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Privatisation and the Economic Performance of Irish Sugar/Greencore

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Abstract:
As one of Ireland's largest agri-business companies the Irish Sugar company played a key role in the country's economic development in the twentieth century. The company was privatised in 1991 (under the new name Greencore) and has since transformed from a largely commodity-based agri-business into an international convenience food company. This paper analyses the financial and economic performance of the company before and after privatisation. It finds that the change from public to private ownership was not strongly associated with improved financial performance and productivity as the company had experienced rapid growth and improvement in the pre-privatisation period. These findings run counter to perspectives such as public choice theory that suggest a positive relationship between privatisation and company performance. Performance in the post-privatisation period was strongly influenced by greater exposure to market forces in the company's expanding food division. It is surprising that greater competition did not translate into improved overall performance.

1. Introduction

For over eighty years, Greencore (formerly Irish Sugar) has been one of Ireland's principal agri-business companies. As a state-owned enterprise, formed shortly after independence in 1922, Irish Sugar served a range of state-led objectives including the harnessing of an important natural resource, the creation and maintenance of employment and the achievement of regional development objectives. Despite these contributions to national economic priorities however, the commercial performance of Irish Sugar became a concern for policy makers in the late 1970s and early 1980s. This coincided with developments at an international level which witnessed a widespread re-appraisal of the objectives and commercial performance of state-owned enterprises in all sectors. In the case of Irish Sugar this re-appraisal resulted in a deliberate change in emphasis to more commercial objectives such as improved profitability and returns to the exchequer. This shift in government policy culminated in the eventual privatisation of Irish Sugar in 1991, the first such divestiture of an SOE in the case of Ireland.

Although many different reasons have been advanced in favour of privatisation, the most fundamental has been that transferring enterprises from the public to the private sector will lead to improved performance. It is this aspect of privatisation that we examine through an in-depth business case history of the Irish Sugar/Greencore. The paper tracks the performance and productivity of the enterprise in the years before and after privatisation and conducts an in-depth analysis of the impact of divestiture in terms of its principal objective. The paper also examines the financial performance and productivity of British Sugar over the same period as it provides a useful point of comparison for Irish Sugar. A detailed examination of the impact of the privatisation of a major agribusiness company is of particular relevance in the aftermath of the global economic crisis which has created conditions for a new wave of privatisation around the world, particularly in countries that are currently experiencing significant fiscal difficulties.

The paper is structured as follows: the next section provides a brief overview of the main theoretical and empirical evidence in relation to the impact of privatisation on company performance. We then provide an overview of the development of Irish Sugar in the run up to privatisation before presenting an analysis of pre- versus post-privatisation company performance using basic financial indicators as well as more sophisticated labour and total factor productivity measures. We also examine whether changes in the competitive nature of the company's markets have played a role in influencing company performance. A brief analysis of the experience of British Sugar is presented for comparative purposes before providing an overall discussion of our findings.

2. Theory and empirical studies of privatisation

When transferring public enterprises to the private sector became popular in the late 1970s and early 1980s, the case for privatisation in terms of improved performance was drawn from theories that challenged the case for state intervention in economies such as property rights and public choice theories. Essentially these theories asserted that the incentives facing private sector managers ensured that they would seek to maximise profits rather than pursue other goals such as budget maximisation, risk aversion, over-staffing and over-investment. It was only when privatisation policies had become more popular that economic theories of privatisation *per se* began to emerge, with perspectives commonly adopting a principal-agent approach to the issue (see for example, Vickers and Yarrow, 1988; Bös, 1991; Boycko et al., 1996). The broad thrust of these theories was that that the nature of the principal-agent relationship in the private sector leads to greater efficiency than that in the public sector. However, the power of this rationale arguably depends on the efficiency of capital markets and the degree to which they constrain managerial (agent) behaviour (Parker, 2003). Later theoretical contributions in incomplete contract theory provided further perspectives on privatisation (see Roland, 2008 for a review). One of the particular strengths of this approach was that it demonstrated how ownership matters. However, this does not provide an argument in favour of privatisation. Depending on the precise aspect of incomplete contracting examined, contributions offer different conclusions in relation to the most desirable form of ownership. From a theoretical perspective therefore, the question of ownership remains open.

With regard to evidence, a host of studies covering the impact of privatisation on enterprise performance have been published. Measuring performance is not however straightforward, as different measures and indicators of performance can be appropriate to different firms. For example, profits and price-based measures can be inappropriate under imperfectly competitive market conditions, as profits can indicate high prices rather than efficient production. Consequently, studies of performance in the case of utilities tend to focus on measures of productivity and cost but these studies can be unreliable due to difficulties such as the valuation of capital (Palcic and Reeves, 2011).

The findings amongst the more comprehensive studies tend to be mixed. Large scale international studies by authors such as Megginson et al. (1994), Boubakri and Cosset (1998) and D'Souza and Megginson (1999), rely mainly on financial indicators and clearly identify improved performance post-privatisation. On the other hand, more in-depth studies of privatisation – for example in the UK, Martin and Parker (1997) and Florio (2004); and in Ireland, Palcic and Reeves (2011) – generally find no consistent relationship between ownership and performance. Instead, these studies point to the importance of other factors such as competition and regulation in terms of understanding how enterprise performance is determined.[1]

In the context of the theoretical developments and empirical evidence to date, this article examines the impact of privatisation on the productivity and performance of Irish Sugar. Before doing so, the following section provides an overview of the history of Irish Sugar and the main events leading up to the decision to sell the company in 1991.

3. History of Irish Sugar: An Overview[2]

Comhlucht Siuicre Éireann Teoranta (Irish Sugar) was established in 1933 with the nationalisation of a heavily subsidised private sugar company that had been in operation since 1926. The rationale behind the nationalisation was to become self-sufficient in the production of sugar. At the time, an average of over €1 million was spent on imported sugar annually and it was felt that "in view of the general nature of our agricultural economy, in

[1] For a more thorough review of the theoretical and empirical literature on privatisation, see Palcic and Reeves (2011).

[2] This section relies heavily on the Joint Oireachtas Committee on State-Sponsored Bodies Report on Comhlucht Siuicre Éireann (JOCSSB, 1980).

view, particularly, of the necessity for finding some other means of utilising to its fullest capacity our soil … this industry is one which ought to be developed in the Free State”.[3]

Up until the 1940s, sugar production was the sole business of Irish Sugar. However, during the 1940s and 1950s the company diversified into activities ancillary to sugar production. These included agricultural machinery, fertiliser distribution and limestone quarrying (since limestone is an important input for increasing sugar beet yields). Further diversification occurred in the early 1960s, when Irish Sugar established a food processing subsidiary, Erin Foods, which went on to become the largest food processing company in Ireland. While the food division exposed Irish Sugar to some competitive pressure during the 1960s and 1970s, the sugar operation enjoyed the protection of monopoly status. This changed in 1973 when Ireland joined the European Economic Community (EEC), bringing sugar production under the European sugar Common Market Organisation (CMO).

Ireland’s entry into the EEC meant that significant investment had to be made in modernising Irish Sugar’s sugar factories since the company could no longer rely on protection at a national level and lagged considerably behind its European counterparts in terms of efficiency. The average length of campaign days, beet sugar content, tonnage of beet per worker and sugar produced per worker were all significantly inferior to other European manufacturers by the end of the 1970s. Two main factors contributed to the poor levels of efficiency at Irish Sugar; the small average size of plant and out-dated equipment. For the company to survive, considerable capital investment in plant equipment along with rationalisation of its sugar processing operations was necessary.

