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13

Prospects for the Upskilling of General Workers in Britain:

**A Case Study Comparison of the English and Irish Dairy
Processing Industries**

By

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**A thesis submitted in partial fulfilment of the requirements for the degree
of PhD in Industrial and Business Studies**

**Warwick Business School
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List of Abbreviations

CAP	Common Agricultural Policy
CATFI	Common Approach to Financial Information
CME	Coordinated Market Economy
DEFRA	Department of Environment, Food and Rural Affairs
DPRC	Dairy Products Research Centre
DTI	Department of Trade and Industry
EI	Enterprise Ireland
HSE	High Skills Equilibrium
LME	Liberal Market Economy
LSE	Low Skills Equilibrium
MMB	Milk Marketing Board
MTL	Moorepark Technology Limited
NIESR	National Institute of Economic and Social Research
NIRD	National Institute for Research in Dairy
NMW	National Minimum Wage
NPD	New Product Development
NVQ	National Vocational Qualification
PCF	Prepared Consumer Foods
SLDP	Short Life Dairy Product
SME	Small to Medium Sized Enterprise
UCC	University College Cork
VoC	Varieties of Capitalism

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Enda Hannon

Kingston University, September 2005

Declaration

This is to declare that:

- I am responsible for the work submitted in this thesis.
- This work has been written by me.
- During the preparation of this thesis, the paper outlined below was prepared. The remaining parts of the thesis are unpublished;
 - Hannon, E. (2005): 'Prospects for up-skilling of general workers in liberal market economies: Empirical evidence from the Irish and English dairy processing industries' *British Universities Industrial Relations Association Annual Conference*, Northumbria University, Newcastle-upon-Tyne, 7-9 July
- This work has not previously been submitted within a degree programme at this or any institution.

Signature: _____

Date: _____

Abstract

While there is strong evidence that longstanding systemic weaknesses in the British economy continue to lead to negative strategic, skills and employment outcomes across much of British industry, there has in recent years been a notable lack of empirical research in the skills and employment relations fields aimed at examining the potential for upskilling or 'employment upgrading' to be achieved for general workers. It is apparent that issues of political economy and in particular the relationship between institutional contexts, competitive performance and skills/employment outcomes at sector level have been largely neglected.

This thesis seeks to partly fill this gap by presenting data from a comparative case study of the English and Irish dairy processing industries, the central focus of which was an examination of the consequences for company strategies, employee skills, employment and wage levels of the overriding emphasis on the promotion of competition and efficiency and the lack of a strong industrial policy in the former, and in contrast the existence of a strategic and resource intensive industrial policy in the latter. This research provides an ideal opportunity to address two issues of current theoretical concern, namely the potential for an industrial policy to facilitate upskilling and debates regarding the advantages and disadvantages of different 'varieties of capitalism.'

In general terms, the industrial policy context in England was found to inhibit investment in product development and in particular moves by processors into higher value, advanced market niches, with negative consequences for employee skills and comparatively low wages resulting. However these outcomes were to some extent mitigated by the presence in the UK industry of a number of high-investing foreign multinationals who undertook very substantial new product development, thereby facilitating some notable upskilling for production workers.

In Ireland, while significant limitations in both the nature and extent of impact were identified, the 'benign' industrial policy context was found to support processors in moving into advanced product markets, and consequently underpinned the creation of substantial opportunities for upskilling alongside a high standard of living for production operatives. However skills outcomes at workplace level were found to be heavily contingent on a number of different factors, with upskilling not found to be either an automatic or likely consequence of a move up market. In addition, the fact that vocational training in the industry continued to be of a predominantly informal, on-the-job nature was found to create significant tensions and lead to dissatisfaction on the part of production operatives.

This research demonstrates the general value of the adoption of a supportive/strategic industrial policy in terms of the potentially positive consequences resulting for strategy, skills and employment outcomes. However it also highlights how the potential of such a policy to facilitate upskilling is limited, being heavily influenced/determined by the structural makeup and key characteristics and trends within particular sectors and product markets. In addition, the need to address broader systemic issues relating to work organisation, the labour process and the nature of vocational training systems is emphasised.

