

TEAM AER LINGUS AND IRISH STEEL: AN APPLICATION OF THE DECLINING HIGH-WAGE INDUSTRIES LITERATURE

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Introduction

Since wage stickiness generates unemployment or intersectoral labour transfer in excess of that associated with a flexible-wage adjustment process, it is frequently argued that declining industries should be subsidised to some extent to replicate the behaviour of undistorted economies. We discuss three arguments against this “traditional” viewpoint, and find that each applies in the cases of Irish Steel and Team Aer Lingus. Intervention, we find, far from alleviating the competitiveness problems that these sectors face, actually worsens them. The cost of protecting jobs in Irish Steel is pushed up over time, and intervention in Team Aer Lingus postpones the necessary adjustments, making further intervention inevitable.

Review of the Declining High-Wage Industries Literature

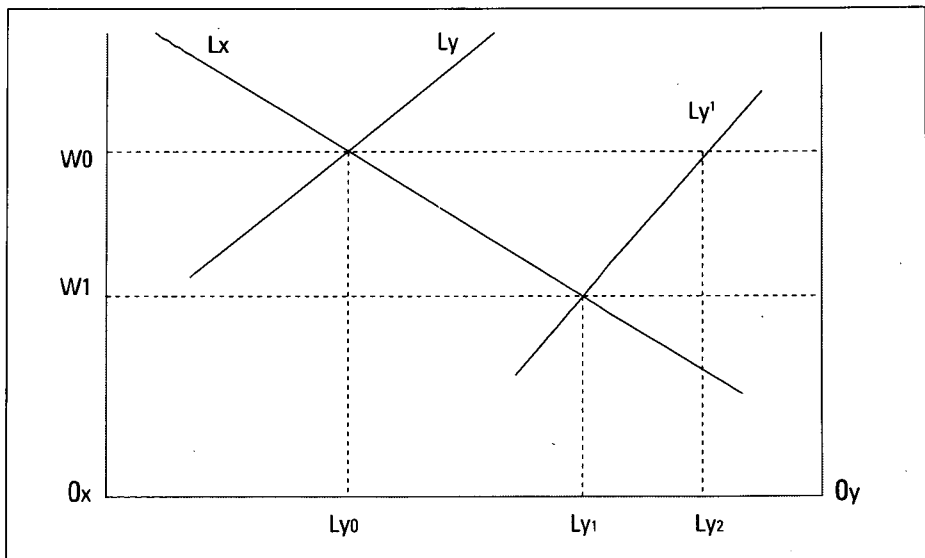
The sector-specific shocks of recent decades, documented for example by Sachs and Shatz (1994), have been of an unusual magnitude and frequency. This has naturally drawn attention to the process of adjustment surrounding industries thrown into decline, and *a fortiori* to the question of whether subsidisation of these industries is warranted. The literature on intervention in these cases deals primarily with labour-market imperfections. Two sector-specific imperfections in particular have been focused upon. (There are a number of other arguments for subsidisation, however, tangential to the declining-industries issue, which we will discuss briefly in our concluding comments. We do not feel that these are applicable to the cases under discussion.)

The first imperfection that the declining-industries literature focuses on involves congestion effects in the local labour market. It has been shown that intervention to slow down the rate of adjustment is warranted when individuals and firms fail to take into account the impact of their severance decisions on the unemployment experience of others.¹ Parsons (1980), however, found no support for the congestion hypothesis in a test on U.S. data, concluding that “if anything, the rate of (intersectoral) transfer rises with industry unemployment, perhaps as the result of a reduced likelihood of rapid recall to the previous firm.” Kazimaki (1993) has recently reported similar findings for Europe.