Up until the late 1970s, Irish Sugar reported profits in all but three years since it was established in 1933. By 1980, however, the company was experiencing severe financial difficulties. The food division, which incurred heavy losses during the 1970s, continued to perform poorly and was a major drain on company resources. In addition, between 1976 and 1980, Irish Sugar spent over €50.79 million on modernising its factories and was forced to finance this from its own resources and borrowing (Irish Sugar Annual Report, 1981). The deteriorating financial position of Irish Sugar led to a request from the company for a significant government capital injection. Since 1933, the company had only received a total

[3] Dáil Éireann Debates (1933) Vol. 49, 21 July: *Sugar Manufacture Bill, 1933 – Second Stage*, col. 378.

of €6.98 million in state investment, despite the fact that the company contributed significantly to regional development over the entire period.

The Government convened a Joint Oireachtas (parliamentary) Committee on State Sponsored Bodies (JOCSSB) to analyse Irish Sugar's operations and make recommendations on the future development of the company. The committee's review was completed in December 1980 and recommended rationalisation of the company's sugar production facilities through the closure of unviable plants as well as considering the closure of some factories in the loss-making food division. The committee also recommended that the Government assist Irish Sugar by providing an immediate capital injection (JOCSSB, 1980).

The following sections examine the performance of Irish Sugar from 1980 onwards when it went through a period of gradual commercialisation on foot of the JOCSSB report culminating in the privatisation of the firm in 1991. During this period Irish Sugar's activities changed significantly with the company diversifying into a number of other agri-food businesses.

3.1 Development of Irish Sugar in the pre-privatisation period, 1980-1991

The recommendations of the JOCSSB report laid the foundations for the gradual commercialisation and rationalisation of Irish Sugar's operations. In September 1981, the Board decided that the smallest of its four factories (Tuam) should be closed by the end of the year. In making its decision, the Board claimed that the Tuam plant refined only 10 per cent of the company's overall sugar output and maintaining operations at the plant would lead to annual losses of over €3 million.[4] Sugar beet processing is a highly capital-intensive industry and is characterised by high economies of scale. Consequently, the larger the processing factory, the lower the costs per tonne of processing sugar beet. As table 1 illustrates, the Tuam sugar plant was the smallest of the four sugar factories, processing just over 2,000 tonnes of beet per day on average during the 1970s and 1980s. Render (1989)[5] finds that investment costs per unit of output in plants with a capacity of 2,000 tonnes of beet per day are a factor of 1.5 higher than those of a plant of 6,000 tonnes per day and twice as high as those of a plant of 10,000 tonnes per day. The small scale of operations at

[4] Shanahan, E. (1981) 'Plan to axe Tuam plant meets wave of protests', *Irish Times*, 12 September, p. 1.
[5] As cited in van der Linde *et al.* (2000: 178).

the Tuam plant along with the higher cost of transporting beet to the factory given its relatively greater distance from beet growing areas meant that the closure of the plant was inevitable.

The announcement of the Tuam plant closure by the company was followed by major protests which eventually led to the government ordering the company to keep the factory in operation for a number of years given the social impact the closure would have on the region. The refusal by the government to allow the closure of the Tuam factory imposed a considerable cost on Irish Sugar for which it received no compensation. Little was invested in the plant during the years of the dispute and there were a number of layoffs. In December 1986 after the remaining workers at the factory opted for redundancy, rather than retaining the plant in operation at a limited capacity the government finally relented to its closure. The cumulative cost of keeping the Tuam plant open since 1983 had amounted to some €16.25 million (Annual Report, 1986).

Further rationalisation measures were announced in October 1987, when Irish Sugar management recommended to the Board that operations be ceased at the Thurles sugar plant within two years and production would be expanded at the remaining two factories in Carlow and Mallow. Irish Sugar formally announced the closure of the Thurles plant in January 1989 after making arrangements for alternative industry to be established in the town. The costs related to these plant closures and other rationalisation measures had a considerable impact on Irish Sugar's financial performance during the 1980s. Indeed, provisions for factory closures and other rationalisation measures such as labour shedding amounted to over €10 million in 1982, 1985, 1986 and 1989, representing an average of over 6 per cent of turnover in each year. In total, almost €60 million in rationalisation costs were incurred during the 1980s, with much of this accounted for by the closure of the two sugar plants at Tuam and Thurles. The impact of factory closures in both the sugar and food divisions, as well as a general reduction in the workforce, resulted in employment levels falling from 3,558 in 1980 to 1,757 by the end of the decade. This significant reduction in the workforce ranked Irish Sugar as the second largest shedder of labour in the commercial SOE sector during the 1980s (Sweeney, 1991).

Aside from the considerable rationalisation measures implemented during the 1980s, Irish Sugar also significantly increased its levels of capital investment, a large degree of which went towards modernising and upgrading its sugar facilities, particularly at the Carlow and Mallow plants. Almost €120 million was spent on capital investment between 1980 and 1989, despite the fact that the company only received approximately €75 million in Government equity injections and no compensation for the cost of keeping the unviable Tuam plant in operation during the early 1980s.

The impact of the factory closures and investment in the modernisation of equipment is evident when one compares the average throughput per sugar processing plant of Irish Sugar with the European average. Figure 1 shows that in the early 1980s Irish Sugar lagged considerably behind its European counterparts in terms of processing efficiency. However, substantial investment in the Carlow and Mallow plants which allowed for increased capacity enabled the closure of the smaller scale Tuam and Thurles plants in 1986 and 1989 respectively. Consequently, by 1990 the average throughput per plant in Ireland was above the European average.

By 1988, Irish Sugar had achieved a significant turnaround in performance. After incurring losses of over €10 million per annum on average between 1980 and 1985, the company began making healthy profits from 1987 onwards. The return to profitability was undoubtedly aided by a gradual change in the Government's stance with regard to Irish Sugar. The Government's decision to allow the closure of factories and the rationalisation of loss-making food activities signalled an end to the company's role as a regional developer and finally allowed the company to move towards becoming a truly commercial state-owned enterprise.

This new commercial focus was articulated in the 1988 annual report when the Chairman stated that the company's main objectives were to expand the Group's existing business and work towards structured diversification, policies that were being pursued by its main competitors. This could only be achieved if the company was not prevented from implementing necessary policies since government-influenced delays in implementing policy had inflicted serious costs in the past. For Irish Sugar to operate as a commercial entity in the future the Government and policymakers needed to "grasp the nettle and sacrifice short-term expediency for long-term benefit" (Annual Report, 1988: 7).

Irish Sugar, like all European sugar companies, was unable to expand its sugar processing operations due to the EC quota system. Since input (sugar beet) and output (white sugar) prices were effectively fixed due to the CMO pricing system, the only option for increasing rates of return was to reduce operating costs through the concentration and rationalisation of sugar processing operations. By 1990, as a result of the closures of the Tuam and Thurles plants and the modernisation and expansion of the Carlow and Mallow plants, Irish Sugar had arguably picked most of the low-lying fruit with regard to increasing rates of return through the achievement of cost reductions.