More broadly, the findings highlight the problematic nature of the central theoretical conclusion and policy recommendation from the varieties of capitalism literature, that liberal market economies like the UK should accentuate the deregulated/fluid nature of capital, labour and product markets and focus attention on activities/sectors dominated by 'radical' as opposed to 'incremental' innovation; and in contrast arguably demonstrate the need for and potential of the development of thick institutional structures and substantial industry support measures, even in 'traditional' sectors such as dairy.

Chapter One: Introduction

1.1 Subject Area & Context

As Coates (2000: 46) outlines, the relatively rapid decline of Britain as a major international economic power from the late 19th and early 20th centuries on and its subsequent, well documented failure to successfully compete in quality-focused international markets, has prompted strong interest among British academics and policy-makers in issues of *political economy* - namely the relationship between social, political and economic institutions and economic performance - with a view to attempting to account for this decline in fortunes of the world's first major economic power and its continuing comparative competitive weaknesses.

For industrial sociologists, skills researchers, economists and some employment relations academics, a central focus of enquiry has been both the significance of the skill levels and qualification profiles of the British workforce and management in accounting for this poor performance, and the skills, training and employment consequences and outcomes *resulting from* this competitive failure. In relation to the former, despite attracting some significant criticism (e.g. Cutler 1992; Chapman 1993), the comparisons of productivity levels in 'matched plants' of British and continental European firms undertaken during the 1980s and 90s by the National Institute for Economic and Social Research (NIESR), have undoubtedly constituted one of the central contributions. These studies identified a very substantial lag in productivity levels (and also comparative weaknesses in product quality) between British firms and their international counterparts in sectors such as metalworking, fitted kitchens, women's clothing, food processing and hotels, with a central finding being that these productivity and quality gaps were substantially attributable to the inferior intermediate and technical qualification and skill profiles at the British firms (Daly *et al* 1985; Steedman and Wagner 1987, 1989; Mason *et al* 1994).

In relation to the skills, training and employment consequences and outcomes resulting from Britain's relative competitive failure, the contribution of Finegold and Soskice (1988) is arguably the most recognised. On the basis of their review of the relationship between social, political and economic institutions and economic performance and skill outcomes in the UK, Finegold and Soskice (1988: 22) concluded that the British economy was trapped in a 'low skills equilibrium' in which 'the majority of enterprises staffed by poorly trained managers and workers produce low quality goods and services.' The central cause of this situation was

identified as a 'self-reinforcing network of societal and state institutions which interact to stifle the demand for improvements in skill levels' (ibid.).

Therefore as opposed to skills deficiencies alone, Finegold and Soskice (1988) (as well as many others observers) emphasised the presence and mutual interaction of a number of additional problematic features or weaknesses of the British economy in their analysis of both the comparatively poor performance of British firms and the negative skills outcomes associated with this. In this regard, the short-term investment horizons resulting from the nature of corporate ownership and financial market structures in the UK, the weakness of general management skills, the flexible/lightly regulated nature of the labour market, and weak central employer and trade union organisations and systems of worker representation have been highlighted. In addition, the British government's historical reluctance to become proactively involved in shaping or directing the country's competitive performance has also typically been seen as problematic.

Although the recent strong economic and employment performance of the UK and the US (its counterpart, deregulated 'liberal market economy') has strengthened confidence in the British economic model (Coates 2000) and while it is now better recognised that the British economy *does* possess (and indeed historically has possessed) a number of internationally competitive, quality/innovation focused, high-skill sectors such as aerospace and pharmaceuticals, in general terms the economy as a whole continues to suffer from serious structural and competitive weaknesses (Porter and Ketels 2003; Nickell and Van Reenen 2002), resulting in ongoing, negative consequences resulting for skills development as well as employment and wage levels (Ackroyd and Proctor 1998; Keep and Mayhew 1998; Nolan and Slater 2003).

However despite growing interest in the 'political economy of skills' (Crouch *et al* 1999), with a small number of exceptions (e.g. Finegold 1999; Lloyd 1999; Wilson *et al* 2003), there has been little recent empirical research in the British skills or employment relations fields examining the potential for British firms to move 'up-market' to higher value competitive niches and therefore facilitate more desirable employment and skills outcomes, in particular upskilling and higher pay for general workers.

The objective of this thesis is to go some way towards addressing this gap or weakness in recent skills and employment relations research in the UK, by means of a comparative case study of the English and Irish dairy processing industries.

