, we need to understand how the interaction between labor and management created binding agreements with different effects for different communities. Towns with large steelworks and high numbers of steel employees were likely to retain jobs and experience a longer decline, whereas towns with smaller mills, even relatively efficient mills, had to adjust sooner and more dramatically to changing political and economic dynamics.

In this article, we argue that the phenomenon of irrational escalation of commitment observed in behavioral economics and studies of

negotiation helps explain steel industry executives' behavior in the postwar period.<sup>4</sup>

### The Irrational Escalation of Commitment

What is puzzling about the behavior of steel executives in the modern period is the extent to which, by almost all accounts, they kept unprofitable mills open too long at the expense of more profitable mills and their firms' financial health.<sup>5</sup> Examples of decision making by steel industry executives illustrate a pattern in which commitment to a particular course of action extends beyond that prescribed by models of rational managerial decision making. The answer to the puzzle of steel executive behavior lies in a phenomenon observed in behavioral economics called irrational escalation of commitment.<sup>6</sup> That is, actors escalate commitment to a preselected course of action when instead, by all indications, they should alter course. Decision makers stay committed to unprofitable courses of action for a number of reasons. In some cases, psychological factors encourage escalation behavior. For example, we may escalate our commitment to a course of action because past choices lead us to look only for evidence that confirms the wisdom of our initial choice (confirmation bias), because our initial investment distorts subsequent judgments (sunk-cost fallacy), or because we want to save face or appear consistent with our past public statements (consistency).<sup>7</sup>

4. In using the term *irrational*, we do not mean that actors do not optimize.

5. Christopher G. L. Hall, *Steel Phoenix: The Rise and Fall of the U.S. Steel Industry* (New York, 1997), 35–64, 92–98.

6. For the best treatment of this phenomenon that we are aware of, see Max H. Bazerman, *Judgment in Managerial Decision Making* (New York, 1998). We base our discussion largely on his treatment and description of this phenomenon. See also Max H. Bazerman and Margaret A. Neale, *Negotiating Rationally* (Toronto, 1992); Avinash K. Dixit and Barry J. Nalebuff, *Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life* (New York, 1991); Avinash K. Dixit and Susan Skeath, *Games of Strategy* (New York, 1999); J. Keith Murnighan, "A Very Extreme Case of the Dollar Auction," *Journal of Management Education* 26 (Feb. 2002): 56–69; Martin Shubik, "The Dollar Auction Game: A Paradox in Noncooperative Behavior and Escalation," *Journal of Conflict Resolution* 15 (March 1971): 109–11; and Allan I. Teger, *Too Much Invested to Quit* (New York, 1980).

7. For a discussion of confirmation bias and how sunk costs affect risk-bearing behavior, see Bazerman, *Judgment in Managerial Decision Making*, pp. 34–36. For a discussion of the psychology of consistency and saving face, see Robert B. Cialdini, *Influence: How and Why People Agree to Things* (New York, 1984); G. Richard Shell, *Bargaining For Advantage: Negotiation Strategies for Reasonable People* (New York, 1999).

Another reason for irrational escalation of commitment, and the one on which we focus, stems from competitive situations in which the parties misunderstand their strategic situations. In such situations, behavior is clearly irrational from the perspective of expected outcomes, but it is hard to identify any specifically irrational actions taken by the parties during the decision-making process. A common exercise used to illustrate the irrational escalation of commitment is the \$20-bill auction, in which the instructor takes out \$20 and announces,

I am about to auction off this \$20 bill. You are free to participate or just watch the bidding of others. People will be invited to call out bids in multiples of \$1 until no further bidding occurs, at which point the highest bidder will pay the amount of the bid and win the \$20. The only feature that distinguishes this auction from traditional auctions is a rule that the second-highest bidder must also pay the amount that he or she bid, although he or she will obviously not win the \$20. For example, if Bill bid \$3 and Jane bid \$4, and bidding stopped, I would pay Jane \$16 (\$20-4) and Bill, the second-highest bidder, would pay me \$3.<sup>8</sup>

Bidding usually begins briskly but slows as bids exceed \$10. Eventually, only the top two bidders remain. They are trapped. Here is the reason why. Suppose one bidder has bid \$17 and the other has bid \$18. The one who has bid \$17 must choose between accepting a certain loss of \$17 and bidding \$19. Bidding \$19 gives the first bidder a chance to make a gain if the other bidder quits. Now the second bidder, who has bid \$18, must decide between a certain loss of \$18 and a bid of \$20. The second bidder bids \$20. What is surprising is that the bids over \$20 follow the same logic. Bidder number 1 must decide between a sure loss of \$19 and a chance for a loss of only one dollar. In these auctions, bidding generally follows a familiar pattern in which bidding ends between \$20 and \$70, although bidding has exceeded the \$100 mark on a number of occasions.<sup>9</sup>

8. Bazerman, *Judgment in Managerial Decision Making*, 70–71. The original idea for the auction comes from Shubik, “The Dollar Auction Game,” but has been described in various places. See also Bazerman and Neale, *Negotiating Rationally*, chap. 2; Dixit and Nalebuff, *Thinking Strategically*, 349–51; Dixit and Skeath, *Games of Strategy*; Murnighan, “A Very Extreme Case of the Dollar Auction,” 56–69. It has been used variously to describe romantic involvement, managerial missteps, and international conflict. See, for example, Murnighan, “A Very Extreme Case of the Dollar Auction,” 65–67; Barry O’Neill, “International Escalation and the Dollar Auction,” *Journal of Conflict Resolution* 30 (March 1986): 33–50.

9. For a case in which bidding exceeded \$2,000 in a \$20-bill auction, see Murnighan, “A Very Extreme Case of the Dollar Auction,” 56–69; see also Bazerman, *Judgment in Managerial Decision Making*, 72–73.

What is the proper way to respond to the \$20-bill auction?<sup>10</sup> Unfortunately, most bidders proceed believing that no one will ever bid more than \$20 for \$20 and that one more bid may get the other party to quit. What is missed is that both parties are following the same logic. Thus, the trap. The solution is either not to play at all or to collude with other bidders and split the money. Of course, if you do not play then someone else can bid a small amount and get a bargain. On the other hand, if someone else does not bid and you bid a small amount, you can get a bargain. Thus, again, the trap.

### Steel Industry History and the Irrational Escalation of Commitment

Decision making by steel executives before and during deindustrialization exhibited aspects of irrational escalation of commitment, which helps explain why low-performing mills were kept open longer than they should have been and why more productive mills were often shut down before low-performing mills. In the following section we explain how, like bidders in a \$20-bill auction, steel executives were faced with a choice of closing down unproductive mills or keeping them open. Shutting mills down (that is, exiting the auction) would trigger substantial shutdown costs in the form of severance pay and employee benefits stipulated by past labor agreements (a certain loss). Keeping mills operating (that is, continuing in the auction) created the possibility that other steel firms would shut their plants down and return the former high-cost, inefficient mills to profitability. On the other hand, loss of furnace capacity contracted a firm's ability to earn higher revenues and profits if other firms exited the market and price increases ensued. Each firm's managers hoped that competitors' decreased production volumes would increase the price of steel. The problem, of course, was that all the firms were making the same calculation, forgoing a certain loss in the hope that their decision to stay in business would lead other firms to quit. Each year that the mills stayed open, the shutdown costs grew and the potential loss for firms owning the less productive mills became

10. There are a number of ways to attain equilibrium in such auctions. One consistent with the theory of economist John Forbes Nash, Jr., is for a bidder to bid \$19 to start. Another is for participants to collude and split the money such that the expected value for the colluding bidders exceeds the expected value for bidders participating on their own. Neither of these courses of action appears feasible for the steel executives considered here. They could not collude because of antitrust laws, and none of the firms was in a position to bid the equivalent of \$20 at the start to force other firms out of business.

greater. The result was an apparently irrational outcome, with many mills staying open longer than they should have and some of the most productive steelworks being shut down first because they were associated with the lowest certain losses.