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The second and more frequently discussed distortion which can justify intervention on efficiency grounds is wage rigidity in the declining sector. To see why, consider the two-sector economy sketched in Figure 1, below. The length of the box represents the economy's (fixed) labour force. The two lines L_X and L_Y represent labour-demand functions with 0_X as the origin appropriate to the X-sector, and 0_Y the origin for the Y sector. Now let the Y-sector face a shock that shifts its labour-demand curve inwards to $L_{Y'}$. The equilibrium wage in the economy falls from w_0 to w_1 , so the employment level in Y should fall from L_{Y0} to L_{Y1} , and X sector employment should rise to an equivalent extent. If the Y-sector wage remains at its initial level, however, employment there will fall *excessively* to L_{Y2} . Whether the rest of the economy expands to employ the extra labour depends on whether wages in that (X) sector are flexible or not.

Figure 1: The Two-Sector Economy



Since wage stickiness generates unemployment or intersectoral labour transfer in excess of that associated with a flexible-wage adjustment process, the implication emerging from this model is that the declining industry should be subsidised to some extent to replicate as closely as possible the behaviour of an undistorted economy. This implication has been drawn out in many papers in recent times, beginning with Lapan (1976), Hillman (1977), Ray (1979), Neary (1982) and Fields and Grinols (1991).

A representative of this tradition is Forster and Rees (1983). They assume that wages in the rest of the economy (the X sector) are also sticky but, unlike the Y-sector wage, they decline over time. In that case unemployment is necessary to induce worker

reallocation into the X sector, and they show that a production (or employment) subsidy to the Y sector is warranted. This subsidy should trade off the benefit of unemployment in speeding the approach to the new long-run equilibrium against the cost of excessive output loss in the declining sector. As wages fall over time in X there is less and less benefit from the existence of unemployment, while the excessive output loss in Y remains. Therefore the incentive to subsidise increases. Their analysis implies therefore that the optimal subsidy to the declining industry increases over time! This controversial conclusion arises however from the assumption that wages in the declining sector are completely rigid while those in the rest of the economy adjust over time.

A crucial cornerstone of the model has been ignored, however, in the literature cited above. What generates the excessive wage rigidity in the declining sector, and how will intervention affect it? This is perhaps the most important issue addressed in the present paper, and we will consider it in detail. Three arguments have been directed against the “traditional” viewpoint that intervention is warranted: (i) that subsidies frequently become permanent, (ii) that union responses to subsidies need to be analysed, and (iii) that union responses to the knowledge that subsidy programmes are likely also need to be taken into account. We deal with each of these in turn.

First, Flam, Persson and Svensson (1983) begin with the assumption that subsidies once introduced become permanent through the lobbying power of the beneficiaries. A trade off therefore arises between the short-run output and employment gains from subsidising the declining sector, and the long-run losses from ending up with a distorted economy. Beginning from an initial Pareto-efficient equilibrium a price fall in the declining sector should be compensated for by a subsidy since the short-run gain in output is a first-order effect whereas the distortion in the long-run is of second order. For an initial subsidised equilibrium, however, where the marginal short-run gain equals the marginal long-run loss, a further fall in the world price of Y generally reduces the marginal gain (since the marginal value product of labour falls) by more than the marginal loss, since the good is now even less desirable to produce. The optimal subsidy level is therefore reduced, entailing even more unemployment or labour-transfer from the declining sector than would have arisen with unchanged subsidies.

Secondly, several papers analyse the declining sector as characterised by monopoly-union behaviour.² In this case, unions push up wage demands to maximise the wage bill of their members (supplemented by unemployment benefits or wages from jobs outside the sector.) In this model the wage differential between the unionised sector and the rest of the economy varies inversely with the elasticity of labour demand in the declining (unionised) sector. Behaviour is non-strategic.