1.2 Rationale for the Study

The comparison with Ireland is seen to possess significant potential because while despite both constituting 'liberal market economies' in terms of institutional makeup (Hall and Soskice 2001) and traditionally possessing many broad similarities in substantive strategic and skills/employment outcomes, Ireland has recently followed a notably different path to the UK in terms of economic policies adopted. Specifically, although neo-liberal and non-interventionist policies have in the main continued to characterise British government policy towards industry, the Irish government has since the early 90s (in particular) invested heavily in the strategic development of both national and sectoral industrial policies designed to enhance competitive performance, with sector-focused policies consisting of targeted financial support measures and the development of 'public good' institutional structures and strong social and policy networks - in particular close links between companies, business associations and state agencies (O'Riain 2000; MacSharry and White 2000). Notably, these policy interventions have met with some considerable success as evidenced by the strong recent performance of indigenous sectors such as software as well as the economy more generally (O'Malley 1998, 2004; O'Riain 2000; MacSharry and White 2000; Haughton 2005).

The apparent success associated with Ireland's distinctive approach to economic management arguably makes it a potentially insightful subject for comparative research aimed at examining how Britain might move to a higher skills path. In addition, the potential for an industrial policy to facilitate upskilling has been frequently highlighted in the British skills literature (e.g. Ashton and Green 1996; Keep and Mayhew 1999; Lloyd and Payne 2002), and an English-Irish comparison might therefore also provide insightful evidence on this particular issue. While the important structural differences between the two countries (i.e. in terms of their relative size) are recognised, for these reasons the English-Irish comparison is seen to be potentially highly instructive.

Historically a low-skill, low-quality sector in both countries, mirroring trends at national level, government policy towards the English dairy processing sector has since 1994 been

characterised by an overarching emphasis on promoting the free operation of market forces and an absence of government involvement/intervention, with a decline of 'public good' institutional structures also evident in recent years. In contrast, the Irish sector has witnessed the implementation of a resource-intensive, strategic industrial policy aimed at moving the sector into higher value market-niches, in the form of the establishment/funding of dedicated research institutes and shared pilot plant facilities, the development of industry support measures (principally grants for applied research and development) and the promotion of close links between Irish processors and multinational babyfood companies.

Both the traditionally low skill nature of the sector and the theoretical relevance of the differences in policy contexts arguably make dairy processing an ideal sector in which to undertake empirical research as part of an English-Irish comparative study.

1.3 Disciplinary Background & Focus

This thesis is intellectually and theoretically located within the British skills and employment relations¹ fields, and its central objective is to contribute to academic understanding and debate in these two areas.

1.4 Intended Contribution

A primary contribution envisaged for the thesis is a substantive one, namely to conduct an in-depth investigation that will facilitate the collection of substantial, high quality empirical data on an under-researched but highly important issue, namely the possibility for 'employment upgrading' or upskilling to be achieved for general workers in England; which it is intended will feed into both theoretical and policy related debates regarding the political economy of skills/employment in Britain. A secondary substantive objective is to undertake research that might contribute to a reinvigoration or redirection of existing British-based employment relations research.

In addition to setting out empirical evidence on a neglected but nevertheless keenly debated issue, the thesis also seeks to add to theory and academic understanding in both the British skills

¹ The terms employment relations (ER) and industrial relations (IR) will be used interchangeably throughout this thesis.

and employment relations fields, by locating the empirical evidence collected within the context of important theoretical debates in these areas. In this regard a central goal is to shed light on the potential for the introduction of a strategic, resource-intensive industrial policy to promote upskilling in the UK, which as noted above is an issue that has been much discussed in the British skills literature in recent years. With regard to the employment relations literature, the theoretical significance of the research for recent debates about the merits and deficiencies of different 'varieties of capitalism' (Hall and Soskice 2001) is the main focus.

A final intended contribution for the thesis is the development of a research design and methodology that might form the basis of future skills and employment relations research.