The same difficulties in achieving cost reductions, as well as the medium- to long-term uncertainty facing the European sugar industry in the context of future CAP reforms and WTO negotiations, were the main driving forces behind many European sugar companies either expanding their operations into Eastern Europe or diversifying their business into non sugar-processing activities during the 1990s (van der Linde et al., 2000). In the late 1980s and early 1990s, Irish Sugar concentrated on the latter as a means of growing its business. This was recognised by the then Chairman, Bernie Cahill, in the 1987 Annual Report where he noted that there was a "plateau in the sugar industry" beyond which Irish Sugar would not be able to develop further and in light of this, the company "must expand to stay relevant". Since its core sugar activities provided little opportunity to expand the Chairman argued that "diversification has to be our goal" (Annual Report, 1987: 8).

Irish Sugar's objective of expansion through diversification in the late 1980s was a further sign of its gradual move towards a more commercial business. By far the most important acquisition of the pre-privatisation era was the purchase of a 50 per cent stake in the Odlums flour milling group in 1990. The Odlums group was the largest and most recognised flour company in Ireland and its acquisition significantly expanded Irish Sugar's food activities. During the same year the company expanded its food operations further by acquiring a 65 per cent stake in the food preparation company, Swissco. Another notable acquisition that occurred in 1990 was that of the Grassland Fertilisers company. The move considerably expanded the company's agribusiness operations, effectively doubling the turnover from its agri-trading operations. Although Irish Sugar had a long standing involvement in the distribution of fertilisers, the acquisition of Grassland marked its first venture into fertiliser manufacture.

The impact of Irish Sugar's diversifying acquisitions is evident from figure 2 which shows that in the three years prior to divestiture, the share of turnover accounted for by the food and agribusiness divisions increased from 8.2 and 22.4 per cent respectively in 1988, to 28.3 and 32.6 per cent respectively in 1991. Despite this reduction in the company's dependence on sugar as a means of generating revenue, the sugar division continued to account for most of the company's operating profit, contributing 62.8 per cent of operating profit in 1991.

Irish Sugar's shift in commercial focus away from sugar-dominated activities towards other food-related operations was firmly expressed in the 1989 annual report when the Chairman referred to the company as an 'agri-food business' for the first time. The report also stated that Irish Sugar would require access to significant funds in the future to facilitate its expansion and development plans. The Chairman argued that the company could not realistically fund any diversification activity from internal resources since the company would then only be able to expand gradually and raised the issue of privatisation for the first time.

The Chairman's statement fuelled a national debate on the issue of privatisation and a government inter-departmental committee was established to examine the future options for Irish Sugar, with the committee eventually recommending that the company be privatised. The government made a formal decision to part-privatise the company in October 1990 and legislation enabling the sale was passed by Dáil Éireann (the Irish Parliament) in March 1991. Fifty-five per cent of Irish Sugar's shares were floated on the stock market under the new name, Greencore, in April 1991. The remaining shares in the company were sold off in two separate placements; approximately 15 percent in February 1992 and the remaining 30 per cent in April 1993.

The 1980s represented an era where the objectives and activities of Irish Sugar experienced seismic changes. The company evolved from a loss-making operation dominated by its sugar activities, to a profitable and more commercial agri-food company. During the process Irish Sugar shrugged off the mantle of being forced to pursue non-commercial objectives related to regional development and employment and began pursuing more commercial objectives, evident from its rationalisation and diversification activities during the period in question. The privatisation of the company in 1991 represented the final transition to a fully commercial operation and the removal of the burden of having to satisfy social and wider economic objectives.

4. Irish Sugar Productivity and performance 1984-2000

Having described the major developments in Irish Sugar's history under public ownership, the analysis now turns to the question of whether the privatisation of the firm in 1991 led to an improvement in performance. Performance is assessed using productivity measures, namely total factor productivity (TFP) and labour productivity (LP), as well as standard financial indicators. The financial indicators used to analyse performance are profit before interest, tax and exceptional items (PBITE), return on assets (ROA), return on sales (ROS) and value-added per employee-hour (VAE).The methodology used to calculate each measure is set out in the appendix. Our analysis of post-privatisation performance is confined to the period 1991-2000. This is attributable to the fact that In January 2001, Greencore made a major acquisition of a leading UK food company, Hazelwood, which effectively rendered a like-for-like comparison of pre- and post-2000 performance impossible since

Greencore's operations were transformed immeasurably as a result of the takeover.

Table 2 displays the results from the productivity and financial performance analysis of Irish Sugar. The LP and TFP indices are rebased to equal 100 in 1991, the year of privatisation, in order to simplify the comparison of pre- and post-privatisation performance. It is immediately apparent that pre-privatisation productivity gains are far in excess of those experienced after divestiture. Indeed, there was little if no improvement in TFP growth post-privatisation, whereas prior to divestiture Irish Sugar experienced considerable productivity growth. While labour productivity continued to improve after divestiture up until 1997, the gains recorded were not as significant as those achieved in the five years prior to flotation. The evidence therefore indicates that the rationalisation and commercialisation period of the 1980s had a more significant impact on productivity than privatisation. The productivity results for Irish Sugar reinforce the findings of Martin and Parker (1997) who found that while privatisation generally led to improvements in labour productivity, these improvements are often outweighed by a deterioration in the productivity of other factor inputs.

As is evident from table 2, the findings using basic financial indicators are broadly in line with the productivity results presented previously, particularly with regard to the VAE variable. The trend in VAE matches that of the labour productivity variable with significant pre-privatisation growth sustained in the initial post-privatisation period before declining sharply after the 1996-97 period. The results for the profit margins indicator largely mirrors this trend, however the ROA results display little growth and considerable variability over the 1987-1996 period before deteriorating thereafter. The temporary dip recorded in both the ROA and ROS indicators in 1985 is partly explained by the costs of maintaining the Tuam sugar plant in operation along with a minor agricultural recession.

The results for both productivity and financial performance indicate that the period of commercialisation led to considerable improvements in the performance of Irish Sugar across all indicators. By gradually allowing Irish Sugar to pursue policies based on commercial realities and to take any necessary action to ensure its viability and competitiveness, the Government enabled the considerable improvement in performance recorded by the company prior to 1991. However, while the post-privatisation period was associated with further gains across many indicators, these gains were not as sizeable as those achieved during the years of commercialisation, particularly with regard to the productivity and efficiency measures.

These findings are consistent with those of similar studies carried out in the UK by authors such as Bishop and Kay (1989) and Martin and Parker (1997). These studies found that the period shortly before and after privatisation is often associated with static efficiency gains which are attributable to measures of rationalisation (employment reduction and other cost-cutting measures). However these do not necessarily translate into long term dynamic efficiency gains generally associated with innovation and new product development. This is particularly evident in the case of Irish Sugar where most performance indicators deteriorate significantly five years after privatisation.

4. The newly privatised Greencore: activities and competition

While the privatisation of Irish Sugar did not have significant performance effects relative to the pre-divestiture period, it must be noted that the company engaged in a considerable expansion of its activities. Although Irish Sugar experienced some diversification and growth in its operations prior to its sale, privatisation brought about a considerable acceleration in its development and a further shift in commercial focus away from sugar-dominated activities. These changes undoubtedly exposed the company to increased competitive pressure which may partly explain the relatively less impressive post-privatisation performance. In order to highlight the nature and impact of these changes, the following section provides a brief overview of the development of Greencore's activities after privatisation. We then turn to the question of competition in the newly privatised company's core product markets.

4.1 Greencore Activities Post-Privatisation[6]

During the 1990s Greencore diversified significantly into malting by making a number of acquisitions. As part of its acquisition of Food Industries p.l.c. in November 1991, Greencore acquired Minch Norton, the largest producer and exporter of malt in Ireland with one of the largest malting plants in Europe. Greencore further broadened its malting operations and expanded into new continental European and international markets through its acquisition of a Belgian malting company, Belgomat, in July 1994. With the acquisition in April 1998 of the UK malting company, Pauls Malt, Greencore Malt became the fifth largest maltster in the world, holding a global market share of over 10 per cent, with factories in Ireland, England, Scotland and Belgium.