### Early Steel History

In the years following the institutionalization of labor-management relations within the context of the Wagner and Taft-Hartley acts passed by Congress in 1935 and 1946, respectively, two critical events shaped the parameters for the steel industry's decline commencing around 1976.<sup>11</sup> The first of these events was the 1959 steel strike, which convinced managers that labor disruptions created a threat from imported steel and that their oligopolies and profits were best protected by sharing profits with steelworkers and sustaining uninterrupted steel production.<sup>12</sup> The second event was the 1973 Experimental Negotiating Agreement, which institutionalized wage escalation and, more important, substantial pension and severance benefits that created large shutdown costs.

### The 1959 Steel Strike

After World War II, there were five strikes in fourteen years in the steel industry.<sup>13</sup> Steelworkers, recognizing the profitability of the steel industry and their own vulnerability to cyclical production patterns and automated processes, eschewed the sacrifices they had made in the wartime economy and sought increases in wages and benefits. The most critical of the strikes was one in 1959 in which both sides seemed resigned to a showdown. The strike was devastating, lasting 116 days.

In the end, threatened by an increase in steel imports and a loss of market share, management made important concessions to steel unions. They agreed to the retention of work rules that prohibited management from changing crew sizes or task assignments once they had been established on a plant-by-plant basis (Clause 2b), and they agreed to increase compensation by increasing pension, vacation,

11. William Serrin, *Homestead: The Glory and Tragedy of an American Steel Town* (New York, 1992), 252–57, 315–18; John Strohmeyer, *Crisis in Bethlehem: Big Steel's Struggle to Survive* (Pittsburgh, Pa., 1994), 64–78.

12. Tiffany, *The Decline of American Steel*, 167–84.

13. Jack Metzgar, *Striking Steel: Solidarity Remembered* (Philadelphia, Pa., 2000), 47–53, 62–64.

and other benefits, the costs of which could largely be deferred far into the future. The labor agreement provided for the steel firms to fully fund a noncontributory pension plan with a minimum pension based on a percentage of earnings for every year of service.<sup>14</sup>

The actions of management in 1959 created parameters for USWA gains in the 1960s. Managers had appeared especially weak when they lost on their major issue in the 1959 strike, the elimination of Clause 2b, and they seemed unconvincing when they refused to cite specific examples of changes in work practices that would increase productivity within the mills.<sup>15</sup> Steel company managers did not revisit Clause 2b in any substantial way for the next twenty-three years. They sustained jobs they could have eliminated rather than risk the disruption of production and loss of revenues that a strike would have caused.

In addition, the specter of future strikes threatened import surges, whereas labor peace meant a steady flow of revenues to the firms and regular, predictable production schedules, unlike the highly cyclical production patterns of the 1950s.<sup>16</sup> This was particularly important because another work interruption could send some of the smaller steelmakers into bankruptcy. The industry as a whole was becoming less competitive, and the retention of Clause 2b constrained firms from competing with more efficient mini-mills and foreign producers in a way that altered crew sizes or task assignments.<sup>17</sup>

### The 1973 Experimental Negotiating Agreement

So great was the fear of labor stoppage in an environment of increased international competition that in 1973 the steel industry entered into the Experimental Negotiating Agreement (ENA) with the United

14. By 1973 employees received pensions calculated as 1.1% of earnings for the first thirty years of service and 1.2% of earnings for every year of service in excess of thirty years, a more generous earnings window that eliminated losses due to layoffs and reduced hours, and shutdown benefits of \$230 per month until the retiree could receive unreduced social security (OASDI) benefits.

15. Clause 2b is often characterized as stifling the adoption of technology in the industry. See Strohmeyer, *Crisis in Bethlehem*, 65–67, 77. Clause 2b did not prevent, or even discourage, technology adoption but rather maintained crew sizes for those processes that continued with the use of the same technologies. See Hall, *Steel Phoenix*, 41–45, 54–63; Metzgar, *Striking Steel*, 98–108. Clause 2b created a basis for negotiating crew sizes throughout the mills. Thus, many crew sizes that could have been reduced in the 1960s and 1970s remained at one size through the 1980s, at which time the USWA conceded some staffing in order to retain mill operations and overall employment. See Glenn Beamer, “Cities of Steel: Institutional Political Economy in the Rust Belt,” book manuscript.

16. Tiffany, *The Decline of American Steel*, 128–52; Serrin, *Homestead*, 307–28; Strohmeyer, *Crisis in Bethlehem*, 98–107.

17. Barnett and Crandall, *Up from the Ashes*, 96–107.

Steelworkers. The ENA provided a no-strike clause and 3 percent annual wage increases, in addition to annual cost-of-living adjustments (COLA).<sup>18</sup> In return, the USWA agreed not to strike against the member companies in the Basic Steel Industry Conference, an organization comprising the largest steel-producing firms and created for the negotiation of a single labor agreement with the USWA. The ENA also instituted the Rule of 70/80, which provided lifetime income security for hourly wage laborers.<sup>19</sup> The Rule of 70/80 provided an immediate pension to any employee over age fifty-five whose combined age and years of service equaled seventy or greater. Employees under age fifty-five whose combined age and years of service equaled eighty or more were also eligible to receive pensions. In addition, employees qualifying for the Rule of 70/80 benefits who were forced to retire because of plant closures became eligible for "shutdown" pay equal to \$239 (later raised to \$300 and then to \$400 by 1980) per month until they reached age sixty-two. This pay was meant to supplement the pension and to precede the benefits that federal Social Security would provide once the employee attained the age of sixty-two.

For every employee eligible for shutdown pay, the industry created a new fixed cost of forcing employees to retire. For a 50-year-old mill worker with thirty years of service, the present value from the shutdown alone was \$36,241 in outlays that the company would have to make over twelve years.<sup>20</sup> The added years of pension payments would create \$96,640 per employee in present-value expenses for the com-

18. After adjusting for inflation, however, the ENA exacted a tremendous, and unbearable, price for labor peace. In real dollar terms, hourly employment costs rose by 50% from 1972 through 1982. Employment costs had been \$29.92 per hour in 1972, but they climbed to \$43.59 per hour in 1982. See Hall, *Steel Phoenix*, 66–72. Large portions of these costs were embedded in pension, shutdown, and supplemental unemployment benefits, all of which distorted the costs and benefits of retaining operations or closing them.

19. In addition to the Rule of 70/80, there was the Rule of 65, which provided pension benefits to workers age forty-five and over with at least twenty years of service. These workers were not eligible for shutdown benefits, although they could qualify for supplemental unemployment benefits for periods of twenty-four months.

20. The amounts were calculated by using approximated yearly pension and health insurance costs from the Weirton Steel division of National Steel. The estimates were reduced to reflect the wage premium paid Weirton workers through their singular collective bargaining agreement with National Steel (see Beamer, "Cities of Steel," for further elaboration). A second way of calculating these costs is to use data from mill closings in the 1970s and steel company financial data. In 1977 Bethlehem Steel recorded charges against earnings equal to \$483 million. This amount represented the present value of pension obligations that the company assumed when it terminated 9,800 hourly and salaried employees throughout the corporation, with operation reductions concentrated at its Lackawanna and Johnstown plants. These obligations comprised shutdown charges of \$49,285

pany (all figures are in 1982 dollars). If we estimate that even half of the unionized employees were eligible for pensions and shutdown benefits, with an average present value of \$75,000 per eligible employee (in 1982 dollars), then the 1973 ENA created a new hidden cost to the industry in excess of \$31 billion.<sup>21</sup> For some firms, these amounts would be greater because of the age distribution of their work force. The liability that the ENA introduced meant that firms could not simply shut down mills because of the losses created by specific operations. Rather, a painful decade-long high-wire act would play out in which managers shed operations, restored profitability briefly, and then shed more operations when they could bear the next shutdown expense.