Lawrence and Lawrence (1985) confine themselves to cases where sectoral shocks reduce the elasticity of labour demand. This arises if the shock leads to a complete halt in investment. Given putty-clay technology, it then becomes more difficult to substitute capital for labour. Thus the absolute elasticity of labour demand falls, raising union wage demands. Policies to protect the sector under these circumstances,

they argue, will simply transfer resources from the taxpayer to union members without revitalising the industry. In fact, the difficulties of adjustment are increased by the strengthening of unions' incentives to seek higher wages. This tendency for wages to increase is only thrown into reverse when the end of the "end game" is reached; i.e. when unions face the credible threat of permanent plant closures.³

Their anti-protectionist argument does not go through, of course, if the elasticity of labour demand remains constant or actually increases (as it would if labour-demand functions were approximately linear). Barry (1995b) however extends the argument to these cases by showing that the shock which sends the industry into decline alleviates rather than compounds the inefficiencies resulting from union behaviour.

Consider the case first where the elasticity of labour demand rises (as will happen for example if labour-demand functions are approximately linear). Two widely-held but apparently contradictory views of the effects of unions show up in this case. First, since unionisation drives the industry up its labour-demand function, employment in the unionised sector is initially sub-optimal.⁴ If some partial wage adjustment occurs in the event of a shock, however, (as will occur if the elasticity rises) it indicates the union's desire to protect employment in the high-wage sector; less labour is released than is socially efficient. (There is ample evidence that many unionised industries respond in this way to adverse shocks.⁵) Efficiency clearly requires a greater degree of labour movement out of the unionised sector than will in fact arise. This suggests that the adverse sector-specific shock, by correcting some of the initial distortion, may actually raise welfare.

Even when this does not arise, though, as in the constant-elasticity case, the cost-to-benefit ratio of intervention increases (the cost in this model is the distortion associated with the marginal social cost of the taxes required to finance the subsidies).⁶ To see why, note that if the labour-demand function has a constant elasticity, it must be more steeply sloped (at any given wage rate) the closer to the origin it lies. Any given subsidy shifts us a constant vertical distance down the labour demand curve. A higher subsidy is required therefore to effect any given level of labour reallocation the smaller the sector is.⁷ In contrast to the literature based on arbitrary wage rigidities, therefore, the implication of these monopoly union models is that there is less justification for protection or subsidisation of a sector once it is hit by an adverse shock.

This is also the implication drawn in Barry (1995a) which employs the Nash bargaining approach to union behaviour (in the large industry case assumed in the diagram above). The paper shows that the union will in the event of a shock release less than the socially-efficient amount of labour to other sectors so as to moderate the drop in wages its laid-off members must face. Subsidisation of the declining sector under these circumstances reduces efficiency still further.⁸ Optimal intervention in this model should encourage labour transfer from the declining sector (through, for example, the subsidisation of intersectoral labour transfer, which is equivalent to government financing of severance payments, or the subsidisation of employment in expanding

sectors) rather than inhibiting it or slowing it down as the traditional viewpoint suggests.⁹

These analyses provide support for some of the arguments advanced informally by Harris, Lewis and Purvis (1982). In general they argue in favour of fiscal spending directed towards industries with long-term potential rather than sectors in long-term decline. As they note, an economic analysis based on the assumption of perfect competition cannot aid in the choice between candidates for beneficial treatment; the focus of attention must be on the potential of various firms or industries to achieve dynamic economies of scale. In opposition to this however are the arguments we present below in our discussion on strategic trade policy.

Thirdly, and finally, we need to make reference to a strand of literature that views wages, subsidies and employment as the outcome of a “game” played between unions and the government, with the firm passively adjusting. Surprisingly this type of model has not been much used in the declining-industries literature. It developed as a macro model of how centralised unions and governments interact in Scandinavian-type corporatist economies. The results of this literature, though, can be easily applied to protection of declining industries.

The papers we discuss are Driffill (1985) and Calmfors and Horn (1985, 1986). A major consideration in these papers, since they deal with the macroeconomy, is whether workers face a higher tax burden when government employment or subsidisation increases. This consideration is not relevant in the declining-industries case, since the cost of intervention is borne by the rest of the economy. The flavour of their results is captured in the following: a government commitment to partially offset the unemployment generated by higher wage demands actually reduces overall employment. This occurs because the union has an incentive to exploit its knowledge of government policy: “By reducing the opportunity cost of wage increases in terms of lost employment, the policy rule induces the trade union to raise the wage. Since government employment (subsidisation) makes up for only a fraction of the employment loss in the private sector, the result must be a fall in total employment” (Calmfors and Horn 1986:296).