In August 1996, Greencore made its first foray into the US market when it acquired 26.9 per cent of Imperial Holly, a major US sugar producer. Greencore's share in Imperial Holly was subsequently diluted to approximately 14 per cent in December 1997, when Imperial acquired another US sugar producer, Savannah Foods, making it the largest sugar producer in the United States. Initially, the investment seemed to be a success with Imperial's share price rising above USD$15 compared to the USD$13.25 per share that Greencore originally paid for its stake. However, in the late 1990s, the impact of record low sugar prices due to market oversupply and soaring energy prices led to large losses at Imperial and an ever increasing debt burden. The mounting losses exerted severe downward pressure on Imperial's share price and by the beginning of 2000, its share price had fallen to USD$5.[7] By the end of 2000, the share price had plummeted below USD$1 and

[6] Most of the information in this section was sourced from Greencore annual reports from 1991-2000.
[7] "More than sweet talking needed", *Irish Times*, Friday, June 2nd 2000.

Imperial eventually declared bankruptcy in January 2001 with Greencore forced to write off its investment in the company at a cost of over €63 million.

In 1998, Greencore also acquired Paramount Foods, a leading producer of pizzas and sauces in the UK. The impact of this acquisition, coupled with the addition of Pauls Malt, meant that Greencore's food activities contributed more than half of group turnover for the first time. Despite the increase in turnover from food activities, Greencore's sugar division still contributed 49 per cent of operating profit in the same year. Prior to 1991 sugar had accounted for well over 60 per cent of operating profit and between 1992 and 1997, the sugar division's share of operating profit never fell below 54 per cent (see figure 2). Greencore made further acquisitions in the UK convenience food sector in 2000 when it purchased William Rodgers Foods and The Robert's Group.

Greencore's continuous expansion into highly competitive malting and international food markets may explain the dip in performance and productivity experienced in the late 1990s with the Group exposed to increased competitive pressures and tighter profit margins. In particular, the consolidation and restructuring of the Group's various malting operations under one integrated division and the rationalisation of a number of smaller and less efficient malting plants took time to implement and the division also suffered from weak global malt markets in the late 1990s.

4.2 Product market competition and performance

The role of product market competition is widely recognised as a key factor in determining enterprise performance and the literature on privatisation highlights the relative importance of competition compared to enterprise ownership (Vickers and Yarrow, 1988; Roland, 2008). This section examines whether changes in the performance Irish Sugar are associated with a change in the degree of product market competition faced by the company and whether the change in degree of competition was greater or less after privatisation.

An important feature of Irish Sugar/Greencore's operations in the post-privatisation period was the accelerated level of diversification in the company's activities that had commenced prior to the change in ownership. This resulted in significant changes in the profile or the company's activities as the traditionally dominant sugar division gave way to the ‘other food’ division throughout the 1990s (see figure 2). The proportion of turnover accounted for by the sugar division fell from a high of 74.7 per cent in 1987 to just over 20 per cent by 2000. From 1994 onwards, the food division accounted for a greater share of revenue than the company’s sugar activities, particularly after 1998 when Greencore acquired major companies in the malting (Pauls Malt) and food (Paramount Foods) sectors.

The shift in the composition of activities had important implications for the competitive environment faced by the company as a whole as the company faced different levels of competition in different markets. Measuring the degree of competition faced by the company therefore requires different activities to be treated individually.

4.2.1 Sugar

Upon entry into the EEC in 1973, Irish sugar was granted the entire sugar beet quota for Ireland since it was operating as the sole processor of sugar at the time. Consequently Irish Sugar held a market share of over 90 per cent of the sugar market from then on. In the retail sugar market, which constituted approximately 25 per cent of the overall sugar market, Irish Sugar held a market share of over 85 per cent from 1985 onwards (EC, 1997). There was little or no change in the level of competition that Irish Sugar faced over the period under review. The company faced limited competition from imports of sugar, artificial sweeteners and, from 1993 onwards, small sugar packers.

Irish Sugar’s dominance of the Irish sugar market was also aided by Ireland’s island status and the high transport costs for any sugar imports (except those from Northern Ireland). Despite facing very little competition, Irish Sugar was found guilty of abusing its dominant position by the EC in May 1997. The EC found that Irish Sugar had been offering selective rebates to certain customers since 1985 in order to restrict competition from imports of sugar, particularly from France and Northern Ireland. In addition, Irish Sugar had been offering rebates to industrial purchasers of bulk sugar that exported to other EU member states. The rebates offered discriminated against customers that supplied only the Irish market and effectively subsidised sugar exports, acting as a barrier to imports and increasing the isolation of the Irish market (EC, 1997).

From 1993 Irish Sugar also began preventing small sugar packers in Ireland from gaining a foothold in the market. Irish Sugar supplied almost all of the bulk sugar used by competing small sugar packing companies but failed to offer them rebates that were offered to other customers of industrial sugar. In addition to charging sugar packers higher prices for bulk sugar, Irish Sugar also began offering price discounts and volume rebates on Irish Sugar's own product to particular food retailers and wholesalers who were customers of competing sugar packers. As a result of the range of anti-competitive practices engaged in by Irish Sugar since 1985, the EC imposed a considerable 8.8 million ECU fine on Irish Sugar in May 1997 (EC, 1997).

After the EC's decision in 1997, sugar import levels rose resulting in increased competition, however, the growth in competition occurred mainly after 2000. By 2005, imported sugar, originating mainly from France, accounted for approximately 20 to 25 per cent of the Irish market.[8] Irish Sugar's dominance of the Irish market and its abuse of market power led to Irish retail and industrial sugar prices being above the EU average during the 1980s and 1990s (EC, 1997). Since Irish Sugar's anti-competitive activities occurred both pre- and post-privatisation and there were no major changes in the degree of product market competition faced by the company, there is little evidence to support the hypothesis that improvements in performance were associated with increased sugar market competition either before or after divestiture.

4.2.2 Food and Agribusiness

Figure 2 illustrated the substantial increase in the share of turnover accounted for by the food division in the late 1980s and 1990s. Prior to divestiture, Irish Sugar acquired 50 per cent of Odlums flour milling company in 1990 and continued to expand and diversify its food operations post-privatisation. The most significant area of diversification in the early 1990s was Greencore's breakthrough into the malting industry. In 1991 the company acquired Minch Norton, the largest producer of malt in Ireland. The Belgian malting company, Belgomat was acquired in 1994 and further acquisitions included the Irish malting operations of the Williams Group in 1996 and the UK malting company Pauls Malts in 1998. By the late 1990s, Greencore was one of the largest malt producers in the world and operated in highly competitive international markets. Greencore also diversified into the convenience food sector with acquisitions including Paramount Foods, a leading producer of

[8] Dáil Éireann Debates (2005) Vol. 596, 27 January: *Private Notice Questions: Food Industry*, col. 870.

pizzas and sauces in the UK, in 1998, and other convenience food companies such as William Rodgers Foods and The Robert's Group in 2000.