### The Legacy of the ENA for Steel Executive Decision Making

The Rule of 70/80 further locked in the oligopoly's inefficiency. The 1950s were a time of increasing returns, and the USWA negotiated its share of the profits reaped by the steel companies. When steel companies faced foreign and mini-mill competition, they could not adjust quickly without cost. Closing facilities immediately introduced a fixed cost of \$75,000 per union employee. With decreased production capacities and falling prices, revenues would drop sharply and only further inhibit an attempt to stay in business.

The calculus became one of sustaining marginal operations that could cover their own material costs and some portion of their labor costs until employees could retire and firms could gradually reduce operations and then abandon plants. If managers did not act to cut their highest losses, then their firms would face bankruptcy. On the other hand, if managers closed too many operations, the shutdown charges could be so great that the immediate liability would push the firm into bankruptcy. Consequently, managers balanced reducing operating losses with accruing pension and layoff liabilities. At this point, the plant managers were much like bidders; the commitments they made to exiting the market (auction) were as likely to cost them

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per employee in 1977 dollars. Adjusting for inflation, the charge in 1982 would have been \$78,364. Court documents from *Pickering v. USX* in 1990 indicate that by the mid-1980s U.S. Steel estimated the present value of pension and health benefits at \$217,000 per eligible worker; see *Pickering v. USX Corp.*, 53 FEP Cases 1465 (D. Utah 1990). However, these costs hit a peak based on initial eligibility and then dropped to a lower level as individual workers neared age sixty-two or normal retirement and thus relieved the company of responsibility for shutdown pension benefits and health insurance coverage.

21. In comparison, Bethlehem Steel had approximately \$7 billion in revenue in 1978, and U.S. Steel had revenues of approximately \$15 billion for its steel division. These companies made up about 45% of the steel industry at that time.

money as to make them money, and they appeared to be most likely to recoup costs by remaining in the market.

As plant closings commenced, firm managers faced a catch-22 situation. In many cases, their most unprofitable facilities were the large, integrated plants that could not compete with the emerging mini-mills.<sup>22</sup> Closing these facilities, however, would trigger huge liabilities for firms and would limit their future production and revenue capacities. Believing that they needed steel production capacity to generate revenues in order to absorb current costs and increased retirement expenses, firm managers focused on closing smaller plants and retained large, integrated steelworks despite the often greater efficiency of the smaller mills.

An important external constraint on the steel managers was the policy of the Pension Benefit Guaranty Corporation (PBGC) that prohibited steel firms from vitiating pension plans agreed to in their collective bargaining negotiations. Created by the Employee Retirement Income Security Act of 1974 to ensure defined-benefit pension plans and regulate firms offering such plans, the PBGC forced steel firms to continue to fund Rule of 70/80 pensions even after the firms sought protection from creditors, including the PBGC and the USWA, under Chapter 11 of the bankruptcy code. In a case that went to the Supreme Court, the PBGC reassigned pension liabilities to a steelmaker after the corporation reorganized under bankruptcy protection.<sup>23</sup>

Part of the reason for retaining the larger mills was the hope of surviving competitors. If a company could sustain operations through the frequent recessions of the 1970s and 1980s and if competitors failed, then the surviving plants might command prices and produce sufficient steel to offset losses incurred by the previous shutdowns. Without large plants that could produce millions of tons of steel, firms would foreclose the revenues they would need later to recoup their operating losses. Not only would closing large plants create huge losses because of the high shutdown charges (arising from the large number of employees), but it would also constrain future revenues and profits. Firm managers calculated that they were better off making pennies on millions of tons of steel than making dollars on thousands of tons of steel.<sup>24</sup>

22. Barnett and Crandall, *Up from the Ashes*, 117–24.

23. *Pension Benefit Guaranty Corp. v. LTV*, No. 89–930, SCUC, 18 June 1990. See Barry Rehfeld, “How LTV Did It,” *Institutional Investor* 31 (June 1997): 58–66.

24. Jonathan P. Hicks, “AID Asked for Steel Industry,” *New York Times*, 26 May 1987, D-1; William Serrin, “A Chapter of Industrial History Closes with the Homestead Steel Works,” *ibid.*, 27 July 1986, p. 16; Jonathan P. Hicks, “U.S. Steel: New Name Ends an Era,” *ibid.*, 9 July 1986, D-1.

## National Steel's Weirton Steel Division

Perhaps the most pointed example of shutdown costs reshaping deindustrialization comes from National Steel's Weirton Steel division in West Virginia's northern panhandle. In return for their allegiance to an independent union, National Steel paid a premium to its Weirton workers, who formed the Independent Steelworkers Union (ISU). In the 1940s and 1950s, the five steel strikes by the USWA enabled National Steel to sell steel while other plants were closed. The wage premium inflated operating costs, however, and motivated National Steel's management to identify Weirton as its least profitable operation among its three plants. The wage premium also inflated the shutdown costs National Steel faced in the early 1980s. Because these costs exceeded \$750 million, the shutdown charges would have pushed National Steel immediately into bankruptcy, and this situation motivated National Steel's management to seek an economic alternative to a plant shutdown and to propose an Employee Stock Ownership Plan (ESOP). After a 22-month campaign, the Independent Steelworkers and Weirton division managers purchased the plant for a fraction of its book value, having successfully negotiated favorable terms for employee pensions that National Steel had resisted.<sup>25</sup> National Steel could negotiate only deferring pension costs and could not minimize them as it had hoped. Nevertheless, in deferring these costs, the firm avoided the shutdown provisions calling for extraordinary severance.

The most critical shift during the campaign had been ISU president Walter Bish's success in moving National Steel from a "Lock and Freeze" pension proposal to the "Work to Get" proposal. Work to Get provided a higher present value of income for workers and ensured that many more workers would have uninterrupted wages, pensions, or both under the provisions of the Rule of 70/80. Under Lock and Freeze, National Steel's pension liability would have been limited to its obligations on the date of transfer. Under Work to Get, National Steel and Weirton Steel shared pension liabilities for employees in proportion to the employees' service to each company. For example, an employee with twenty years of service to National Steel and ten years of service to Weirton Steel would qualify for a full pension. National Steel would be liable for two-thirds of the pension payments, and Weirton Steel would be liable for one-third. For an employee with twelve years of service with National Steel and eighteen years of service with Weirton Steel,

25. James Lieber, *Friendly Takeover: How an Employee Buyout Saved a Steeltown* (New York, 1995), 219–26.

National Steel would be liable for 40 percent of the employee's pension, and Weirton Steel would fund the remaining 60 percent.

Had National Steel succeeded with its Lock and Freeze position, it would have eliminated a sizable portion of its staggering legacy costs in the transaction, because no employees of the new Weirton Steel could subsequently qualify for shutdown benefits or 70/80 pensions from National Steel. For example, in 1983 a 48-year-old employee with thirty years of service would have been one year away from qualifying for a full pension. Had Lock and Freeze been enacted, the employee would have received no pension benefits until age sixty-two, and then the employee would have received reduced benefits. With Work to Get, the employee would become eligible for full retirement after one additional year of service to the new Weirton Steel. For such an employee, National Steel assumed 97 percent of the pension liability, and the new Weirton Steel assumed approximately 3 percent.

Table 1 indicates the incomes that various employees could expect with the ESOP compared to those expected without the ESOP. As indicated, the Work to Get provisions of the ESOP substantially increased employees' lifetime expected benefits by advancing eligibility for pension benefits and increasing the monthly payments by crediting service from National Steel and Weirton. The question becomes why National Steel would accept such an offer. The answer is that the Work to Get formula offered the only certain means by which to at least defer, and possibly avoid altogether, the shutdown benefits that would have accrued for pension-eligible workers. By completely averting a shutdown, National Steel negated a \$120 million liability for the \$400 monthly shutdown benefits, and it deferred much of the remaining \$400 million liability and spread its accrual over the next fourteen years. Like the bidder in the \$20-billion auction, National Steel conceded equity and created a new competitor rather than exit the auction and incur a cost it could not bear.