Background to the case of Irish Steel

The 1930s represented the period when protectionism was the favoured instrument of industrial policy, and it was this that gave rise to the emergence and development of the Irish steel industry. Prior to this, steel sheet was imported for further fabrication locally. In order to capture the profits made by overseas suppliers and shippers associated with demand in Ireland a new firm, located at Haulbowline in Cork, and using plant from a Belgian steel works, was established in 1938. A crucial decision governing the setting up of the firm was the location in Haulbowline. The region had suffered very heavy unemployment, and the location there carried with it:

- the lease of State property at very favourable rates;

- tariff protection;
- an embargo on scrap metal exports, which was based on the view that without the embargo exports of scrap could take place in response to higher prices abroad and this would deprive domestic foundries of scrap;
- an exclusive licence under the Control of Manufacturers Act.

Production actually began in August 1939, just one week before the invasion of Poland. The company, Irish Steel Limited, subsequently found it impossible to obtain from overseas the materials and equipment needed for the full operation of the plant, and a receiver was appointed in April 1942. Prior to this the company had sought State guaranteed loans, but there was considerable resistance on the part of the relevant Ministers to the exposure to loss by the State implicit in the loans sought. In the event loans were provided, but the State appointed all directors. However, during the remainder of the war the company continued to make losses, though it did produce some steel. The shortage of materials and of some parts of the plant made it difficult to maintain production at reasonable levels. It was only in Spring 1946 that the furnaces were completed to the original design and thereafter that the company realised satisfactory production levels. By then it was too late – the company was technically insolvent, and was put into receivership, with a view to its sale as a going concern.

However, no purchaser was found, and government, in response to a desire to ensure supplies against an uncertain world background, decided to purchase the assets. This was done in 1947, though the state provided no equity or grant until very much later. At the 1957 AGM the chairman of Irish Steel referred to the accumulated profits of the company since 1947 achieved without a penny of State money, though no reference was made to the costs of protectionism to the economy. Since then, of course, the situation has changed, with the state input by way of equity, non-repayable grants, and loan capital now in excess of £175 million. There are, in addition, some state guaranteed loans.

The company moved from a situation where it was a heavily protected state firm, without subsidy to one, where with the elimination of protection on the home market, it required substantial state injections to survive, in the controlled ECSC market. The annual reports of Irish Steel make cautionary reading, and read almost as a catalogue of adversity, with the company ultimately managing to maintain its existence. The last major crisis was during 1982/85, the culmination of which was an injection from government of £89 million in 1984 and £19 million in 1985, and an increase in production and delivery quotas for the company agreed by the Commission.

The European steel industry has been in difficulty since the first oil price increase and the associated decline in demand and productive capacity. This was exacerbated by increased competition from outside the EC, and the recession of the early 1980s. The initial solution to the problems of the industry was to utilise powers under the Treaty of Paris which allowed the Council of Ministers and the Commission to regulate production

and sales and to monitor prices. This was later reflected in a series of Anti-Crisis Measures which sought to reduce capacity, provide production and delivery quotas, and introduced minimum pricing and VERs agreements with third countries. The regulation of the industry weakened its capacity to adjust to changes in demand and new sources of supply and allowed marginal producers to remain in production.

