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Competition and Co-operation: Restructuring the UK Steel Castings Industry

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The decade 1975-85 was a period of profound crisis for Europe's mature industries such as steel, chemicals, cars and mechanical engineering: output declined, labour was shed, plants closed and profitability plummeted. Many firms found the necessary adjustments extremely difficult and most traditional industries did not emerge from their parlous state until the late 1980s. In this chapter I examine the steel castings industry to understand the cause of the general crisis and why it persisted for such a long time. The answers to these questions are of interest not only to historians, but also to present-day managers and policy makers. Crisis is not a phenomenon confined exclusively to the older manufacturing industries. In the late 1980s banking and other services experienced excess capacity and falling profits; these sectors may also benefit from understanding events in manufacturing.

The steel castings industry may seem small, but during the decade in question its products were vital in the much larger engineering sector. The firms in the castings industry were diverse in size, ownership and back- ground. Some were parts of large, diversified enterprises, others were traditional specialists. Like much of the rest of British manufacturing, the industry experienced a dramatic fall in output: between 1975 and 1983, orders fell by more than a half.

Unravelling the recent history of this industry allows a better under- standing of exit barriers and why excess capacity can persist for a long time. In addition, it provides insights into the relative merit of co-operative as opposed to competitive behaviour. With the help of Lazard, the merchant bank, the industry organized a collective rationalization scheme in 1982-3; subsequently there were a number of mergers.

In undertaking my analysis I shall consider the process of adjustment: the speed and quality of labour shedding, the speed and quality of capacity adjustment and the redirection of firms' activities within the industry. I find that change was slow, and that both behavioural and economic factors explain why the industry took more than ten years to adjust to events which started in the mid-1970s.

Barriers to Exit

Rapid and sudden changes in demand cause problems for managers, firms and society because adjustment is nearly always costly and difficult. These costs and difficulties are particularly large in the technologically based industries of Western Europe. Assets such as plant and machinery are frequently designed specifically for a particular industry and location; when demand declines or shifts, these assets are hard to move to another location where they may be needed and hard to use for producing some alternative good. Nor can firms abandon assets when they are no longer required; current laws and practices require managers to dismantle the plant and clean up the site. This is costly, and requires time and effort. Workers too have rights; they cannot be dismissed without notice and severance pay. Such arrangements are not only seen as socially necessary but may be reinforced by previous managerial actions designed to keep the loyalty of the workforce when labour was scarce.

Caves and Porter coined the phrase 'barriers to exit' to capture the factors which make adjustment costly. Harrigan, and Ghemawat and Nalebuff, show how competitor behaviour can compound the difficulties; Bower and Daems extend the analysis to include governments.[1] Two aspects of the structure of competition have been ignored by these writers: the role of single-plant versus multiplant firms and the role of undiversified versus diversified firms. It is argued here that being a single-plant, undiver- sified firm may constitute a barrier to exit from an industry.

Single-plant and Undiversified Firms

Firms which belong to undiversified groups may have higher adjustment costs than those which are diversified. Managing adjustment, in particular managing the closure of plant, requires a different set of skills from those of day-to-day operations. Whilst some *undiversified* firms are good at manag- ing change, in general many do not have experience in managing closure. In contrast, diversified firms are more likely to have such experience some- where in the group, and, in addition, other corporate skills and resources which allow them to tackle the closure process more effectively.

There is an additional point to be made, arising from the fact that assets cannot be abandoned or workers easily dismissed. Closure requires action not just by senior managers but by a cross-section of all managers and workers. In a diversified firm, closure does not threaten the jobs of the most senior managers; moreover, junior managers and some of the workers may be redeployed elsewhere in the group. In the undiversified firm, the situation is different; all managers and workers may be unemployed after closing plant. This absence of future possibilities may discourage both senior and junior managers from closing. Grant noted that undiversified firms in the declining UK cutlery industry often failed to quit voluntarily.[2]

A third aspect of the competitive structure may give rise to an exit barrier: multiplant firms may have an advantage over single-plant firms in adjustment. When a single-plant firm closes, it bears all the costs of closure - and its competitors capture the benefits of

the capacity reduction. In contrast, when a multiplant firm which has a significant share of the industry's output closes a plant, the firm is able to capture some of the gains of the capacity reduction through higher prices and better plant utilization in the remaining plants.[3]

The presence in an industry of both single-plant, undiversified firms and multiplant, diversified businesses may be detrimental to the quality of the adjustment process. The efficiency of operations is not the only factor affecting the order of closure; of equal importance is the efficiency of adjustment. If the 'least efficient' plants (in the sense of operational efficiency) happen to be owned by the single-plant, undiversified firms, these may *not* be closed before some of the relatively more efficient plants of multiplant, diversified firms. Multiplant and diversified firms may have a greater comparative advantage in quitting than in staying because their barriers to exit are lower. As a result the wrong kind of resources (i.e. the less efficient plants) may be stuck in the industry, to the detriment of the firms and their customers.