This expansion into highly competitive malting and international food markets undoubtedly exposed Greencore to more competitive pressure during the 1990s. The 1994 Annual Report highlighted the increased competitive pressure faced by the Group with its "operations constantly benchmarked against the best internationally in terms of quality, service and, of course, price" (p. 8). The report also noted the escalating competition in UK and Irish food retail markets which had led to severe margin pressures on its food manufacturing operations.

Greencore's agribusiness operations consist of various activities that include agricultural machinery, animal feeds, fertiliser production, limestone products and grain. While the degree of expansion in Greencore's agribusiness division was far less than that recorded by the food division, the division nonetheless accounted for a considerable proportion of company activities.[9] Indeed, during the early 1990s, the agribusiness division accounted for a larger share of turnover than both the sugar and food divisions. While it is difficult to assess whether there were any major changes in the degree of competition faced by this division, evidence from annual reports suggests that the division had always operated in competitive markets and that there were no significant changes in the level of competition faced by the agribusiness operations.

Whether the overall level of competition faced by Irish Sugar / Greencore increased after privatisation is open to interpretation. Although there is strong evidence to suggest that competition increased in the expanding food division, there is no evidence indicating a similar pattern in both the sugar and agribusiness divisions. Our conclusion therefore is as follows: since the impact of ownership and competition cannot be disentangled we cannot reject the hypothesis that improved performance in the first five years after privatisation was associated with increased competition (mainly in the food division). The results, however, show that this improved performance was not sustained into the late 1990s. This may reflect the fact that Greencore's lower margin food operations had at that stage become the most dominant element of the company's activities.

[9] There was only one notable acquisition by the agribusiness division in the early 1990s; as part of the acquisition of Food Industries p.l.c. in 1991, Greencore acquired its grain operations subsidiary, Drummonds Minch Norton.

5. Providing a comparative context: British Sugar

Overall, it is important to recognise the limitations involved in case study analysis and the difficulties associated with attempting to disentangle the impact of various explanatory variables on our performance and productivity results. In order to address these issues we conduct an analysis of a relevant comparator company, British Sugar, over the period 1984-2000. The selection of British Sugar provides a valid basis for comparison for a number of reasons: (1) in the early 1980s both companies were broadly similar in terms of their operations, however British Sugar was a private company and Irish Sugar was a fully state-owned enterprise (SOE); (2) over the 1984-2000 period, Irish Sugar went through a period of rapid commercialisation, privatisation and extensive diversification into other agri-food activities, while British Sugar remained largely the same apart from some rationalisation of its operations and a number of changes in ownership. Our analysis of the financial performance and productivity of Irish Sugar and British Sugar over the 1984-2000 period thus allows for an insightful comparison of the productivity and performance of two (initially similar) companies that pursued vastly different strategies over the timeframe of analysis.

5.1 British Sugar History[10]

The sugar industry in Britain dates back to before World War One when Dutch sugar manufacturers began offering English farmers contracts to grow sugar beet for export to Holland. In 1912, the Dutch built a factory in Norfolk to manufacture sugar however this was wound up in 1915 having never achieved a profit. The factory was subsequently acquired by the English Beet Sugar Corporation and reopened in 1920. Due to the shortage of sugar during World War One, the government helped to finance the establishment of another factory which began operating in 1923 in order to help develop the domestic sugar industry. A third factory was built in 1924 and in 1925 the UK government passed *The Sugar Industry (Subsidy) Act* which provided exchequer subsidies for new sugar factories for a ten year period. This led to 15 new factories being built between 1925 and 1928.

[10] This section relies heavily on Hart (1953) and the British Sugar History section of British Sugar's website (http://www.britishsugar.co.uk/)

In the late 1920s and early 1930s, world sugar prices plummeted due to overproduction of sugar and countries began selling their surpluses below cost. Concerned that British sugar companies would not be able to compete the UK government set up a committee to examine the future options for the industry. The recommendations by the committee led to the *Sugar Industry (Reorganisation Act)* in 1936. The Act reorganised the industry by amalgamating the existing 15 separate sugar manufacturing companies into one company, the British Sugar Corporation. Unlike Irish Sugar, the company was never a fully state-owned company with the UK government acquiring a 36 per cent stake in the company in recognition of the state subsidies that had helped develop the industry over the years. The Act also established an independent Sugar Commission to oversee the industry as well as providing for assistance payments to the newly formed British Sugar Corporation.

Over the years the British sugar industry developed rapidly, with significant capital investment improving the productivity of factories and new research into fertilisers and herbicides improving sugar beet farming methods. The *1956 Sugar Act* established a Sugar Board to purchase sugar produced in the Commonwealth at subsidised prices and sell that sugar commercially. In the 1970s there was considerable capital investment in modernising the existing factories with one factory closed as part of a rationalisation programme. The capital investment in the 1970s was undertaken to increase the capacity of factories due to the increased national sugar beet acreage and production that resulted from Britain's entry into the EEC in 1973. A rights issue in 1977 raised further funds for investment and diluted the UK government's stake in British Sugar from 36 to 24 per cent.

Between 1975 and 1980, British Sugar succeeded in increasing its productive capacity by 33 per cent to 1.25 million tonnes of sugar, tripling turnover to GBP£380 million and quadrupling profits to GBP£36 million. A reduction in the UK's A/B sugar quota in 1981 from 1.326 million tonnes to 1.144 million tonnes led to the closure of four factories at the end of the 1980/81 campaign. A hostile takeover attempt of British Sugar by S&W Berisford in 1980 eventually failed with Berisford unable to acquire enough shares to trigger the sale of the government's share in the company.

In 1981 the government sold its 24 per cent stake in the company to institutional investors. S&W Berisford launched another takeover bid for British Sugar in 1982 and this time succeeded in its attempt. Berisford invested some GBP£350 million in the company and focused investment on cutting costs through energy savings. The increased productivity in each factory as a result of investment led to the closure of a further plant in 1988. After suffering significant losses in other divisions, Bersiford was forced to sell of many of its assets and British Sugar was purchased by Associated British Foods in January 1991. Further cost-cutting measures and capital investment led to the closure of two more factories in 1991 and another in 1994.

By the mid-1990s, nine factories were producing more sugar than seventeen factories had processed more than a decade before. Unlike Irish Sugar, British Sugar did not diversify into other businesses such as processed food or the manufacture of agricultural machinery. Sugar sales constituted the main part of its business from 1984-2000, contributing approximately 85-90 per cent to total revenue over the entire period. The sale of pulp and other by-products from the sugar production process[11] contributed the remaining 10-15 per cent of turnover over the period.[12]

6.2 British Sugar Performance

This section examines British Sugar's performance using the same indicators as for Irish Sugar / Greencore. Specific details on the calculation of TFP for British Sugar are outlined in the appendix. Table 3 presents the productivity and performance results for British Sugar. Labour productivity increased considerably over the period in review, due mainly to the expansion of production facilities at some factories which enabled the closure of smaller plants. This reflected wider European rationalisation trends during the 1990s where production levels remained stable even though the number of factories and the level of employment fell by one-third (EC, 2003).