Table 1 Pension Eligibility and Estimated Payments under Lock and Freeze Compared to Those under Work to Get

Age/Years of Service	Lock and Freeze		Work to Get	
	Year Pension Begins	Amount	Year Pension Begins	Amount
50/20	1995	\$750	1988	\$950 + \$400 if shutdown occurs
40/21	2005	\$750	1993	\$1150
53/19	1992	\$710	1987	\$862 + \$400 if shutdown occurs

## Where Is the Irrationality?

We are not suggesting that the decision to keep mills with the highest shutdown costs open was irrational. In the \$20-billion auction, it is hard to fault bidders for continuing in the auction when they are given a binary choice between a large certain loss and the possibility of a smaller loss. Steel executives had a binary choice between high immediate shutdown costs and continuing operating losses. There are many conditions under which keeping the mills open is a reasonable strategy. Like bidders in the auction, however, the longer executives kept mills open (stayed in the auction), the higher the shutdown costs became and the more money the firms lost by operating unprofitable mills.

If any part of the decision making was a mistake, it was the failure to recognize that all steel executives would make the same calculation. They would keep unprofitable mills open at a loss rather than accept shutdown costs, in the hope that steel prices would rise again once they won the auction and other mills shut down. The perverse legacy of this auction scenario was that prices never rose again to the level steel executives hoped, partly because too many mills stayed open too long and partly because of import and mini-mill competition. As in the \$20-billion auction, the “winners” were not necessarily better off by winning. On the contrary, mills that stayed open faced increased competition from mills that often had better technology and more efficient, less labor-intensive processes.

This analysis begs the question of why steel executives agreed to the provisions of the 1973 ENA in the first place. Either they did not understand what they were doing, did not anticipate a decline in steel prices, or highly discounted the future. Our analysis leads us to believe that steel executives bought labor peace at this high price because they discounted the future. Their primary motivation was to keep the firms profitable and the stock prices high during their tenures. In order to do that, they agreed to large liabilities in later years, which they expected to offset with high prices and increased labor productivity. Past experience with labor disruptions taught executives the damage that labor unrest could cause, and they agreed to the 1973 ENA to secure labor peace in the immediate future.<sup>26</sup> The irrationality of decision makers in this case was not that they could

26. This perception is borne out in USWA memoranda prepared for contract negotiations. See Otis Brubaker and Arthur Stuart, “Steel Industry Profits: 1967 Full-Year and Quarterly Data,” *USWA Memorandum*, 25 June 1969; Otis Brubaker and Ed Ghearing, “Steel Industry Profits: 1968 Full-Year and Quarterly Data,” *USWA Memorandum*, 4 Aug. 1969. Regarding the aversion to imports and the relative emphasis on short-term profitability, see Tiffany, *The Decline of American Steel*,

not optimize, but that steel executives did not properly take into account the auction scenario that the 1973 ENA put in place. Once steel executives found themselves in the auction, however, they played the way most rational individuals do.

### Data, Variables, and Methods

The preceding theoretical and historical analysis suggests that mills with the highest shutdown costs should be the most durable. With location, technology, or productivity controlled for, those firms with the highest number of employees should be the most durable because they would also incur the highest shutdown costs.

*Hypothesis: Mills with the largest number of employees (highest shutdown costs) are more durable than other mills.* The preceding history of the steel industry provides evidence for this hypothesis, but with quantitative data and modern econometric techniques we can strengthen our case. As in all quantitative analyses, we are limited by the availability and quality of data. We have a limited number of mills to analyze, and there are limited data available on a mill-to-mill basis. With these caveats, our goal is to model mill outcomes and durations based upon the characteristics of the plants in 1973 at the signing of the ENA. Were those mills with the highest shutdown costs in 1973 the most durable?

To test this hypothesis, we use data collected on steel mill durations.<sup>27</sup> There are data on 81 mills; three firms (Bethlehem Steel, U.S. Steel, and Republic Steel) owned 40 percent of them. Of the 81 mills in existence in 1973, 49 (60 percent) were completely closed and razed by 2002. An additional 16 (20 percent) had been sold, had significant reductions in processes, or both.<sup>28</sup> The first mill in the sample was shut down in 1977, and the median survival time was thirteen years.<sup>29</sup> Of the 81 mills, 63 were steel-producing mills. The remaining mills focused on steel enhancement (treating steel) or fabrication (reshaping for specific purposes).

We measure shutdown costs by using the log of the number of employees in a mill. The number of employees varied from 112 to

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167–84; Hall, *Steel Phoenix*, 45–48, 68–71; and *New York Times*, “No-Strike Accord Reached on Steel,” 30 March 1973, p. 1.

27. Beamer, “Cities of Steel.”

28. Two mills were still owned by the same firm but had reductions in processes (such as an end of steelmaking), twelve were sold and continued with the same processes, and two were sold and had reductions in processes.

29. This does not account for right censoring, because we cannot observe the shutdown dates of mills that are still operating. We account for this in estimation.

22,600 per mill in 1973, with a mean of 4,406 and a standard deviation of 4,377. Ideally, in measuring shutdown costs we would consider both the number of employees and their demographic characteristics to better estimate per-employee expenses. Since shutdown charges were a function of employees' ages and years of service, these charges varied across mills in accordance with the demographics of the mill workers. In the absence of data enabling us to estimate mill-to-mill variations in shutdown expenses, however, we approximate mill-to-mill shutdown charges by assuming proportionately equal age and years-of-service distributions across plants.

### Controls

We include a number of controls to account for other predictors of mill durability, primarily mill-specific, firm-specific, and location-specific factors. To gauge mill technological sophistication, we use two measures. In models of all eighty-one mills (both steel producing and non-steel producing), we use an indicator to distinguish mills that produced steel from those that were finishing plants with facilities for fabricating and galvanizing. This variable, *steelmaker*, equals one for steel plants that had primary steelmaking furnaces and zero otherwise. In models of steel-producing mills only, for which we have better data, we use four indicators of furnace type, with some types being more efficient than others. The four types, from most efficient to least efficient, are electric arc furnaces, basic oxygen furnaces, some combination of electric arc or basic oxygen furnaces with open-hearth furnaces, and open-hearth furnaces only. In the models, we exclude mills with open-hearth furnaces as the base category. The coefficients representing furnace type should be positive and progressively increase, indicating that with all else being equal, increasing furnace sophistication increases expected mill duration.

Anecdotally, we might suspect that access to water transportation facilities would lengthen mill duration, particularly because land-locked facilities in Youngstown, Ohio, were among the first mills to be closed. We include an indicator variable equal to one if a plant was located on the Great Lakes (21 percent) and equal to zero otherwise. We also include an indicator for plants located next to water transportation facilities on one of the coasts (19 percent). The advantage of some locations extends beyond easy access to transportation. The tax burden can also increase or decrease costs for mills. We include local property taxes per capita in 1975 to measure the impact

of tax rates on mill retention. Per capita property taxes varied from \$38 to \$515, with a mean of \$265 and a standard deviation of \$109.

The durability of mills also depends fundamentally on the characteristics and decisions of the firm operating the mill. We include controls for the importance of the plant to a company's livelihood. The more important a mill is to a firm's livelihood, the longer the firm is likely to keep the mill open. Larger firms have more flexibility in stopping steel production, selling mills, or shutting mills down. To account for this factor, we include an indicator of whether or not a mill is the only plant owned by a firm (7 percent).<sup>30</sup>

We also include fixed effects to account for other firm-to-firm variance, because existing explanations for mill durability often focus on the viability and decision making of individual firms.<sup>31</sup> Specifically, we include indicators for the three largest firms: Bethlehem Steel, U.S. Steel, and Republic. Because we also include an indicator for single-mill firms, the base category is mills owned by firms with more than one mill but fewer than eight mills.