Competition or Co-operation?

Which is better in overcoming excess capacity: competition or co-opera- tion? Traditionally, economists have argued that cartels hinder the ef- ficiency of the market mechanism; however, in the presence of market failure (a sign that there are externalities), collective action can allow externalities to be internalized and the process improved. The exit barriers highlighted above are externalities: if single-plant firms can join multiplant firms then some of their exit barriers may be overcome. Likewise, the linking of undiversified firms to diversified firms may eliminate exit barriers.

Bower's analysis suggests that there is more to it than this and he argues that the usefulness of collective action depends crucially on its timing. He says that managerial thinking must pass through three stages before the crisis (excess capacity) can be resolved, and that cartels and co-operation will only help in the third stage.[4] In the first stage, optimism prevails: each downturn in demand and adverse event is seen as an exception to the historic pattern. Downswings will be followed by upturns - and the greater the downswings, the greater the belief in the succeeding recovery. During this phase managerial activities are directed at preparing for the recovery and tend to ignore any crisis or treat it as temporary. Co-operation at this stage is unlikely to alleviate excess capacity.

In the second stage, Bower argues, managers no longer hold optimistic beliefs and accept that a profound crisis may have occurred. However, they view the cause of the crisis as deriving from actions of competitors and outsiders such as the government. As a result, or in addition, each believes that it is someone else's job to resolve the crisis. During this phase, behaviour becomes entrenched; government may be lobbied for support and competitors cajoled into quitting. Co-operation at this stage is unlikely to be successful if it is designed to encourage competitors to quit. It is likely that all players hold similar beliefs and that there will consequently be no agreement and so no resolution to the crisis.

In the third phase, firms cross the watershed by accepting that they themselves are to blame for the excess capacity and poor profitability. This is evidenced by taking action not only in the form of closing plant but also in investment in new technology. In overcoming the exit barriers, there may be bilateral or multilateral deals between competitors. These will differ from those of the second phase - the actors are not looking for someone else to take action for them but rather co-ordinating and reinforcing initiatives from within each enterprise.

The following analysis of the steel castings industry examines not only the competitive and co-operative aspects of the adjustment process but also the timing of the attempts at co-operating within the industry.

The description of the UK steel castings industry which follows is based on several sources: government statistics, financial data from Companies House and data provided by the trade association SCRATA.[5] This was supplemented by interviews with chief executives and senior decision makers of a wide range of firms accounting for two thirds of the industry's output, and with others such as the Bank of England, government departments and the intermediary merchant bank Lazard.

Characteristics of the UK Steel Castings Industry in 1975

In 1975, castings were an important component in many mechanical products, and the steel castings industry had a wide and diverse customer

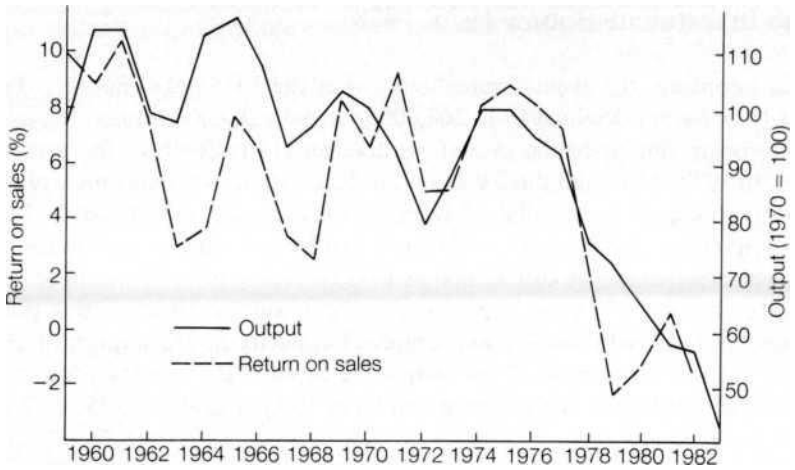

Figure 8.1 Output and profitability of UK steel foundries, 1959-1983 *Source: SCRATA*

base. The product was typically made to order in batches using the traditional labour-intensive green sand process.[6]