1.5 Outline of the Thesis

The next chapter, chapter two, will outline at greater length the academic context of the thesis by firstly exploring in some detail the origins, definition and current relevance of the 'British skills problem', and secondly reviewing recent empirical research and theory development on the question of how the British economy might be shifted to a higher skills path. Following this, after examining the potential usefulness of comparative research in general and a comparison between England and Ireland and their respective dairy industries in particular, the chapter will set out an initial, general research question before addressing the issue of what sort of conceptual or analytical framework might be used in order to guide research into such a research question.

The following two chapters, chapters three and four, will respectively consist of a review of the institutional and sectoral contexts in both countries. Chapter three will focus on the institutional characteristics of particular interest to the study, namely the industrial policy context surrounding the dairy sector in each country, while chapter four will firstly locate the English and Irish sectors against the context of trends and developments in the international dairy industry, before providing an overview of the makeup of the sector in both countries in terms of the size and ownership status of firms, trends in employment and turnover and key product market dynamics and influences.

Following this, chapter five will outline the philosophical approach or 'paradigm' (Burrell and Morgan 1979) underpinning the research in terms of the assumptions made in relation to issues of ontology and epistemology (Smith 1998; Bryman 2004). It will then outline the overarching research strategy and specific data collection techniques and research methods adopted as well

as the manner in which the data collected was recorded and analysed, and discuss the issue of the 'generalisability' of the research findings.

Chapters six to nine will consist of the four main data chapters in which the information collected during the empirical research will be presented. Chapter six will provide an overview of the key organizational characteristics of the seven English companies researched, their product strategies and the main influences on the same, in particular the significance for these of the industrial policy context. Chapter seven will then set out the substantive skills, employment and wage outcomes identified at the English firms, with a particular emphasis on examining the skills and wage consequences of the industrial policy context and the views of managers and production operatives on the same. Chapters eight and nine will outline the key findings from the Irish research, with the structure of these chapters mirroring that adopted in chapters six and seven.

The penultimate chapter, chapter ten, will draw out and discuss the primary points of comparison between the substantive outcomes identified in both countries, while the final chapter, chapter eleven, will outline the main conclusions arising from the study, highlight its contribution and limitations, and make some suggestions for future research.

Chapter Two: Literature Review

2.1 Introduction

The purpose of this chapter is to outline the academic and theoretical context within which the empirical research undertaken for this research is located. The chapter has six main sections. Firstly, the emergence and key features of academic analysis on the 'British skills problem' will be outlined, with particular reference to the NIESR matched plant studies and the Finegold/Soskice 'low skills equilibrium' thesis. Secondly, the contemporary relevance and validity of the low skills equilibrium analysis will be examined in the light of recent reviews of competitive performance of the British economy. Next, empirical research and theory development in the skills and employment relations fields addressing the question of how Britain might move to a higher skills trajectory will be reviewed, before in the fourth main section of the chapter a suggested overarching research agenda and methodological framework for British skills research (namely comparative research with other liberal market economies focused at the level of the sector) and a specific research proposal (a comparative study of the English and Irish dairy processing industries) are outlined. This is followed in the fifth section by a discussion of a number of conceptual and analytical issues that need to be addressed before fieldwork is undertaken. Finally, a conclusion is provided.

2.2 The Emergence of Academic Analysis on the 'British Skills Problem'

As noted in chapter one, British academics (e.g. Williams *et al* 1983; Fine and Harris 1985; Gospel 1992; Nolan and Walsh 1995) have long been concerned with understanding and interrogating the reasons behind Britain's historical failure to successfully compete in quality-focused international markets. While a number of authors, such as Nichols (1986) or Gospel (1992), have emphasised or given concerted attention to the relative significance of characteristics of the British workforce to Britain's economic performance (in particular their skill/qualification levels and industrial relations practices), the comparisons of productivity levels in 'matched plants' of British and continental European firms undertaken during the 1980s and 90s by the National Institute for Economic and Social Research (NIESR), arguably did the most to stimulate the strong, ongoing interest in academic and policy circles alike in the 'political economy of skills' in Britain; and arguably also constituted the foundation stone for the

emergence and development of a recognisable 'British skills literature' (e.g. Keep and Mayhew 1998, 1999; Ashton and Green 1996; Brown *et al* 2001; Lloyd and Payne 2002).

The purpose of this section is to briefly outline the key features and findings of the NIESR studies before setting out the 'low skills equilibrium' thesis which Finegold and Soskice (1988) developed as a means of both comprehending and analysing the headline findings from the NIESR and other studies on Britain's economic performance.