## Method

To test the impact of shutdown costs on decision making, we model both the final outcome and steel mill duration. To model steel mill outcomes, we estimate ordered probit models of the three category-dependent variables (that is, survival, sale or change in process, and complete shutdown). There are a number of ways to model mill durability. Some techniques model the natural log of the survival time, and others model the hazard rate. We have chosen the former technique in this case, because we are more interested in the survival time than in the rate of termination. Estimation of the accelerated failure time model allows for a natural interpretation of the coefficients in terms of expected durability in years.<sup>32</sup> Because the hazard rate increases over time, we assume that the error term has a Weibull density.<sup>33</sup> Because we do not observe whether or when a mill is terminated

30. In other model estimations, we included a measure of the percentage of a firm's total numbers of production and maintenance employees working at an individual mill. The percentage of production and maintenance employees varies from 1 to 100%, with a mean of 21% and a standard deviation of 30%. The parameter estimate for this variable was close to zero and not significant.

31. See Hall, *Steel Phoenix*.

32. We have also estimated a series of Cox proportional hazard models (which use the hazard rate as a dependent variable), however, and the results confirm what we report here. They are available on request from the authors.

33. We graphed the product limit estimate hazard rate, and it shows a clear pattern of monotonic increase.

after 2002, the data on 20 percent of the mills are right censored. Right censoring is quite frequent with time-dependent data and is accounted for in maximum likelihood estimation.<sup>34</sup>

## Results and Discussion

Table 2 includes estimates of an ordered probit model of steel mill outcomes, and Table 3 includes estimates from Weibull models of steel mill durations.<sup>35</sup> In the first column we present results based on the full sample of steel mills, and in the second column we model estimates on the subset of steel-producing mills only. In general, the models confirm our expectations about mill durability, although the small number of cases makes the standard errors relatively large. The coefficient and size of the ancillary parameter in Table 3 confirm our expectation that the hazard rate of steel mills increased ( $\rho > 1$ ) between 1973 and 2002.<sup>36</sup> Coefficient estimates suggest that the mills with the best technology were the most likely to survive the period. Steel-producing mills with all electric arc furnaces had a 0.64 higher probability of avoiding complete shutdown than mills with open-hearth furnaces.<sup>37</sup> Those mills with geographic advantages also appear to be slightly better off than other mills. Mills located on waterways were marginally more successful than other mills. All coefficients representing locations on the Great Lakes and the coast progressed in the expected direction and were marginally significant. Steel-producing mills in low-tax areas were also significantly more durable than other mills. There is no systematic evidence that mills owned by one of the big firms did better than the other mills, but there is evidence that mills owned by smaller firms were more vulnerable to shutdown. The coefficient representing the single-mill

34. Nancy Brandon Tuma and Michael T. Hannan, *Social Dynamics: Models and Methods, Quantitative Studies in Social Relations* (Orlando, Fla., 1984).

35. All models were estimated using Stata 7.0 for PCs. All data and results are available on request from the authors.

36. If  $\rho$  equals one, the Weibull model is equivalent to an exponential model. When  $\rho$  is less than one, the hazard is a strictly decreasing function. When  $\rho$  is greater than one, the hazard rate is a strictly increasing function. See Janet M. Box-Steffensmeier and Bradford S. Jones, "Time Is of the Essence: Event History Models in Political Science," *American Journal of Political Science* 41 (Oct. 1997): 1414–61, for details.

37. We calculated this probability through simulations on ordered probit estimates in which we set variables at reasonable values. Specifically, we calculated the probabilities, assuming that a firm owned more than one mill but that the firm was not Bethlehem, Republic, or U.S. Steel. We assumed that the mill was not located on the Great Lakes or the coast, and the tax rate and employment levels were set at the means.

Table 2 Ordered Probit Model Estimates of Steel Mill Outcomes

	(1)	(2)
Shutdown costs		
In (mill employment)	-0.50** (0.22)	-0.65** (0.27)
Controls and cut points		
Steelmaker (0,1)	-0.28 (0.52)	—
Electric arc furnace—EAF (0,1)	—	-1.84** (0.75)
Basic oxygen furnace—BOF (0,1)	—	-1.85** (0.70)
Combination of open hearth and EAF or BOF (0,1)	—	-0.53 (0.76)
Great Lakes location (0,1)	-0.39 (0.49)	-0.88* (0.65)
Coast location (0,1)	-0.42 (0.54)	-0.91* (0.63)
Per capita taxes	0.002 (0.002)	0.006** (0.003)
Single-mill firm (0,1)	1.21** (0.69)	1.03* (0.77)
Bethlehem Steel (0,1)	0.37 (0.46)	0.26 (0.52)
U.S. Steel (0,1)	-0.13 (0.37)	-0.85* (0.54)
Republic (0,1)	0.22 (0.49)	0.29 (0.51)
Number of Mills	81	61
$\chi^2$ (9 df)	20.46**	24.37**

Note: The dependent variable is a three-category variable with 0 indicating that the mill was still operating at the same level by same owner, 1 indicating a change of owner or reduction in process (or both) and 2 indicating complete shutdown. Cut-point estimates were omitted (-4.82, -4.11; -6.65, -5.85). Column (1) estimates are based on data from all steel mills, and column (2) estimates are based on data from steel-producing mills only. The base category in furnace sophistication is open-hearth furnaces, the least efficient.

\*  $p < 0.10$ , one-tailed test; \*\*  $p < 0.05$ , one-tailed test.

firms is significant in both models ( $p < 0.05$ ;  $p < 0.10$ ) and indicates that mills owned by these firms were more vulnerable than other mills. Indeed, in simulations, mills owned by single-mill firms had a 0.34 higher probability of complete shutdown than other mills.

### Shutdown Costs and Irrational Escalation of Commitment

Most important for our argument, however, steel mills with the highest shutdown costs were the most durable. In both models, the coefficient representing steel mill employment is significant and negative, indicating that an increase in employment decreases the

Table 3 Weibull Model Estimates of Steel Mill Duration, 1973–2002

	(1)	(2)	(3)
Shutdown costs			
ln (mill employment)	0.32** (0.09)	0.41** (0.09)	0.82** (0.24)
Controls, constant, and ancillary parameter			
Steelmaker (0,1)	0.07 (0.22)	—	—
Electric arc furnace—EAF (0,1)	—	1.17** (0.21)	5.71** (2.44)
Basic oxygen furnace—BOF (0,1)	—	1.17** (0.21)	5.01** (2.34)
Combination of open hearth and EAF or BOF	—	0.71** (0.20)	2.62 (2.82)
EAF* ln (mill employment)	—	—	-0.55** (0.30)
BOF only* ln (mill employment)	—	—	-0.46* (0.28)
Combination of open hearth and EAF or BOF* ln (mill employment)	—	—	-0.22 (0.34)
Great Lakes location (0,1)	0.06 (0.23)	0.20 (0.21)	0.19 (0.20)
Coast location (0,1)	0.03 (0.25)	0.08 (0.20)	-0.06 (0.21)
Per capita taxes	-0.00 (0.00)	-0.002** (0.001)	-0.002** (0.001)
Single-mill firm (0,1)	-0.65** (0.26)	-0.76** (0.24)	-0.72** (0.25)
Bethlehem Steel (0,1)	-0.37** (0.19)	-0.05 (0.18)	-0.20 (0.19)
U.S. Steel (0,1)	0.03 (0.19)	0.22 (0.18)	0.18 (0.17)
Republic (0,1)	-0.05 (0.23)	-0.09 (0.17)	-0.09 (0.16)
Constant	0.66 (0.71)	-0.78 (0.88)	-4.24** (2.03)
$\rho$	1.97** (0.20)	2.66** (0.31)	2.82** (0.34)
Number of mills	81	62	62
Number of failures	65	48	48
$\chi^2$ (9 df)	34.19**	49.71**	53.17**

Note: Dependent variable: ln(t). Column (1) estimates are based on data from all steel mills, and column (2) and (3) estimates are based on data from steel-producing mills only.