In relation to Irish Steel the Commission not only approved the state injection of £89 million but also increased the production and delivery quotas applicable to the company. A condition attached to the aid however was that it should be established that the company be financially viable by end 1985 without further aid. A consultants' report suggested that the company could be viable after 1985 if the company was granted higher production and sales quotas, and also pointed out that the plant at Haulbowline was one of the most technically advanced in Europe. It was on this basis that the Commission approved state aid and an increase in Irish Steel's quota. The principles involved in this decision are not clearcut, as 'being technically advanced' provides no evidence of profitability. The company itself saw the shape of the future dependent on the Commission's success in restructuring the industry i.e. in reducing excess capacity, and in the ability to restrict state aid to the industry by national governments, but did not see that this applied to itself.

The cash injection of £89 million proved insufficient to meet the needs of the company. This had been used to repay the company's Irish pound debt, but the company was still making operating losses. These losses reflected a relatively high cost base, and had existed for several years. The operating losses that occurred following the cash injection were blamed on increased scrap prices, depressed steel prices, and high energy prices. The initial response of the company was to seek further resources from the state, but they also considered the need to realise major cost savings. Both objectives were realised in that the state provided further funding, and the company instituted a cost cutting programme, resulting in a reduction of about one fifth of the workforce, and improvements in operating practices which further reduced costs.

The company had a somewhat ambivalent attitude to labour costs for much of its history. At its inception basic pay rates for unskilled workers were related to rates for builders labourers in the region, reflecting the lack of employment opportunities in the Cork area. Shortly after the state takeover this was supplemented by a production bonus related to output, applicable to all workers. Hogan (1980) refers to the willingness of the Board to meet reasonable wage demands, and this clearly had an impact on wage determination. By the mid 1950s pay levels for unskilled workers were almost identical to those of all workers in transportable goods industries. Semi-skilled and craft workers were essentially paid at local applicable rates at the time the company started. By 1985 when the company was experiencing the crisis referred to earlier average earnings of all workers were £15,781 compared with £10,171 for all those in industry. Table 1 shows how earnings at Irish Steel have developed since the mid 1980s, compared with all industry. There are obvious difficulties with the Irish Steel data – in particular in relation

to average numbers employed, but there can be little doubt that average earnings are well above those of industry generally, and that the gap, after narrowing in the period following the 1982/85 crisis has begun to widen again.

It would be interesting to carry out a detailed comparative analysis of skill levels and earnings in relation to Irish Steel. It is possible that the big shifts in employment indicated in Table 1 reflect reductions in unskilled, and hence lower paid employment, and that this explains the relative size of earnings in the company. For a company that has attracted such publicity over its life there is a remarkable dearth of data and published analysis, though, of course, this information is almost certainly available at Departmental level.

Table 1: Average Earnings – Irish Steel and All Industry

	<i>Irish Steel*</i>	<i>All Industry**</i>	<i>Ratio</i>
<i>1985</i>	15781	10171	1.560
<i>1986</i>	16847	10939	1.540
<i>1987</i>	16620	11502	1.445
<i>1988</i>	17030	12111	1.406
<i>1989</i>	17930	12604	1.423
<i>1990</i>	19328	13115	1.474
<i>1991</i>	21656	13736	1.577
<i>1992</i>	23052	14347	1.607
<i>1993</i>	24745	15170	1.631

* Estimated from Employment Cost data: Annual Reports of Irish Steel

** Industrial Earnings and Hours Worked (CSO, various). Data are a weighted average of industrial and non-industrial workers.

Analysis of the Case of Irish Steel

Each of the arguments directed against the “traditional” view that temporary subsidisation is warranted have resonances in the Irish Steel experience. First, it is clear that the initially temporary subsidisation has become a permanent phenomenon. In this case the argument of Flam, Person and Svensson (1983) applies: i.e. that, even if subsidisation was initially warranted, the case in favour declines rather than remains constant with each progressive shock.