The four largest firms in the industry were multiplant: F. H. Lloyd, the Weir Group, the Davy Corporation and British Steel (then state-owned) controlled 60 per cent of the output. The next largest multiplant firms controlled a further 15 per cent. The remaining 25 per cent of the industry was accounted for by some 60 smaller plants. Competition among firms was based mainly on price, with quality and speed of delivery the other important factors. Not all firms were equally successful: large size helped a little, but more importantly there was considerable 'craft skill' in making castings, permitting many smaller plants and single-plant firms to be successful. There were some substitutes, such as iron castings, but little foreign competition, direct imports and exports generally being less than 20 per cent of UK consumption. The customers, however, were subject to strong foreign competition, and this coupled with the fact that they were all part of the capital goods industry meant that castings sale were volatile

Prior to 1975, for as long as many of the managers can remember, profitability and output have moved in cycles, albeit irregular ones. Figure 8.1 shows industry data from 1959 indicating peaks in 1960, 1965, 1969 and 1975, with a clearly discernible downward trend in output since 1964. Between 1975 and 1983, orders and output fell in an unprecedented fashion by more than 50 per cent. Excess capacity arose and persisted for more than a decade, causing major changes in the industry.

The Investment Boom, 1975-1978

First I consider the events immediately after the 1975 peak. Between 1975 and 1978 output declined from 268,000 tonnes to 204,000 tonnes, the latter figure being similar to the rate of production at the depth of the previous cycle in 1972. Although there was said to be a cutback on overtime working during this period, 'layoffs' of workers only started in earnest in 1978. Consequently, productivity, measured crudely as output in tonnes per worker, fell from a peak of 12,600 in 1975 to 11,400 in 1978 (see table 8.1). Capital was not adjusting: only one closure of any significance took place, when F. H. Lloyd closed 2,300 tonnes of capacity at Darlington in 1975 (representing 1 per cent of the industry's capacity). Capacity utilization, measured crudely on a 1975 base, fell from 100 per cent in 1975 to 77 per cent in 1978.

Most (though not all) firms were strongly optimistic about the future, as is evident from their reluctance to lay off workers and close plant. Because this industry 'makes to order', output lags orders; finished inventories are negligible, and the immediate labour requirements are known. The fact that firms did not adjust their labour indicates that they expected sales to rise. Their optimism was also evident in their investment behaviour. According to a financial analysis of a sample of company accounts, between 1975 and 1977 the industry increased its rate of capital spending from 4 per cent of turnover to more than 6 per cent despite falling orders and falling profits. The

government-sponsored Ferrous Foundries Aid scheme helped finance some of the investment, and this scheme was explicitly designed to increase capacity by up to 12 per cent.[7] Although not all the aid monies were spent, the investment boom and contemporary statements confirm that managers were forecasting an upturn in 1978.

With the benefit of hindsight, this optimism seems wholly unjustified, but as explained by Bower, Lorange and Nelson, and the opening chapter of this book, at the time things looked different.[8] Each fall in demand was accompanied by the expectation that 'things must improve'.

Adjustment by the Leaders, 1978-1981

The average profitability of plants in the industry was more than 8 per cent of sales in 1975; by 1978 it had fallen to 3 per cent, and by 1979 the majority of firms were not only unprofitable (accounting losses of 2 per cent) but also losing cash. This collapse in profitability was caused by the unexpected and continual fall in orders. In response, the two largest firms in the industry, Lloyd and Weir, closed three plants totalling 17,500 tonnes (nearly 7 per cent of the industry's capacity); a further 11,500 tonnes was closed by

Table 8.1 Capacity, output, employment, capacity utilization, productivity and profitability in the UK steel castings industry, 1975-1988

	1975	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Output in year ('000 tonnes)	*268*	*255*	*246*	*204*	*192*	*174*	*155*	*154*	*115*	*116*	*118*	*109*	_	_
New series										*126*	*128*	*119*	*122*	*120"*
Labour at year end ('000 people)	*21.3*	*20.8*	*20.4*	*17.9*	*16.7*	*14.2*	*12.6*	*11.5*	*8.6*	*8.0*	*7.5*	*7.0*	*6.0*	*n/a[v]*
Capacity year end ('000 tonnes)	*268*	*266*	*266*	*266*	*256*	*246*	*237*	*235*	*198*	*197*	*193*	*187*	*170*	*157*
Productivity ('000 tonnes/man)	*12.6*	*12.3*	*12.1*	*11.4*	*11.5*	*12.3*	*12.3*	*13.4*	*13.4*	*14.5*	*15.7*	*15.6*	-	-
New series										*15.8*	*17.1*	*17.0*	*20.3*	*n/a[v]*
Capacity utilization (%)	*100*	*96*	*93*	*77*	*76*	*72*	*66*	*66*	*58*	*59*	*61*	*58*	-	-
New series										*64*	*66*	*64*	*72*	*76*
Profitability as % of turnover	*9.0*	*8.5*	*7.5*	*3.0*	*(2.0)*	*(1.0)*	*1.0*	*(1.7)*	*0.0*	*(1.6)*	*(2.7)*	*n/a[v]*	*n/a[v]*	*n/a[v]*

- indicates not applicable.