\* $p < 0.10$ , one-tailed test; \*\* $p < 0.05$ , one-tailed test.

probability that a mill will reduce its processes or shut down, even when the models control for a variety of factors, including mill technology, location, and firm characteristics. Although it is true that international factors affect the market for steel in the United States and the world, substantial variation in steel mill outcomes exists

among mills, and shutdown costs appear to be one cause of that variation. In Figure 1, we graph the change in probability of shutdown (category 2; 0, 1, 2 ordering) based on employment levels. The downward-sloping line confirms that larger mills were less likely to be shut down.

In Table 3 we include estimates of three Weibull models of steel mill durations. In column (1), we include all steel mills; in columns (2) and (3), we base estimates on only steel-producing mills. In these models, we expect the coefficients to be the opposite of those in Table 2, because a larger coefficient in Table 2 indicated shutdown, whereas in Table 3 it indicates duration. Like those in Table 2, the estimates confirm our expectations about steel mill durations. Those steel mills with higher shutdown costs were more durable than other mills. Increasing steel mill employment by one standard deviation increased steel mill duration by 4.4 years. In Figure 2, we graph cumulative survival probabilities for mills with lower than average employment levels, mean employment levels, and higher than average employment levels. The graph clearly shows higher survival probabilities for mills with higher numbers of employees.

When we control for a variety of factors, including the efficiency of mill processes, we find that those mills with high shutdown costs have the highest expected longevity. Were smaller, more efficient mills shut down at the expense of larger, less efficient mills? In column (3) in Table 3, we include estimates from a model with furnace type and mill employment interacting, and we graph the predicted mill survival times in Figure 3. The terms representing the interaction of these factors are significant in two of three cases and are negative, indicating that furnace type becomes a less important determinant of mill duration as the number of employees increases. The survival times of all mills increase with efficiency, but mill employment is a much more important factor for mills with less efficient processes.<sup>38</sup>

Rather than shut down the larger mills, firms chose to shut down mills with smaller work forces to avoid triggering substantial shutdown costs.<sup>39</sup> Decisions made in past labor agreements, notably the 1973 ENA, locked them into a choice like that of the bidders in the \$20-billion auction. Either they could accept certain substantial fixed costs by shutting down large mills or they could wait, keep the large

38. Indeed, in Figure 3, mills with high numbers of employees and less efficient furnaces have longer expected durations than more efficient mills, but this may be because no mills had those high levels of employment and electric arc furnaces.

39. Whatever furnace a plant used, the plant was less likely to shut down as employment increased. In 1977 through 1981, employment at shutdown plants averaged 1,174 workers per plant. In the 1987 to 2002 period, average employment was 6,469.

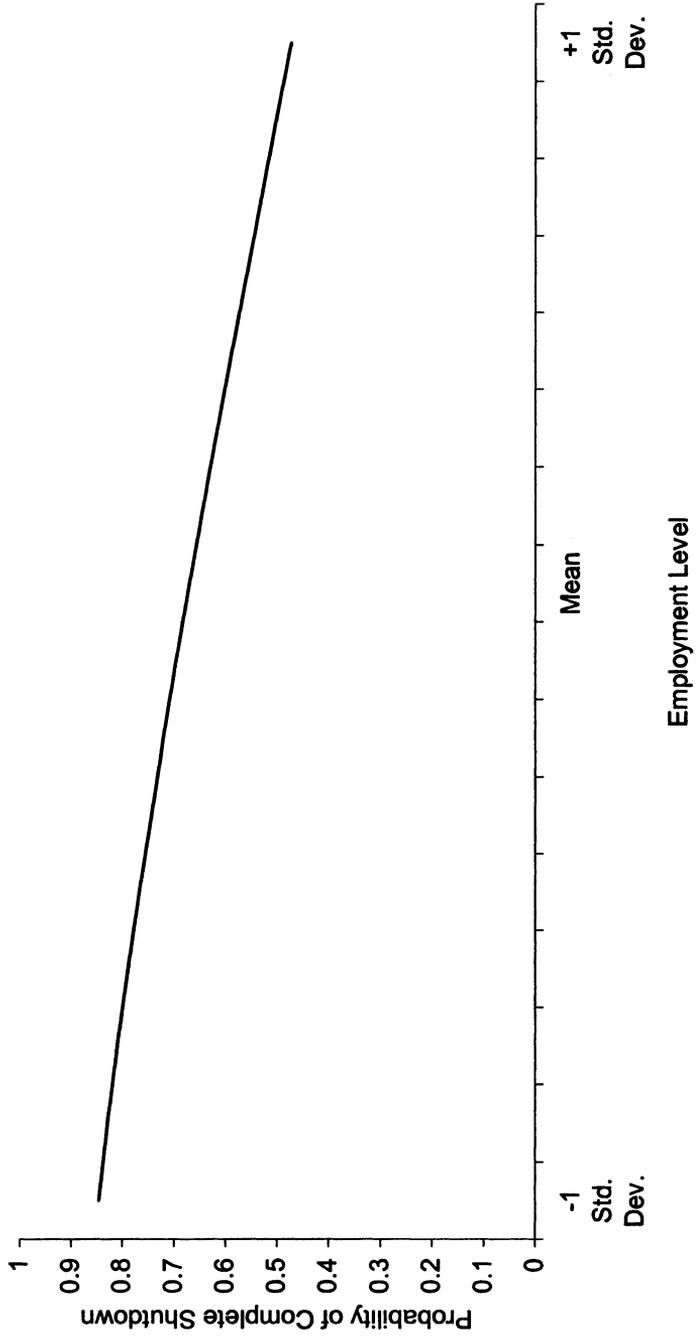


Figure 1 Impact of mill employment on shutdown probability.