2.2.1 *The NIESR Studies*

During the 1980s and 90s researchers at NIESR undertook a large number of studies aimed at comparing productivity levels and the influence or contribution made by qualification and skill levels to the same at British and continental European firms (specifically firms in Germany, France and the Netherlands). These took the form of comparisons between 'matched plants' (namely establishments and plants that were as far as possible similar in terms of size, products manufactured and the nature of equipment utilised) and were undertaken in the metalworking, fitted kitchens, women's clothing, food processing and hotels industries (Daly *et al* 1985; Steedman and Wagner 1987, 1989; Prais *et al* 1989; Mason *et al* 1994). In total, 160 establishments were compared (Coates 2000: 115).

In each industry studied, higher productivity levels were identified at the European firms, with the inferior qualification and skill profiles of workers at the British firms found to account for the lower productivity levels at the latter. For example, the study by Daly *et al* (1985) in the metalwork industry found that the weak production performance and poor maintenance and diagnosis of faults identified at the British firms, had their 'origins in technical skills at the level of foremen and operators' (Daly *et al* 1985: 60-1, cited in Coates 2000:115).

Notably, as Del Bono and Mayhew (2001) outline, while the NIESR studies aimed to carefully match the plants compared in terms of the type of product range manufactured, this was typically not fully possible, with, as a consequence of their stronger skills profiles and technical capabilities, the continental firms generally manufacturing higher quality, higher specification products. For example, the more recent matched plant study of the British, German, Dutch and French biscuit industries undertaken by Mason *et al* (1996) found that the superior skills profiles of the foreign manufacturers underpinned their production of higher quality, more differentiated

products than those manufactured in the British sector. Mason *et al's* (1996: 191) conclusion from this was that there was a 'close correspondence' between the low skill levels of the majority of workers in Britain and the 'continued specialisation of large numbers of British manufacturers in highly automated, low value-added production activities.'

While strongly criticised by some (most notably Cutler 1992 and Chapman 1993) for their perceived weaknesses in both methodological design and the principal conclusions outlined, the NIESR studies quickly gained widespread acceptance and acclaim (e.g. Soskice 1993) and have been interpreted by many as providing conclusive evidence that the low qualification and skill levels of British workers are a primary cause of Britain's poor economic performance, in particular the economy's low productivity levels and failure to compete in quality, innovation-focused markets.

2.2.2 *The Finegold and Soskice (1988) 'Low Skills Equilibrium' (LSE) Thesis*

As noted in chapter one, alongside the NIESR studies, the 'low skills equilibrium' thesis developed by Finegold and Soskice (1988) is one of the most widely referenced analyses of the political economy of skills in Britain. On the basis of their review of the relationship between social, political and economic institutions and economic performance outcomes in Britain, Finegold and Soskice (1988: 22) concluded that the UK economy was trapped in a 'low skills equilibrium' in which 'the majority of enterprises staffed by poorly trained managers and workers produce low quality goods and services.' The central cause of this situation was a 'self-reinforcing network of societal and state institutions which interact to stifle the demand for improvements in skill levels' (ibid.).

Specifically, the combination in Britain of, among other factors, short-term investment horizons on the part of senior company managers and financial institutions, a flexible/lightly regulated labour market, a poorly developed vocational training system and weak central employer and trade union organisations and systems of worker representation/participation, was seen to lead to a predominant focus on the part of British firms on the production of low quality goods. In addition, the reluctance on the part of British governments to proactively shape the strategic performance and direction of British industry was given particular emphasis.

The core message emerging from the Finegold/Soskice analysis was that the *mutual interaction* of various features or component parts of the institutional context surrounding firms constituted

a central determining influence on product strategies adopted and skills outcomes. Crucially, they argued that change in any one institutional feature would be unlikely to lead to upskilling or increased training unless accompanied by corresponding change in other institutional elements also. Skills researchers and policy-makers would therefore in future need to grasp that for an upskilling of the workforce to be achieved, *systemic issues* would need to be addressed.