* Estimated.

[b] Capacity figures are based on estimated 1975 output and exclude the effect of the Ferrous Foundries Aid Scheme. From 1984 onwards, they become less reliable due to investment and reconstruction behaviour of firms.

Source: SCRATA and interviews

smaller firms, most of whom were diversified and quit the industry to concentrate their resources elsewhere. Despite this capacity adjustment, plant utilization declined from 76 per cent in 1978 to 66 per cent in 1981.

The less than perfect adjustment of capital contrasted with more effective labour

shedding, which helped improve productivity from 11,400 to 12,300 thousand tonnes per man. Because the labour effect outweighed the capital effect, by 1981 most firms had managed to record a small profit.

In considering the capacity adjustment it is apparent that the larger firms in the industry were closing a disproportionate share of capacity; between 1975 and 1978 Lloyd and Weir organized 60 per cent of the closing capacity and their market share (by value) fell from 41 per cent in 1975 to 24 per cent in 1981. More significantly, the plants they closed were not the least profitable in the industry, and some had not been recently modernized.[9]

Because closures took place a long time before our interviews, it is hard to be certain as to why the least efficient plants were not closing. It is clear that the larger players, being multiplant and having a significant share of the industry, thought that they would be able to capture the gains from closing. It is also true that some of the diversified firms which quit believed that they could make greater profits in other industries.

Stubborn Resistance, 1981-1983

Although the rate of profit in 1981 seemed better than that in 1979, the situation facing many of the firms was worse. The costs of the layoffs and plant closures were substantial in terms of cash, balance sheet write-offs and management time. Redundant workers had to be redeployed, or paid severance money; closed plant could not be abandoned but had to be expensively dismantled and sites cleaned up. Many of these costs were not included in the normal profit and loss accounts. For the Weir group, these costs had undermined the strength of the firm, depleted cash reserves and forced them into financial reconstruction. The situation at Lloyd was little better. There was a strong feeling of resentment among the senior managers in these two firms who felt that ‘the wrong plants were closing’ and that ‘it was about time someone else did some closing’.

Executives from five firms - British Steel Corporation, Weir, Lloyd, North British, and Lake and Elliot (which together accounted for nearly half of the industry’s output) - met together in late 1980 and early 1981 to discuss the future. They concluded that there was a compelling need for the industry to reduce capacity, and that some mechanism was needed to encourage the smaller players to quit. The idea of a rationalizaton scheme found favour, so Ian MacGregor, chairman of British Steel, approached

Lazard, who agreed to take on the task without fee and appointed their vice-chairman Peter Grant to supervise the task.

Lazard’s plan was simple: all the firms in the industry should be persuaded to contribute to a fund; these monies - together with a grant from the government - should be used to pay the smaller firms to close capacity. Since all firms which did not close would benefit from the actions of those which did close, the scheme should have

allowed the benefits and costs to be roughly matched and speed up the process of adjustment.

Lazard's scheme had much merit, and it also showed that the organizers were aware of the faults of the Davignon cartels described by Shaw and Shaw, Shaw and Simpson, Joliet and Foroutan.[10] Those cartels did not have incentive schemes paying firms to close capacity. As a result, many of the Davignon agreements were not binding, and firms often failed to deliver the promised capacity reductions.

It is not surprising that the Lazard ideas appealed to the Bank of England, which at the time was concerned about the possible collapse of some of the major firms in the industry. It also appealed to the larger firms in the industry. A year after their first initiative in April 1982, Lazard announced a scheme for those specializing in high alloy production." Two of the largest firms, APV and Weir, together with the government paid for the closure of five small foundries accounting for about 1 per cent of the industry's output. The cash incentives were large, about 30 per cent of one year's sales for the closing plant. The organizers openly admitted that this was a pilot scheme intended to encourage and demonstrate to the rest of the industry what a rationalization scheme could achieve.