Secondly, Lawrence and Lawrence’s (1985) endgame argument also seems to apply. Since the cash injection of £89 million pounds in 1984 was used to repay the company’s Irish pound debt, it obviously could do nothing to effect a turnaround in

operating losses. What it did seem to do was to convince the workforce that their position was stable, so no great reduction in relative wages followed. The implications of a declining workforce alongside stable relative wages suggests, in the model of Barry (1995b), a constant elasticity of labour demand.¹⁰ In this case the marginal benefit of intervention is reduced relative to the cost of intervention by each successive shock. The conclusion is the same as that drawn from Flam, Persson and Svensson (1983).

Finally, and most importantly, there has been an obvious union reaction to the knowledge that protectionist policies are in place and are likely to be continued. We see how, though the company would most likely never have been profitable in a free-market situation, that relative wages in Irish Steel climbed from the initial position of equality with the pay rates for builders labourers, to equality, by the mid-1950s, with industrial workers, to a position today where average earnings are well above those in industry in general.

The clear implication is that protection, and the knowledge that it would be continued, increased the power of the workforce and pushed up wage demands, inhibiting further the competitiveness of an industry that was in any case unlikely ever to have been able to survive unaided.

Background to the case of Team Aer Lingus

Team is a subsidiary of Aer Lingus, established in 1991. It grew out of the maintenance function within Aer Lingus. Aer Lingus had been involved in maintenance since the early 1960s, and had developed a business providing maintenance for other airlines for almost 20 years. During the second half of the 1980s the growth in the world economy led to extraordinary growth in airline traffic. In the short term aircraft manufacturers could not meet the demand for new aircraft so that old aircraft were used more intensively, and kept in service longer. There was thus a boom in aircraft maintenance, and Aer Lingus, with its maintenance department already in the market seemed suited to benefit from this. There was also a view that the demand for airline travel was likely to grow in the long term by 6 per cent per annum, so that the market seemed secure.

It was in this context that Aer Lingus established Team, outside the airline, and, in conjunction with the IDA, undertook a major investment programme, building a new hanger and increasing the size of the labour force. At the time there were complaints from many enterprises that the emergence of Team pushed up basic wages and earnings of maintenance workers throughout the economy, though it is impossible from published data to compare Team and other companies' labour costs. In 1994 earnings of maintenance workers in Team averaged £25,000, which is well above earnings outside Team.

As with Irish Steel it is hard to imagine a worse start-up time. The Gulf War and the '90s recession both reduced the demand for airline travel, resulting in older aircraft being mothballed. This, coupled with deregulation and greater competition in the sector, narrowed margins and forced many companies into loss, and made them much more cost conscious. Maintenance costs were thus subject to greater scrutiny. Simultaneously

Boeing had increased capacity to meet forecast demand, and Airbus production was also rising. Airline companies took the view that given the oversupply in the new aircraft market, and the depressed prices in that market, it was better to operate new aircraft than to maintain and operate older aircraft. This had a significant effect on the demand for aircraft maintenance and was of particular importance to Team given the segmentation of the market. The market is governed by technical safety checks operating at different levels.

- Level A: 35 days, light service check
- Level B: 3 months, service
- Level C: 18 months, service
- Level D: 7 years, major overhaul

Levels A,B, and C represent routine maintenance. Many airlines, with temporary surplus routine maintenance capacity, now bid for this part of the market. Thus while there are less than 20 major companies in the maintenance market they will be competing for routine maintenance with a much wider group. This market is also temporally segmented, as firms weigh costs against potential revenue losses from having aircraft idle travelling from a home base to a maintenance centre. This effectively excludes Team from Far Eastern Markets. Furthermore, newer aircraft today require less maintenance than new aircraft even 5 years ago. Level D maintenance is different. This is a worldwide market. On the supply side the competition is between the major maintenance companies, while a relatively small number of companies dominate the demand side. With newer aircraft the pattern of demand for Level D maintenance has been pushed out into the future, as older aircraft are mothballed.