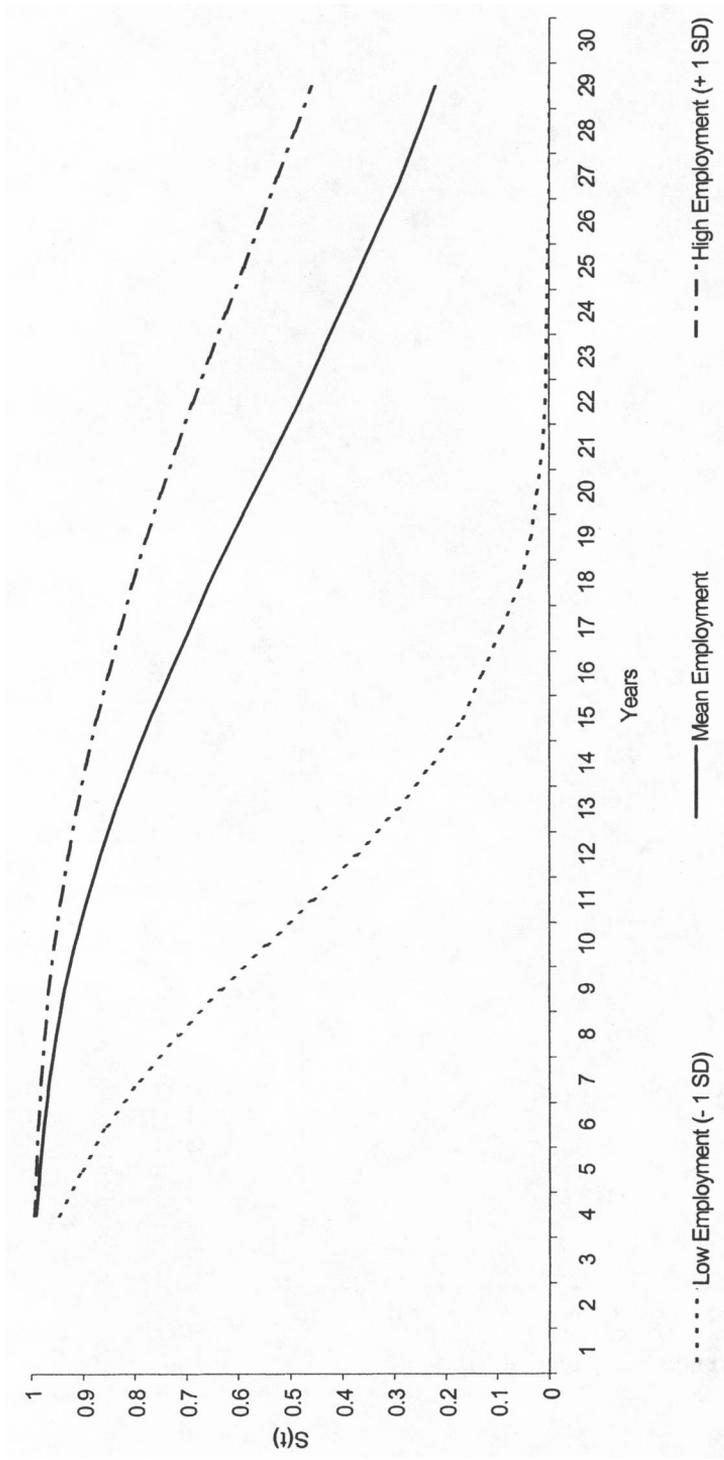


Figure 2 Impact of employment on survival probability.

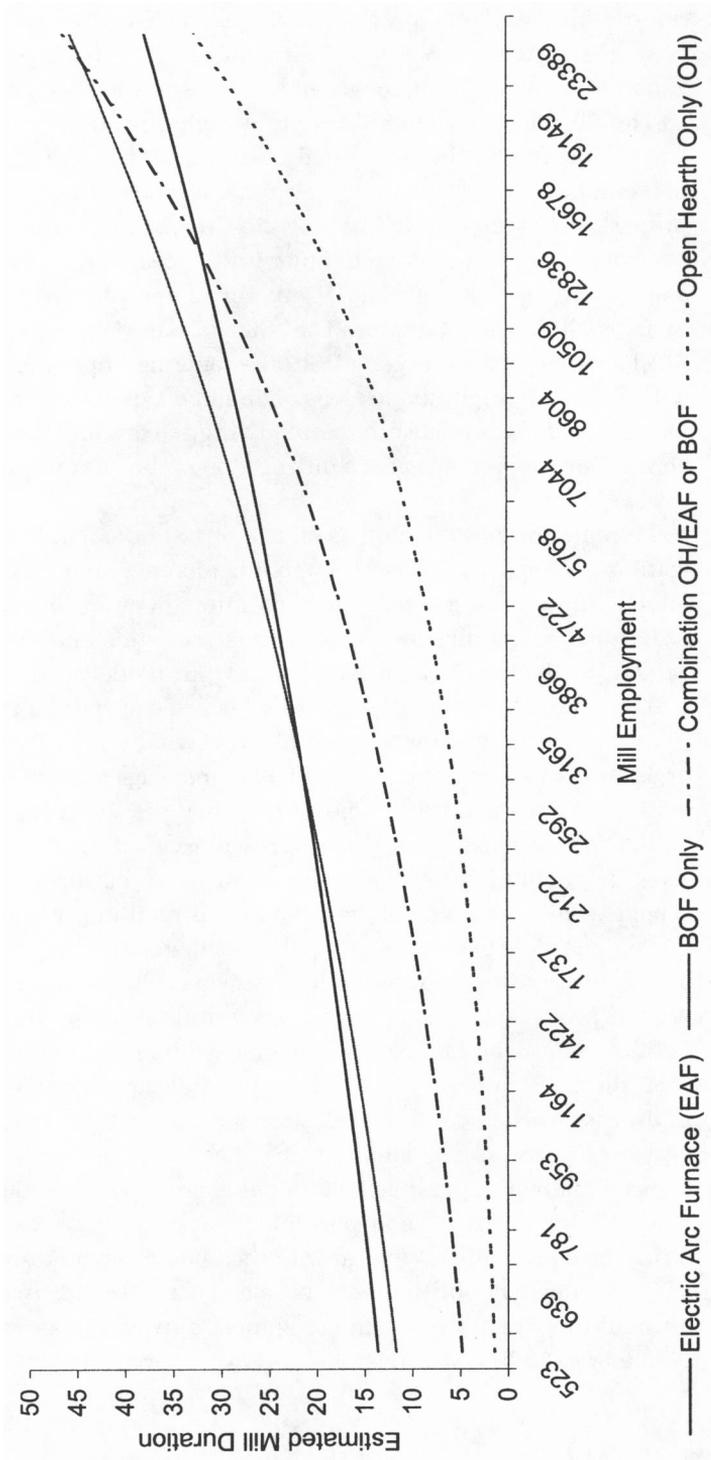


Figure 3 Impact of employment on predicted mill duration by furnace type.

mills running, and hope that other mills would shut down and return their mills to profitability. The decision to wait was like raising the bid in the \$20-billion auction, because each year of delay added to both operating losses and future shutdown costs.

The duration models indicate that higher property taxes systematically decreased the likelihood of mill survival. This finding supports public choice theorists' arguments about the effect of local property taxes on employers' location decisions.<sup>40</sup> However, these estimates are small relative to other influences on the likelihood that a steel plant would survive. Many very large plants—for example, Sparrows Point in Maryland, U.S. Steel's Gary Works, and National Steel's Great Lakes Works in Detroit—remained operational in areas with relatively high tax burdens. The large capacities of these mills provided a means to absorb relatively high taxes, and the large numbers of steelworkers made shutting down the plants prohibitively expensive.

More important, the models enable us to understand deindustrialization not just as a macroeconomic phenomenon but as one in which community politics and institutional commitments reshaped individual communities. Unlike analyses that point to labor's "greed" as the cause of steel's downfall, our models indicate that the USWA and its creation of exit costs for firms sustained steelmaking in many communities where it otherwise would have ended by 1980 or earlier.<sup>41</sup> We are not denying that labor's wage costs and Clause 2b restrictions were burdensome, but rather are arguing that labor's ability to create exit costs gave it critical room in which to negotiate the survival of plants and jobs beyond a point that firms would have accepted in the absence of the collective bargaining agreements.

The question that remains is whether there is another explanation for the relationship between mill employment levels and mill durability. It is possible, for example, that larger mills attracted the attention of political elites who funneled public money into parent firms in order to keep the large mills open. It is also possible that keeping the largest mills open was a sound strategy in which firms kept their core businesses operating while shutting down newer, more peripheral operations. Finally, it is possible that unions exercised substantial influence in shutdown decisions and prevented steel executives from shutting down the largest mills. We deal with each possibility in turn.

It is true that politicians intervened and sought assistance for mills in their districts. Such assistance, however, was at best complementary to larger issues of shutdown charges. In the case of the

40. Paul E. Peterson, *City Limits* (Chicago, 1981).

41. Strohmeier, *Crisis in Bethlehem*, 160–73; Hall, *Steel Phoenix*, 74–79.

Weirton Works, Senator Robert Byrd (D-WV) negotiated an emissions “bubble agreement” that saved the company an estimated \$27 million annually.<sup>42</sup> This agreement lowered Weirton’s operating costs and contributed to its profitability, but its present value paled in comparison with the gains the ISU won from National Steel by moving the parent corporation from its Lock and Freeze proposal to the Work to Get pension plan.