The full rationalization scheme was much harder to achieve than anticipated; apart from the original five, only a few firms which did not wish to close were willing to come forward and volunteer a contribution to the fund. Smaller firms were openly distrustful of Lazard, whom they saw as being too closely involved with British Steel, one of the larger players, and they resented the attempt by the large players to gain market share through forcing out the smaller firms. Things got worse when a key player, Lloyd - the largest firm in the industry - pulled out of the scheme in December 1981; they had been the subject of a takeover raid and the new management publicly announced their withdrawal.

The resentment and the lack of volunteers to contribute to the fund were less serious than the absence of prospective closers. Even the promise of cash did not bring forth many volunteers. For obvious reasons, Lazard did not expect the large firms to volunteer, but the absence of small firms indicated that powerful exit barriers persisted.

One barrier faced by the smaller firms was the extraordinarily high perceived cost of closure. In the interviews, some single-plant undiversified firms showed us their calculations, and these revealed that the cash costs were expected to be in excess of the '30 per cent of sales' offered by the scheme. In contrast, some diversified firms showed us their calculations revealing much lower anticipated costs, closer to zero. These perceived differences in closure costs are confirmed by examination of post-closure accounts.

There were other problems for the undiversified single-plant firms: closure of plant meant loss of jobs for all managers as there was no other business within the firm to go to. Several of the smaller firms said that they had not undertaken any formal analysis of closure as the option was 'unthinkable'. Grant notes that this kind of psychological barrier was also present in the cutlery industry, where bankruptcy was the principal mechanism for forcing small plants to close.[12]

The Lazard Scheme and the Quality of Adjustment in 1983

Although Lazard officially abandoned the idea of the scheme in 1982, many in the industry believed that something would still happen. In particular, the few firms planning closure, mostly parts of diversified enterprises, realized that it was worth waiting. The difference between closing in 1982 and receiving no money and waiting possibly a year or two and receiving a large grant to close, persuaded potential closers to sit tight and stay open.[13]

Weir and the Bank of England, together with those who wanted to close, lobbied Lazard to reconsider the situation. With the help of £6 million from the government, they persuaded Lloyd and a number of other firms to change their position and an agreement was signed in February 1983 whereby 36,700 tonnes of capacity (14 per cent of the industry's 1975 total) would be closed by the end of 1983.

In the end, closers received about 30 per cent of annual sales in cash. About half of the non-closers contributed £12 million over several years at a rate of 2\ per cent of average 1980-2 sales between the years 1983 and 1988.

The scheme, whilst not a failure, could hardly be described as a great success for the initiating firms. The amount of closed capacity was less than half the overcapacity of 82,000 tonnes in 1981. Given that no plant had closed for two years, the rate of closing was only a little more than that of the years 1980 and 1981. More significantly, the scheme did not persuade many of the small operators to quit.

The quality of the adjustment left much to be desired. In table 8.2,1 show the profitability, size and extent of diversification of a selection of both the closing and non-closing firms representing about 90 per cent of the industry's capacity. Profitability is measured for 1977 as operating profit divided by sales; and for the period 1980-1 as net profit before interest, tax and depreciation (i.e. cash flow) divided by sales. The latter is a crude measure of the efficiency of plant in 1982. The table reveals that many of the least efficient plants did not close. Ten of the non-closing plants were less efficient than the Wednesbury plant of Lloyd which closed, and Wednes- bury was a large plant of 12,400 tonnes capacity. The Wellman and Sheepbridge plants which also closed were more efficient than many which did not close.

It was the multiplant operators such as Lloyd, Sheffield Forgemasters and Davy Corporation which contributed 23,700 tonnes of closed capacity. (Sheffield Forgemasters is not shown in the table due to an absence of financial data.) Diversified firms contributed most of the rest: the 3i Group (part-owned by the Bank of England), Reynolds and British Steel (BSC) (also not included in the table) closed 12,300 tonnes. Only one undiversified single-plant firm closed: it contributed 700 tonnes.

Although some of the diversified and multiplant firms such as BTR did not close their unprofitable plants, the extent of diversification of the majority of the remaining plants was less than that of the closers: 3i Group, GKN, Davy and Reynolds.

Reconstruction, 1984-1988

The signing of the Lazard scheme coincided with another dramatic fall in output from 154,000 tonnes in 1982 to 115,000 tonnes in 1983, and so capacity utilization at the end of the scheme was worse than at the beginning. Labour shedding continued, but only as fast as the decline in output, so productivity per worker remained static at 13,400 tonnes per annum. Fortunately rising prices allowed the industry to break even.