Thus the market for aircraft maintenance, which looked so promising 5 years ago, is substantially different to what had been expected. For Team the issue is not solely one of shifts in demand and new entrants. The cost structure is seriously out of line with competitors. Although average earnings are high relative to Irish earnings, Team's hourly rate is below that of the major competitors, though not of residual competitors as far as level A,B,C maintenance is concerned. The company suffers from lower productivity as a result of restrictive practices and it is this that has affected its ability to compete. In contrast to the situation that prevailed prior to the emergence of factors listed above when the quality of the maintenance was the most important factor determining the award of contracts, in the current situation price has become the dominant element. Turnabout times are also important. Thus the cost and revenue implications of maintenance weigh more heavily than the quality, which is now of a high standard among the majors. The maintenance product has become more homogeneous. Typically Aer Lingus, and then Team, sold on the basis of quality, and more recently also on the basis of flexibility, but these are less important, though clearly not irrelevant.

At maintenance prices prevailing today Team can, with its branded image of quality and flexibility, win contracts, but it finds it difficult to make money on these

contracts, given the restrictive practices that prevail in the company, at the wages currently paid. Thus if restrictive practices remain, the solution is lower wage rates i.e. closer to those prevailing domestically, while if restrictive practices are eliminated, existing earnings can be maintained. Some years ago it seemed likely, with a significant proportion of the labour force laid off, that new practices were being adopted which saved on labour costs and which could return the company to profitability. However the government was under severe political pressure to secure a full return to work, given the importance of Team to employment in North County Dublin. This resulted in a return to work of all Team employees and, most importantly, a return to previous practices. Of course if wage rates had remained domestically competitive, with no restrictive practices, not only would Team have gone through the market changes much more readily, it could compete more effectively.

Analysis of the Case of Team Aer Lingus

In an important sense the cases of Team and Irish Steel are different. Team can potentially be sustainable, while Irish Steel may never have been. There are parallels however between the experiences of the two companies, which give some indication as to the likely long-term consequences of offering increased protection to Team. There is always the problem of course that subsidies once introduced become permanent, and this always reduces the desirability of intervention. Again, optimal intervention should offset the effects of existing distortions rather than magnify them, and we saw that this did not happen in the case of Irish Steel. Neither has it happened in the case of Team. The results of the most recent intervention, which saw the return of the restrictive work practices that reduce the company's competitiveness, do not give cause for optimism, though as noted above this could yet be averted.

Clearly the assumption of an exogenous wage distortion that underlies the traditional interventionist prescription is not applicable to Team. The fact that Team earnings are well above the average for equivalent skill levels indicates that the monopoly union model may be appropriate. In this case restrictive work practices may be regarded as a substitute (in workers' eyes) for even higher wages. The fact that recent intervention has led to the return of those practices indicates the distorting nature of the intervention. Protection introduces incentive effects that are not captured in the traditional model. The incentives it introduces induce behaviour that worsens the competitiveness problems of the industry, making calls for further protection inevitable.

Concluding Comments

We have argued that the traditional model justifying intervention overlooks the incentive-distorting effects that intervention induces. We have seen in the case of both Irish Steel and Team that intervention, far from alleviating the competitiveness problems of the companies thus ensuring a smoother transition to a new free-market

equilibrium, actually exacerbated the problems. Protection, we find, induces behaviour that makes calls for further protection inevitable.

We should mention briefly a number of other arguments for subsidisation that have been made. These concern: (i) employment creation, (ii) externalities, and (iii) trade policy. With respect to employment creation, it is well-known that subsidisation of employment can be justified when the labour-market performs poorly (e.g. Barry, 1989). The general principle here though is that economy-wide subsidisation (or, more practically, reductions in labour taxes, whether in total or on the margin) is required, rather than any special focus on individual sectors. When externalities are present, e.g. through the possibility of spin-offs from human-capital intensive sectors, subsidisation of the externality-generating sectors should also be welfare-enhancing. This argument has been advanced with reference to Team for example. The optimal subsidy is that which equates the marginal benefit of the subsidy with the marginal cost. If state intervention were already at the optimum, what should the government response to a (temporary or permanent) decline in demand be? To some extent this depends on the response of the company and its workforce to the decline, the issue with which the major part of the present paper is concerned. If these respond "optimally" (as we have found they do not), and if the value of the spin-off industries moves in the same direction as the value of the primary industry, then marginal benefit and marginal cost change by the same proportion, and the optimal subsidy is unchanged. This long-term equilibrium justification for protection does not provide an argument, then, for intervention to offset a world-price or world-demand shock.