In the case of the Bethlehem Steel structural-product plant in Bethlehem, Pennsylvania, the company successfully attained a similar Environmental Protection Agency bubble agreement and negotiated with the five municipalities in whose jurisdiction the plant lay to reduce its property taxes substantially in 1985. However, these savings were rather small compared to those generated by negotiations with the USWA to reduce crew sizes in 1985 and 1990 in the blast furnace department. The crew sizes had been maintained because of Clause 2b, and the USWA in turn used this “slack” to lengthen the plant’s durability when it perceived an imminent threat. For its last contract, when it knew that decreases in employment were certain, the USWA negotiated specific “triggered benefits” that Bethlehem Steel would have to pay if it reneged on agreements to modernize the plant. As it turned out, the company abandoned a \$350 million modernization plan in 1994 and paid those benefits because it reduced employment ahead of schedule.<sup>43</sup>

In response to the second argument that firms retained their core businesses while closing smaller businesses, we again turn to case evidence. Although some firms explicitly tried to protect their core businesses, many firms’ legacy costs coerced them to retain their steel plants, and managers continued to balance high exit costs, future production capacities, and continuing operating losses.<sup>44</sup>

42. \$27 million dollars represented about 3% of Weirton Steel’s 1984 revenues.

43. Ken Kunsman, “Bethlehem Negotiates Benefits with Modernization Nixed,” *Morning Call*, 19 Feb. 1994, B-8.

44. We base our assessment of Weirton Steel on author interviews from 1997 and 2000. Walter Bish, former ISU president, and Charles Cronin, former Weirton Steel communications manager, recounted how the parameters for a complete shutdown precluded an easy exit for National Steel despite National’s assessment that Weirton produced the lowest return of its three major integrated steel plants. Walter Bish, interviews with authors, 1997 and 2000; Charles Cronin, interview with authors, 2000. LTV accrued \$943.5 million in operating losses from its steel business and \$401.1 million in profits from its aerospace, defense, and energy businesses, yet it retained its unprofitable steel business and sold its profitable defense and energy businesses. Jonathan P. Hicks, “A Steel Strategy Backfires,” *New York Times*, 18 July 1986, D-1. For an analysis of LTV’s initial plan to emerge from bankruptcy while retaining its defense and aerospace units, see “Firm Wants to Keep Defense and Aerospace Unit; LTV Corp. Unveils Plan to Emerge from

Bethlehem Steel is the prime example of the shedding of operations based on plant size. Between 1975 and 1980, it closed all six of its fabricating plants and then proceeded to close two West Coast mini-mills and to sell a third while retaining larger, less efficient East Coast operations. In Weirton, National Steel managers relented on many substantial points in the ESOP negotiations and assumed substantial future liabilities in order to avoid an immediate plant closing that would trigger thousands of 70/80 pensions and shutdown benefits. In addition, pressure from the PBGC directly forced LTV Steel to retain its steel operations while jettisoning profitable defense and aerospace businesses without shutdown costs and in other cases forced smaller steelmakers to honor pension liabilities even after the firms sought bankruptcy protections.

With respect to union influence, the evidence changes as deindustrialization progresses. The first deterrent to union influence was the way the USWA structured representation internally. Until the collapse of the Basic Steel Industry Conference in the mid-1980s, votes to accept or reject contracts were the prerogative of the USWA local presidents, with each president having a single vote. Thus, locals at Sparrows Point, Maryland, with five to ten thousand represented production and maintenance employees, received the same representation as locals at "List-3" fabricating plants, with fewer than five hundred employees. If anything, the USWA's internal representation favored strategies to preserve smaller plants, and more of them, rather than to concentrate on larger plants.

Through 1982 the USWA largely took a hands-off approach to plant closings, surmising that some of the closings were inevitable, perhaps even overdue and beneficial in terms of long-run employment security.<sup>45</sup> Not until 1983 did three USWA locals break away from the unified bargaining agreement and negotiate contract concessions that would lower their compensation relative to that at other USWA-represented mills and limit the autonomy of union locals to negotiate concessions.<sup>46</sup> The USWA sought to preserve its standard of living as much as it sought to preserve jobs.

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Bankruptcy," *Los Angeles Times*, 5 May 1988, pt. 4, p. 12. See also Andrew Baxter, "LTV Seeks Way to Keep Its Eggs in Many Baskets," *Financial Times* (London), 25 May 1988, I-33. Steven Pearlstein, "LTV Seeks to Sell Aerospace, Defense Division; Firm Needs Cash to Fund Pension Plan, Emerge from Bankruptcy," *Washington Post*, 21 May 1991, D-3.

45. Serrin, *Homestead*; Strohmeier, *Crisis in Bethlehem*, 108–19 and 161–73; John P. Hoerr, *And the Wolf Finally Came: The Decline of the American Steel Industry* (Pittsburgh, Pa., 1987), 52–81, 215–94.

46. Strohmeier, *Crisis in Bethlehem*, 205–15.

## Conclusion

Following the 1959 strike, steel firm managers perceived that steady production by means of labor peace was the best way to maintain their markets and profits, and the best way to continue the gradual programs of capital improvements was increased pension benefits, whose costs were largely deferred, and severance benefits, which the company managers never really expected to pay over a sustained period. By bidding for labor peace in the 1960s with benefits that could be claimed beginning in the 1970s and continuing over decades, however, steel firms fundamentally altered their calculus for surviving in a period of greatly increased competition and stable or decreasing markets for their products.

The irrationality of steel executive decision making was the agreement of the executives to fixed costs for closing plants, an action that would permanently reduce their ability to bear the fixed costs triggered by the Rule of 70/80. Managers thus kept plants open, hoping to survive competitors and to retain production capacity. In retrospect, it is easy to see that steel executives should have shut mills down sooner rather than participate in the decades-long high-wire act of keeping uncompetitive mills open. As with the bidders in the \$20-billion auction, however, it is difficult to discern exactly where the irrationality originated. By the time steel markets began contracting, steel executives were choosing between a certain loss (shutdown) and the uncertain future of keeping uncompetitive mills open. If they kept mills open, they suffered only a small immediate loss and maintained the probability of the mills' returning to profitability in the future if they outlasted their competitors or if prices went back up (if they won the auction).

Steel executives did not recognize that all the other executives were participating in the same auction. All were staying in, bidding up their shutdown costs, in the hope that they would outlast the others. While they were doing so, the industry as a whole was becoming less competitive, since the earlier collective bargaining provisions other than Clause 2b had hindered modernization and import penetration was increasing. Market share decreased, so the firms that stayed in the longest did not reap the benefits of their perseverance. By agreeing almost without exception to labor's collective bargaining pension strategy, steel executives had set up the auction scenario in which they would all be bidders.

Steel executives stayed committed to the operation of uncompetitive mills longer than they should have, but was agreeing to the the Rule of 70/80 and Clause 2b, and then institutionalizing them in the 1973 ENA, the compound mistake of both management and labor? For steel executives it is difficult to say. They valued labor peace for

good reasons. Strikes had damaged the industry in the past. They had hurt firms financially and had resulted in import penetration. That said, had steel executives recognized the coming competition from steel imports and the auction-type constraints that the ENA would force on their future decisions, they might have acted differently.

For unionized steelworkers, the irrational escalation of commitment from their employers had two benefits. Not only did the Rule of 70/80 pensions and \$400-per-month shutdown benefits provide a dependable, if modest, income as plants closed, but Clause 2b and the Rule of 70/80 helped sustain jobs within steelworks for years beyond the time when closures would have occurred in the absence of these exit costs to the industry. Despite many ways in which the labor movement was constrained in the United States relative to its counterparts in Western Europe, the strategy of the USWA, which was largely created as a response to automation in the 1960s, became a means of preserving jobs, as both automation and industry change wrenched the industry from the mid-1970s to the present. Had labor not secured such protections, plants may have been shut down sooner. Clause 2b and the Rule of 70/80 therefore resulted in a wealth transfer from industry management to labor that may not have occurred without these provisions in the industry's collective bargaining agreements.

The interaction between labor and management had a dramatic impact on the fortunes of steel towns. While others have noted the impact of international economic competition, failure to modernize, and shrinking markets on steel town declines, we note how institutional commitments between steel manufacturers and labor unions representing American steelworkers affected the declines. Our attempts to understand deindustrialization and the way it shapes local and regional politics are incomplete without an understanding of how labor agreements built in shutdown costs that help explain variations in steel town political economies.

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