The Lazard scheme also marked the end of an era; many firms in the industry were convinced that a new approach was needed to resolve their problems. Some firms, such as Blackett Hutton, Mech Cast and Hyde, had made profits throughout the lean years, suggesting that the problems of the loss-making firms were as much their own fault as that of the competitors' exit barriers. In this period, a new industry leader emerged which had no association with the Lazard scheme and the old leaders: William Cook.

Andrew Cook, a lawyer, inherited the family firm, William Cook, and took control of about 2 per cent of the industry output. He set about changing first his firm and then the industry. Whilst most of the industry was hoping for salvation through Lazard, he had slimmed down his operations so that he was making a profit. In 1983, with a major investment programme, he set about modernizing his plant to improve the quality of castings, raise productivity *and expand capacity.* In 1984 profits rose to 10 per cent of sales whilst profits fell for the industry as a whole.

Company	rility Profita l 1980-81*	1977*	Share of capacit y	Owners	Sales of group (£m)	Diversification ratio'
(a) Survivors	8.8	11.5	0.6	Brockhouse	73	38
Brockhouse						
Alfred Steel	-6.0	2.9	0.5	Alfred Steel	1	1
Tennent	-4.3	2.2	3.4	Sheffield Forge Masters	214	32
Larkhall	-4.0	20.6	0.5	G. Blair	14	7
Paramount	-3.6	4.9	1.9	APV Holdings	293	23
Wilsons	-2.3	16.3	1.1	BTR	515	194
Cronite	2.2	8.0	0.3	Cronite Group	11	3
Firth Brown	2.3	-1.4	1.4	Johnson, & Firth Brown	210	41
Holbrook	2.7	17.1	0.8	Weir Group	137	23
Cattons	3.9	15.5	6.6	Weir Group	137	10
Goodwin	5.2	0.1	0.6	Goodwin	5	3
W. Cook	7.2	15.0	2.4	W. Cook	4	1
Blair	7.5	9.4	7.3	G. Blair	14	1
Edgar Allen	7.7	1.5	3.6	Aurora Holdings	91	15
Davy Rolls	7.7	1.2	1.1	Davy Corp	924	88
Lake & Elliot	8.4	20.8	1.1	Lake & Elliot	25	4
Burton	9.0	3.8	4.8	F. H. Lloyd Holdings	80	7
Jopling	9.2	6.5	3.1	Weir Group	137	25
Hopkinsons	9.5	n/a	1.3	Hopkinsons Holdings	36	2
North British	10.1	10.4	4.6	North British Steel Group	11	I
Parker	10.8	10.9	2.5	F. H. Lloyd	80	12
Hyde	11.5	10.5	2.4	Hyde Industrial	5	I
Mech-cast	16.6	18.4	0.8	Mech-cast	1.7	2
Bonds	17.9	5.9	0.6	Bonds	1	1
Blackett Hutton	22.9	12.4	1.7	Crane	33	8

(b) Management Buy-outs (1982-3)						
Shaw	*-7.0*	*5.2*	*1.0*	*Ley's Foundries*	*22*	*10*
Wolsingham	*-1.3*	*13.8*	*1.4*	*British Ship builders*	*873*	*140*
National	*6.0*	*4.1*	*1.2*	*Lake and Elliott*	*25*	*5*
(c) Closures (1982-3)						
Ryders	*-11.7*	*7.8*	*0.3*	*Ryders*	*0.7*	*1*
Holcroft	*-6.7*	*5.7*	*1.3*	*Reynolds Metals Inc.*	*1,670*	*179*
Triangle	*-2.6*	*-6.7*	*0.5*	*Finance for Industry*	*1,135'*	*1,135*
Broadbent	*- 1.5*	*0.9*	*1.6*	*Finance for Industry*	*1,135'*	*426*
Head Wrightson	*-0.7*	*0.1*	*4.1*	*Davy*	*924*	*121*
Wellman	*2.6*	*0.7*	*0.1*	*Wellman*	*40*	*19*
Wednesbury	*4.1*	*7.5*	*4.6*	*F. H. Lloyd*	*80*	*48*
Sheepbridge	*9.5*	*13.6*	*0.3*	*GKN*	*1,762*	*706*
(d) Closures (1979 80)						
Spotborough	*-*	*2.2*	*1.5*	*Ward Group*	*26*	*n/a*
K. L. Foundry	*-*	*3.6*	*2.0*	*600 Group*	*133*	*n/a*
O. H. Foundry	*-*	*4.1*	*3.8*	*Weir Group*	*137*	*n/a*
Alston	*-*	*9.7*	*0.7*	*F. H. Lloyd*	*80*	*n/a*

- indicates not applicable; n/a indicates data not available.