The third category of arguments for protection concerns trade-policy issues. Much justification has been provided in recent years for "strategic" trade policies, often entailing tariff protection or export subsidies (Krugman 1985). These arguments arise however only for large oligopolistic industries capable of influencing their competitors behaviour. The logic is that for such industries price exceeds marginal cost, so capturing a foreign rival's market share is beneficial. Governments can aid in this process by precommitting to subsidise. Even if Team were deemed to fulfill these requirements, however, there are a vast range of caveats that go along with the basic protectionist message. The argument for protection is substantially weakened if the marginal social cost of taxation is high. This may be particularly important for Ireland.¹¹ The argument is also weakened if there are other domestic competitors, and other imperfectly competitive sectors which would be weakened by the subsidies. The argument breaks down if inefficient entry (or rent seeking) is induced by the subsidies, and the results in favour of protection (as against sector-specific taxes for example) are actually reversed under alternative specifications of how oligopolistic firms behave.

Notes

1. See Lapan (1976) and Cassing and Ochs (1978).
2. The two standard models of union behaviour are the Nash bargaining model and the monopoly union model [McDonald and Solow (1981, 1985); Oswald (1985)]
3. Espinosa and Rhee (1989) interpret such wage concessions as the union's efforts to endogenise the probability that the game will continue.
4. Using a microeconomic data set on British establishments, Blanchflower, Millward and Oswald (1991) find that employment in the typical unionised establishment grows at around three percentage points less per annum than in a typical non-unionised establishment. Leonard (1992) arrives at similar conclusions using data on Californian manufacturing plants.
5. Orr and Orr (1984) for example, in a study of twenty-five import-sensitive US industries, show that relative wage declines are common. Sachs and Shatz (1994) note that increased foreign competition both eroded rents earned by low-skilled workers in the US and eliminated jobs in the industries that paid those rents.
6. Brander and Spencer (1994) list a number of recent studies which find the marginal welfare costs of taxation to be quite substantial. Ballard, Shoven and Whalley (1985) for example suggest a net efficiency loss of between 17 and 56 cents per dollar of tax revenue raised in the US. Some of Honohan and Irvine's (1987) estimates for Ireland, a country with a high ratio of tax revenue to GNP and a narrow tax base, range to well in excess of £1 per £ of additional tax revenue.
7. In other words, one worker represents a higher proportion of the workforce the smaller the workforce is. With a constant elasticity therefore the tax cost of reallocating one worker rises.
8. A similar conclusion is reached by Gerken *et al* (1986) in their discussion of the impact of the expansion of West German subsidies to the iron and steel industry since 1983. They propose as an alternative a regionally-oriented wage-subsidy programme.
9. Feenstra and Lewis (1994) also present a model with imperfectly mobile factors of production, showing that the achievement of Pareto efficiency from trade or trade shocks requires policies that give factors an incentive to move from the declining to the expanding sector. Riordan and Staiger (1993) provide another argument for exit subsidies, though Kazamaki's results (1993) do not support this model.
10. Average numbers employed were 786 (1975–79), 671 (1980–84), 572 (1985–89) and 566 (1990–93).
11. Ballard, Shoven and Whalley (1985) suggest a net efficiency loss of between 17 and 56 cents per dollar of tax revenue raised in the US. Some of Honohan and Irvine's (1987) estimates for Ireland, with a high ratio of tax revenue to GNP and a narrow tax base, range to well in excess of £1 per £ of additional tax revenue.

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