The substantial improvements in British Sugar's labour productivity are not reflected in the TFP results. This is unsurprising since labour input accounts for a relatively small proportion of costs, with raw sugar beet and energy costs accounting for the largest share. Since British Sugar had to pay a fixed minimum price for A and B quota sugar beet from

[11] Pulp extracted from the sugar beet during the sugar production process is converted to animal feed and sold while other residuals from the production process such as molasses and lime are also sold as by-products.
[12] Source: authors' calculation from British Sugar annual report data (1984-2000).

farmers[13], the scope for achieving reductions in operating costs was limited to areas such as energy savings and labour shedding. Coupled with the fact that the EC effectively sets the output for British Sugar through quotas and intervention prices, the scope for total factor productivity gains is very limited. While British Sugar could have increased production above quota levels and availed of the C-sugar system, highly volatile world market prices for sugar and the fact that the EU intervention price has remained well in excess of world prices since 1981 would act as a disincentive to do so.[14]

British Sugar's financial performance displays significant improvement from 1986 onwards with all three performance indicators increasing considerably up until the mid-1990s. Profit margins at British Sugar were significantly higher than that of Irish Sugar for the entire period analysed; however given the extent of Irish Sugar's diversification into non-sugar activities in the 1990s, it is not possible to draw definitive conclusions from this. It would be expected that British Sugar's margins are higher given the generous support prices of the CMO which effectively guarantee input and output prices, whereas Greencore's expansion into highly competitive and price sensitive food markets would put obvious downward pressure on its profit margins.

Irish Sugar's return on assets was higher than that of British Sugar in the 1980s, however, this trend was reversed significantly in the 1990s when British Sugar rationalised its operations. While value-added per employee at British Sugar was considerably higher over the entire period, this is to be expected given the larger scale of British Sugar's operations and consequent higher levels of output per employee. Moreover, British Sugar had historically invested a much larger amount in plant and equipment in relation to its output and employees than Irish Sugar, contributing to its higher profitability (JOCSSB, 1980). At the same time it must be noted that, unlike Irish Sugar, British Sugar was a private company with access to more funds and did not suffer from political interference.

British Sugar faced very limited competition throughout the period analysed. While it was the sole processor of sugar beet grown in the UK over the period of analysis, it faced

[13] The minimum prices for A and B quota sugar set by the European Commission were fairly stable between 1984 and 1995. There was an increase in the minimum price in 1996 and thereafter prices did not change at all (EC, 2004).

[14] See van der Linde et al. (2000:69) for a comparison of the intervention price and effective minimum revenues with world market prices for the UK and a number of other countries over the period 1981-82 to 1997-98. The effective minimum price per tonne for the UK was generally double that of the world market price over the entire period.

some competition from Tate & Lyle, who processed imported raw sugar cane. Given that both companies faced production quotas (sugar beet quotas for British Sugar and raw sugar cane import quotas for Tate & Lyle), in effect competition was severely limited with neither company given an incentive to cut prices since production could not be increased. Indeed, in 1998 both British Sugar and Tate & Lyle were found guilty of collusion and price fixing in the industrial sugar market (along with Napier Brown) by the EC and heavy fines were imposed.

7. Conclusions

In the space of a decade Irish Sugar was transformed from a sugar-dominated company that fulfilled "a non-commercial role in relation to regional development" (JOCSSB, 1980: 71) to an agri-food company which "seeks to add value to its business" (Annual Report, 1991: 4). The case of Irish Sugar thus provides a textbook example of what Vickers and Yarrow (1988) describe as a benchmark model of SOE privatisation where the objectives of the firm changes from welfare maximisation to profit maximisation. The purpose of this paper is to analyse the case of Irish Sugar / Greencore in terms of the standard hypothesis that a change to private ownership is associated with improved enterprise performance.

Our analysis shows that the privatisation of Irish Sugar resulted in a dramatic change in the profile of the company during the period under analysis. Although the company had started to become more commercially-focused prior to divestiture, in the absence of privatisation one can reasonably speculate that it would have remained a sugar-dominated company. This would have provided limited scope for on-going efficiency improvements since it was not possible to expand the company's core sugar activities due to the constraints of the European sugar CMO. In order to expand operations the company needed to diversify. However without access to funds, expansion would have been gradual as it would have had to finance any diversification activity from limited internal resources.

Both Irish Sugar / Greencore and British Sugar recorded little or no growth in TFP over the 1991-2000 period. Given the extent to which Irish Sugar/Greencore diversified its activities away from sugar production during the 1990s it is surprising that TFP results post-privatisation do not display any marked improvement. Due to the small scale of sugar production in Ireland and the EU quota system in place, the scope for productivity increases in Irish Sugar/Greencore's sugar activities were minimal and one would expect that diversification into other activities would have allowed for improvements in productivity.

Overall, the evidence presented demonstrates how considerable improvements in the productivity and performance of commercial SOEs can be achieved under public ownership. This is consistent with the findings of various studies such as Bishop and Kay (1989), Martin and Parker (1997) and Dewenter and Malatesta (2001). While privatisation led to a significant change in the focus and activities of Irish Sugar/Greencore, the evidence presented here fails to provide clear-cut evidence supporting the hypothesis that a change to private ownership will lead to improved performance as measured in financial and efficiency terms.

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Appendix: Methodology for calculating performance and productivity indicators for Irish Sugar and British Sugar

Financial Indicators

The formulae used to calculate the basic financial indicators used to analyse Irish Sugar and British Sugar performance are given in Table A1 below.

Table A1: Formulae for basic financial indicators

Indicator	*Formula*
Return on Sales (ROS)	$\frac{\text{PBITE}}{\text{Turnover}}$
Return on Assets (ROA)	$\frac{\text{PBITE}}{\text{Total Assets}}$
Value-Added per Employee Hour (VAE)	$\frac{(Wages + Depreciation + PBITE) \div (price\ index)}{(no.\ of\ \ employees) \times (average\ hours\ worked)}$

Note: When calculating ROS and ROA, profit before interest, tax and exceptional items (PBITE) is used in order to avoid the distortion caused by changes in accounting practices in relation to exceptional items and interest charges before and after divestiture.

Deflators used in calculation of VAE for Irish Sugar were as follows: for wages, a deflator was created from data on nominal compensation per employee in manufacturing from the EU AMECO database; for depreciation, a deflator was created from data on GFCF in the total economy (AMECO); for PBITE, the CPI index (food & non-alcoholic beverages) sourced from the CSO was used as a deflator. The method and source for constructing the deflators used in the calculation of VAE for British Sugar was the same as that used for Irish Sugar apart from the deflator for PBITE, where the RPI index (food & non-alcoholic beverages) sourced from the Office for National Statistics (ONS) was used.

Productivity Indicators

The approach adopted in the estimation of productivity follows that of Martin and Parker (1997) and Daßler et al. (2002). Labour productivity (LP) growth is calculated as follows:

$$LP = \frac{Output\ Index}{Labour\ Index}$$

Total factor productivity (TFP) growth relates changes in total output to changes in the usage of all inputs. TFP growth is calculated using index numbers constructed to measure changes in the levels of output produced and levels of inputs used in the production process over time. Most empirical studies use the Törnqvist index formula when calculating TFP growth and Coelli et al. (2005) define it in its logarithmic form as follows:

$$\ln TFP_{st} = \frac{1}{2}\sum_{m=1}^{M}(w_{is} + w_{it})(\ln y_{mt} - \ln y_{ms}) - \frac{1}{2}\sum_{n=1}^{N}(v_{ns} + v_{nt})(\ln x_{nt} - \ln x_{ns})$$

The first part of the equation corresponds to the Törnqvist index applied to output data while the second part of the equation relates to input data. The formula is calculated using output/input quantities weighted by their corresponding revenue/cost shares (where w and v are the weights attached to outputs y and inputs x in periods s and t). Further details on the method of calculation are available from Coelli et al. (2005) and Diewert (1992).