• Cash flow/sales where cash flow is net profit before tax, interest and depreciation. [b] Operating profit/sales where operating profit is net profit before tax and interest. [c] Based on estimated output in tonnes in 1975. [d] Diversification ratio is the ratio of total firm sales to plant sales.

' Assets not sales.

Source: Financial data from Companies House; table reproduced by permission of the *Economic Journal*

Cook's view was that the industry only had itself to blame for its problems. In a contemporary statement repeated later in a public interview he said: 'In the 1970s the industry was grossly over-manned; costs were rising and only world demand sustained it ... The slump (of the early 1980s) was good for the foundry industry. Many companies were not fit to survive.'[14] Cook did not stop at putting his own company on a secure footing: in 1986 he made a bid for Hyde's foundries, which failed. He then bid for the entire castings operations of Weir. The industry was amazed at the audacity of such a small player seeking to take over the largest operator after failing to capture a more modest player. Some thought him mad to buy deeper into a troubled industry. Cook's bid was successful, and he set about rationalizing the combined businesses, closing the Jopling plant. In 1988, Cook again bid for Hyde and this time he was successful. By the end of 1988, Cook was by far the largest firm in the industry with more than 30 per cent of the output; and it was profitable.

Cook's lead was followed by others such as Aurora, and Lake and Elliot, who also invested, merged and reconstructed. In 1988, the industry looked very different from that of 1975. It is obviously too early to draw definitive conclusions on the success of these activities, but it seems that the industry is now much fitter. In the process of reconstruction, several of the old leaders have disappeared: British Steel quit during the Lazard scheme; Weir was bought out by Cook; Aurora (Edgar Allen) bought North British Steel in 1988 and closed its Edgar Allen foundry, rationalizing output; Lake and Elliot bought the big APV Paramount foundry in Sussex and embarked on rationalization. Between 1984 and 1988, almost 40,000 tonnes of nominal capacity was closed. The deals by Cook, Aurora, and Lake and Elliot contributed 21,500 of nominal closed capacity. Lloyd closed a further 6,700 tonnes, and the Ford Motor Company much of the remainder.

The reconstruction involved more than closures: there was investment shifting the firms away from producing the low-value, variable quality carbon steel castings by traditional methods, towards producing higher- value, highef-quality alloy castings by new methods. In 1975, carbon steel castings accounted for about 70 per cent of the tonnage; by 1988 that figure was less than 40 per cent.

How did the firms overcome the exit barriers which had plagued the industry previously? In examining the kinds of firms which undertook the reconstruction, it is notable that Cook, and Lake and Elliot were not large, diversified groups, but relatively small firms. However, they were not loath to undertake investment and used co-operation to gain resources, persuad- ing banks and others to assist them. In addition, they used mergers as a way of buying up competitors to get rid of capacity. Although this was costly, they believed that it was necessary.

Simultaneously, and probably consequently, between 1983 and 1988 output became less volatile, varying between 115,000 tonnes (in 1983) and 128,000 tonnes (in 1985) stabilizing at about 120,000 tonnes in 1988. Since capacity was falling, capacity utilizaton rose sharply, but because of investment, reconstruction and new data series it is hard to be precise. Using historic data it seems that capacity utilization rose to 75 per cent, but the trade association claims that the real figure is higher.

Labour shedding and redeployment continued also at a rapid pace: employment fell from 8,500 people in 1983 to 6,000 in 1988, and output per man rose from less than 13,500 tonnes in 1983 (the highest since before 1975) to more than 20,000 tonnes in 1987. Not surprisingly, the industry was profitable in 1988 and many felt that it could now go forward.

Conclusions

The steel castings industry took more than ten years to adjust to changing demand. Several factors help explain why this was so. First, in common with firms in many other industries, there were considerable exit barriers in the form of high sunk costs and difficulties and costs in laying off workers and closing plant. Secondly, the presence of undiversified single-plant firms compounded the problems. Third, and equally important, were behavioural factors: optimism and the belief by each firm that others should act first.

Bower's description of the three steps of reconstruction represents a useful, albeit simplified, paradigm and it helps us to understand and appreciate why collective action at some times helps and at other times hinders the process.[15] There was clearly an initial period when, in response to falling demand, the majority of managers expressed optimism by refusing to shed labour, not closing plant but undertaking investment designed to create more capacity. In the next period there was a variety of responses. A few firms saw the problems coming and quit the industry, thereby indicating purposeful resolve. The majority remained, shed labour and cut back investment. In addition, the two largest firms which were multiplant closed substantial capacity.

Had such action continued, the industry might have recovered quite quickly, going directly from the first to the third phase of Bower's process and not passing through the second phase. This was not to happen: a third, regressive period - that of 'stubborn resistance' corresponding to Bower's second phase - appeared. In response to further declines in demand, the industry leaders stopped their closing activities and instead tried to per- suade the smaller firms to quit. They went about this plan by proposing a rationalization scheme and persuading Lazard Brothers, the merchant bank, to execute their plan. Lazard found the scheme hard to implement in the face of resistance from the smaller firms of the industry and from the Treasury. Eventually, with the help of the Bank of England, they did achieve an agreement and gained government assistance, but the outcome was different from that originally anticipated. It was the multiplant diversified firms, not the smaller firms, which did the closing, and the amount closed was much less than originally anticipated. Co-operation between firms in the industry in this phase seems to have been a hindrance not a help.

Then following the final period (corresponding to Bower's third phase) when several firms launched major internal investment plans designed to overcome past inherent weaknesses. These initiatives were followed by mergers with other firms and massive reconstruction of the industry with more labour shedding and capacity reduction. In this

period, co-operation of a more conventional nature, that is mergers, seems to have been more successful.

Notes

1 See R. E. Caves and M. E. Porter, 'Barriers to Exit' in R. T. Masson and P. *Qualls (eds)* Essays on Industrial Organization in Honor of Joe S. Bain (Ballinger, Cambridge, Mass., 1978), ch. 3; K. R. Harrigan, 'Deterrents to Divestiture', *Academy of Management Journal,* 1981, vol. 24, no. 2, pp. 306-23; K. R. Harrigan, 'Implementing Endgame Strategies for Declining Industries', ch. 10 in this volume; P. Ghemawat and B. Nalebuff, 'Exit', *Rand Journal of Economics,* 1985, vol. 16, no. 2, pp. 184-94; P. Ghemawat and B. Nalebuff, 'Excess Capacity, Efficiency and Industrial policy', ch. 3 in this volume; J. L. Bower, 'Management Revolution: the Response to Global Glut', ch. 2 in this volume; and H. Daems, 'Industry and Country Exit', ch. 4 in this volume.

2 See R. M. Grant. 'Exit and Rationalization in the British Cutlery Industry, 1974-84', ch. 6 in this volume.

3 The argument is similar to that about a firm with a substantial share of the industry reducing output to raise prices. The multiplant firm must have a significant share of the industry's output, and its actions must not be frustrated by subsequent output decisions of its competitors.

4 Bower, 'Management Revolution'.

5 For a full description of the industry and the Lazard scheme, see C. W. F. Baden-Fuller and R. Hill, 'Industry Strategies for Alleviating Excess Capacity: The Case of the Lazard Scheme for UK Steel Castings', mimeo, Centre for Business Strategy, London Business School, 1984. See also C. Baden-Fuller, 'The Economics of Closure and the Case of the UK Steel Castings Industry', *Economic Journal,* vol. 99(4), December 1989.

6 In 1983, the cost structure of a tonne of carbon steel was: labour £750, capital £150, energy £150, materials £450: total £1,500.

7 *Trade and Industry,* 20 August 1976 and 28 January 1977.

8 Bower, 'Management Revolution' and P. Lorange and R. T. Nelson, 'Organizational Momentum: Key to Long-term Strategic Success', ch. 9 in this volume.

9 Less profitable plants which did not close included Shaw, Wolsingham, Tennent and Edgar Allen.

10 R. W. Shaw and S. A. Shaw, 'Excess Capacity and Rationalization in the West European Synthetic Fibres Industry', *Journal of Industrial Economics,* 1983, vol. 32, no. 2 (December), pp. 249-66; R. W. Shaw and P. Simpson, 'Rationali- zation within an International Oligopoly: The Case of the West European Synthetic Fibre Industry', ch. 5 in this volume; R. Joliet, 'Crisis, Dirigism and Cartel Law', *The World Economy,* 1978, vol. 1, pp. 403-45; F. S. Foroutan, 'Rationalization Schemes and the European Steel Industry, 1975-85, ch. 7 in this volume.

11 Lazard's segmentation of the industry was somewhat artificial, but this is not of importance here.

12 Grant, 'Exit and Rationalization in the British Cutlery Industry'.

13 Several firms said that output in 1982 was artificially high as firms which had planned to close were making products to stay open and customers were advancing orders. In addition, some of the customers of the closing plants may have switched to substitutes.

14 *The Engineer*, 15 September 1988.

15 Bower, 'Management Revolution