To analyse the productivity of Irish Sugar / British Sugar, data was gathered from various sources. Company annual reports were the main source of information, providing data on the number of employees, turnover, operating costs, staff costs, fixed assets, capital expenditure and depreciation. Investment deflators were sourced from the EU AMECO database while data on price indices and interest rates were obtained from the Irish Central Statistics Office (CSO) and UK Office for National Statistics (ONS).

To calculate the output index for Irish Sugar, data was sourced for the three main operating divisions as follows: (1) Sugar: the total tonnage of white sugar produced each year sourced from company annual reports and EC DGAGRI reports; (2) Food and Agri-business: no physical output indicators were available for these operations so deflated revenues were used to arrive at a real measure of output for each business. Turnover for food was deflated by the CPI index for food and non-alcoholic beverages sourced from the CSO. Turnover for agri-business was deflated by the CPI index excluding food and energy (CSO) since no other appropriate price index could be obtained. An overall output index was then calculated by aggregating across the real figures for sugar, food and agri-business, with each output weighted by its nominal revenue share in total turnover. The calculation of the output index for British Sugar was created using data on the total tonnage of sugar produced along with deflated revenues for animal feed as no consistent time series of physical indicators was available. The index created was weighted by each product's share in total turnover.

The three categories of inputs used in the analysis were labour, capital and other inputs. Real indices of each input were created and weighted by their share in total cost to get the overall input index. Labour input was measured as physical man hours per annum and was calculated as follows:

$$L_{real} = number\ of\ employees * \frac{hours}{week} * 52 \frac{weeks}{annum}$$

The average number of full-time employees per year was obtained from annual reports. The figures for hours worked per week were taken from the CSO and the OECD. Data was not available for the sugar/food industry itself so figures for industrial hours worked were used as a proxy.

Real capital stock (K) had to be estimated since company annual reports only report historic accounting costs for capital assets. The current value of capital assets was estimated using an initial current cost valuation of tangible fixed assets and subsequent data on real capital investment and estimates of economic depreciation. Most TFP studies estimate real capital stock using the perpetual inventory method, as below:

$$K_t = I_t + (1-\delta)K_{t-1}$$

where K is real capital stock, I is real investment, d the depreciation rate and t is time. Irish Sugar annual reports provide information on three asset groups: land and buildings, plant and equipment, and fixtures and fittings. Real capital stock was thus calculated separately for each fixed asset group, FA_{kt}, using a formula analogous to the above, as below:

$$FA_{kt} = I_{kt} + (1 - \delta_k)FA_{kt-1}$$

where I_k is real investment in fixed asset *k* and δ_k is the depreciation rate. The depreciation rates used in the calculation of real capital stock for each asset class were taken from estimates provided by Hulten and Wykoff (1996). Real investment is simply the nominal capital investment figure for each asset group deflated by the GFCF deflator taken from the EU AMECO database. The results for each asset group were then aggregated to arrive at an overall value for real capital stock.

Since it is extremely difficult to come up with a physical quantity for other inputs, the most common method for constructing an index is to deflate the total cost figure for other inputs. Costs of other inputs were calculated as follows:

$$COI = OpC - LC$$

where *COI* is the cost of other inputs, *OpC* is the operating cost and *LC* is the labour cost per annum. Data for *OpC* and *LC* was obtained from company annual reports and the resulting *COI* figures were subsequently deflated by the wholesale price index obtained from the IMF (for Irish Sugar) and the producer price index for inputs used in manufacturing obtained from the ONS (for British Sugar) to obtain a real value for other inputs.

To determine the nominal input costs and their corresponding shares of total cost, the following equation was applied:

$$TC = LC + OCK + COI$$

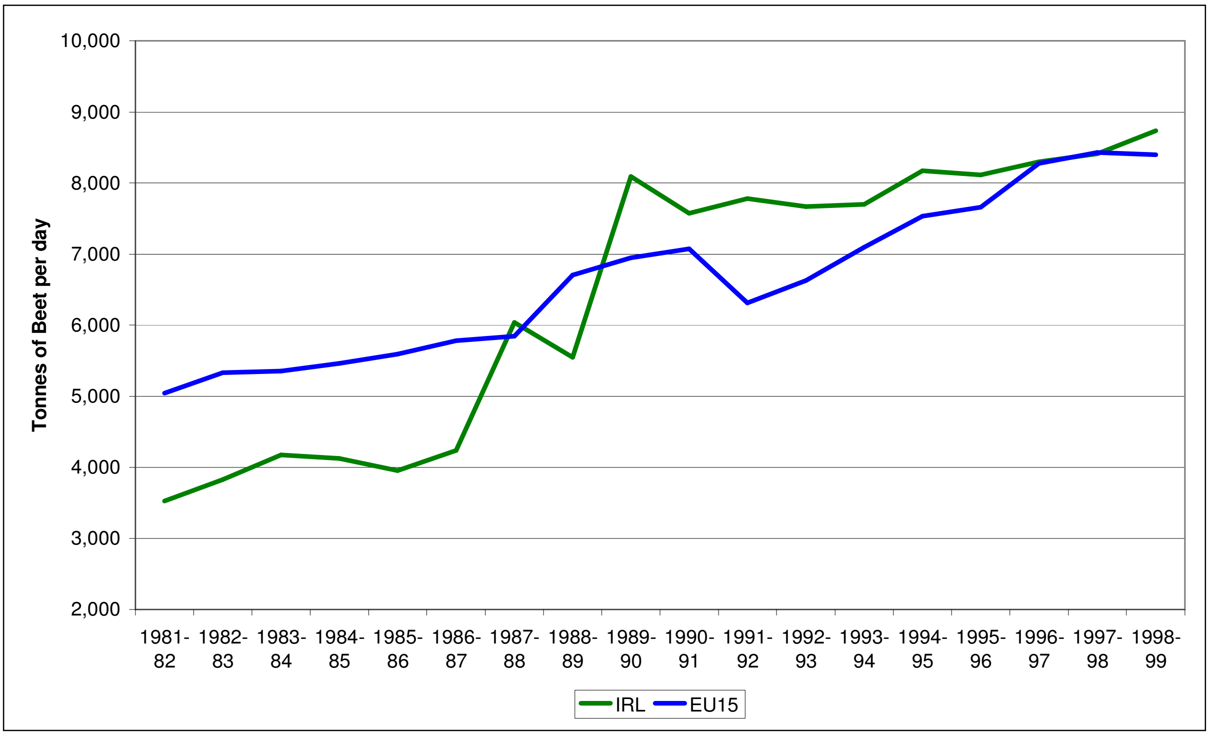
Labour cost was taken to be the nominal figure for net staff costs obtained from company annual reports and the COI figures are the nominal values obtained from the previous section. The opportunity cost of capital (OCK) for each year was estimated using the following equation:

$$OCK_{kt} = \sum_{k=1}^{N} (i_t + \delta_{kt}) NomFA_{kt}$$

where *k* is each asset group, *i* is the ten year bond yield on government securities obtained from the IMF, δ_k is the depreciation rate and *NomFA* is the nominal value of each group of fixed assets. Finally, the nominal input shares used in the calculation of TFP were obtained as follows:

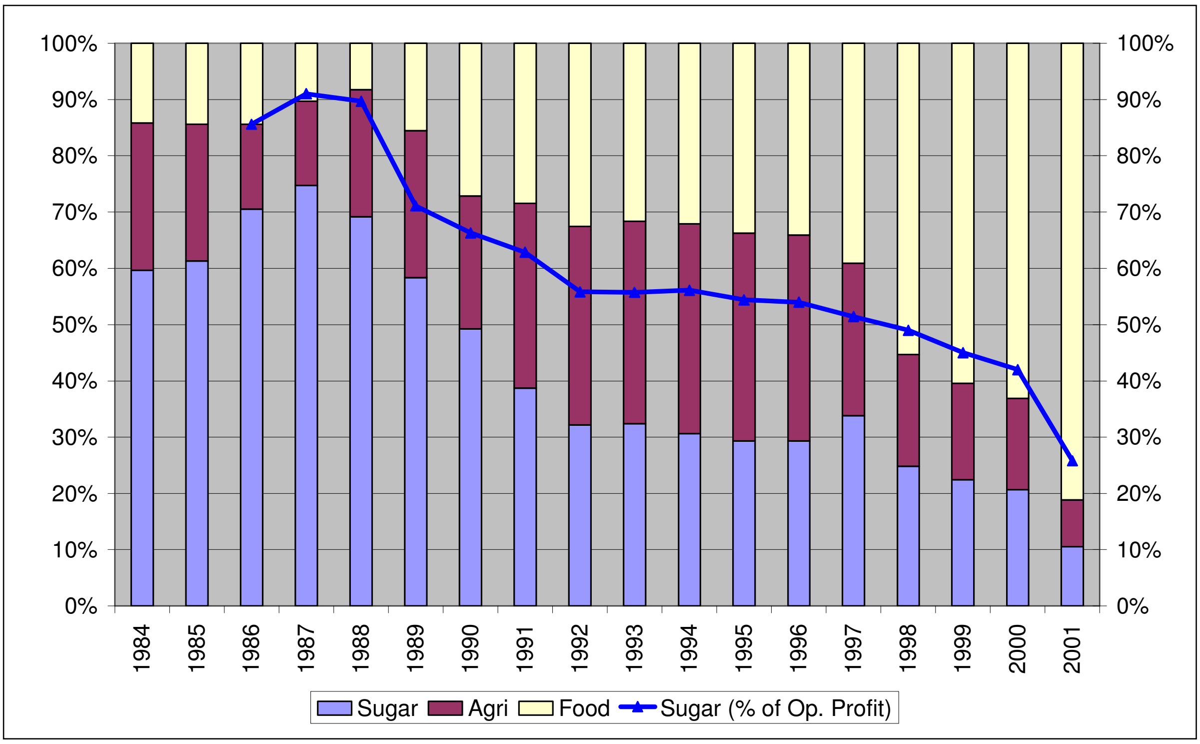
$$S_L = \frac{LC}{TC} \quad S_K = \frac{OCK}{TC} \quad S_O = \frac{COI}{TC}$$

Figure 1: Average throughput per plant in Ireland and the EU, 1981-1999



Source: van der Linde *et al.* (2000). Note: the authors' calculated average throughput per sugar processing plant (in tonnes of beet per day) as the amount of sugar beet processed divided by the average campaign length and number of processing plants.

Figure 2: Group Activities Contribution to Turnover 1984-2001



Source: Authors' elaboration of Annual Report data.

Table 1: Sugar Factory Beet Throughput (tonnes per day)

Factory	*1970*	*1978*	*1983*
Carlow	3,700	4,244	5,650
Mallow	3,000	3,486	4,470
Thurles	2,900	3,054	4,070
Tuam	2,000	2,007	2,400
Total	*11,600*	*14,414*	*16,590*

Source: JOCSSB (1980) and Irish Sugar Annual Report (1983).

Table 2: Irish Sugar Productivity and Performance 1984 – 2000

Year	*Turnover (€'000s)*	*Average Number of Employees*	*LP*	*TFP*	*ROA (%)*	*ROS (%)*	*VAE*
1984	317,954	2,621	41.10	70.33	12.33	7.75	17.08
1985	310,389	2,522	46.68	77.26	8.41	5.06	15.90
1986	274,017	2,205	25.87	47.83	10.68	6.84	16.89
1987	263,345	1,855	29.08	54.57	13.90	9.21	20.12
1988	296,862	1,681	57.13	77.22	14.36	8.37	21.31
1989	295,778	1,556	65.47	79.80	14.66	9.39	21.72
1990	355,948	1,757	82.18	92.17	14.76	10.76	23.36
1991	414,128	1,874	100.00	100.00	13.43	9.77	25.25
1992	472,694	2,003	106.57	100.11	13.40	10.22	26.70
1993	479,208	1,928	113.96	104.38	14.85	10.91	29.06
1994	478,167	1,774	117.01	99.74	14.52	10.82	30.65
1995	506,806	1,721	131.75	104.54	14.23	11.11	31.91
1996	524,811	1,675	141.46	105.25	15.60	12.04	34.74
1997	531,224	1,822	123.11	100.49	13.49	12.66	32.87
1998	658,669	2,791	101.44	100.20	12.06	11.36	26.55
1999	737,998	3,446	95.88	100.08	12.19	10.93	23.68
2000	757,983	3,682	93.51	101.08	10.57	10.06	22.08

Averaged Annual Percentage Changes / Averaged Annual Rates

84-87	-4.93	-10.18	-6.21	-8.01	11.33	7.22	17.50
88-91	12.26	0.69	39.57	14.76	14.30	9.57	22.99
92-95	5.32	-1.96	7.20	1.19	14.25	10.77	29.58
96-00	8.70	17.92	-6.23	-0.65	12.78	11.41	27.98

Note: (1) It was not possible to include the years 1980-83 in the analysis since company annual reports during those years did not contain enough detailed information; (2) Turnover is displayed in real terms; (3) LP and TFP figures are indexed to equal 100 in 1991, the year of privatisation; (4) Averaged annual percentage changes are given for turnover, average number of employees, LP and TFP while averaged annual rates are used for the remaining indicators; (5) The period 96-00 is a five-year period.

Table 3: British Sugar Productivity and Performance 1984 – 2000

Year	*Turnover (£millions)*	*Average Number of Employees*	*LP*	*TFP*	*ROA (%)*	*ROS (%)*	*VAE*
1984	617.2	4,901	59.88	84.58	7.69	8.95	25.67
1985	637.7	4,854	71.84	102.09	6.39	6.98	22.32
1986	595.5	4,699	65.59	86.40	5.44	6.52	23.88
1987	619.2	4,828	70.21	92.43	9.67	12.16	26.32
1988	629.8	4,631	64.91	85.72	11.49	13.61	26.34
1989	677.6	4,196	75.15	91.56	12.63	14.70	30.12
1990	715.8	3,569	83.40	87.46	10.77	16.49	35.51
1991	694.3	3,241	100	100	22.57	18.51	37.80
1992	709.3	2,943	97.49	86.22	22.76	19.71	45.92
1993	823.9	2,941	119.14	96.71	24.43	19.70	52.60
1994	822.4	2,735	124.66	94.67	22.88	20.32	54.64
1995	886.0	2,467	125.34	84.09	23.45	20.78	62.10
1996	860.9	2,171	148.54	86.74	21.60	21.02	70.09
1997	828.6	2,062	195.34	101.81	20.31	21.66	65.28
1998	766.8	1,947	230.81	102.71	15.91	19.09	56.75
1999	737.8	1,895	226.17	97.77	22.87	23.52	63.26
2000	690.7	1,953	228.30	107.20	15.94	16.56	45.12

Note: (1) Turnover is displayed in nominal terms; (2) LP and TFP figures are indexed to equal 100 in 1991 for ease of comparison with Irish Sugar/Greencore results.