While not set out in a systematically comparative manner, the Finegold/Soskice thesis was clearly based on the authors' knowledge and experience of institutional structures and strategy, skills and training outcomes in continental European countries such as Germany, Denmark and Sweden, and in particular the fact that the existence of strong, dense institutional structures in these countries has been frequently highlighted as substantially accounting for 'better' skills and training outcomes.

For example and arguably most notably, in Germany the 'dual' system of *vocational* training in which apprentices are trained both in firms and public training schools, despite facing significant challenges in recent years, constitutes by far the most popular educational/career path for young persons to follow, and provides clear occupational structures and career pathways (Wagner, 1999). The content of occupational qualifications in the dual system is jointly determined by representatives of employers and trade unions, while responsibility for supervising and testing apprentices and approving companies to train rests with chambers of industry and commerce, membership of which is compulsory (Streeck et al. 1987; Culpepper, 1999a). In addition, works councils have statutory rights of codetermination with regard to apprenticeship training at the level of the firm, as well as in relation to the organisation of production more generally. Further, the dual system operates against a context of industry/regional collective agreements between employers and unions that set comparatively high wages and conditions of employment and also close, cooperative relationships between companies and banks who are prepared to sanction substantial, long-term investments (Streeck 1992; Lane 1989).

The combination of these institutional/environmental characteristics, has typically been seen to both stimulate and facilitate the adoption by German businesses of strategies of 'diversified quality production', in the form of the production of customised, high-quality products for niche markets (Streeck, 1992); resulting in what Culpepper (1999a) describes as the 'German high skills equilibrium.' For Finegold and Soskice (1988), the various aspects of the German (as well as other continental European systems) interacted in such a way as to support high-skill, high

training outcomes, a situation which contrasted strongly with the negative consequences resulting from the interaction of the sub-components of the British institutional complex.

Similar to the NIESR studies, the Finegold/Soskice thesis quickly gained acceptance and recognition and is now seen to represent one of the 'classic' academic analyses of the British economy (Fulcher 2005: 188). While the 'low skills equilibrium' concept continues to be referenced in academic writings (e.g. Grugulis 2003: 3) and there has also been a (rather belated) recent express recognition of it in government and policy circles (PIU 2001:7; AIM/CIHE 2004: 29-31), its current relevance and applicability of the analysis to the UK economy needs to be examined and this task is now undertaken in the next section. Similarly, the contemporary relevance of the NIESR studies arguably also needs to be addressed, and this task is also undertaken in the following section.

2.3 More Recent Analysis & Evidence on Economic Performance & Skills Outcomes in Britain

David Finegold, one of the original authors of the 'low skills equilibrium' thesis, has recently highlighted one particularly problematic aspect of the LSE analysis/model. Finegold (1999) highlights the tendency of the LSE model to support over-simplistic analyses that ignore the existence of substantial diversity in skills structures and outcomes *within* national economies, and in particular of 'significant high-skill regions or industries...within otherwise relatively low-skill economies' (ibid: 63). In particular, in elaborating the advantages of utilising the concept of 'high skill ecosystems' as opposed to high skill *equilibria*, Finegold points to the existence in the UK of pockets of internationally competitive high-skill sectors/activities such as pharmaceuticals, aerospace, biotechnology, computers and healthcare technologies.

Notably, other authors have also highlighted the existence of some of the same pockets of successful, high-skill activities in the UK (Nickell and Van Reenen 2002) as well as others such as advanced materials and opto-electronics (Hendry 1999) and electronics components (Mason and Wagner 1998).

Therefore while the tendency of the LSE thesis to over generalise is acknowledged and the existence in the UK of a number of internationally competitive, high-quality, high-skill activities/sectors increasingly recognised, recent reviews of both economic performance and

labour market and employment outcomes demonstrate how in general terms the British economy as a whole continues to suffer from serious competitive weaknesses, with ongoing negative consequences resulting for employee skills and wage levels.

In this regard, the recent review of productivity performance by the Economic and Social Research Council (ESRC 2004: 7) highlights how productivity in the UK (measured by output per hour) is currently 40% below that in the US and 20% below levels in France and Germany. It is therefore evident that the relative weaknesses in productivity performance uncovered by the NIESR studies continue to persist.

In relation to the performance of British firms in international markets, in their review of technological innovation and economic performance Nickel and Van Reenen (2002) outline how despite possessing pockets of advanced activities the British economy in general continues to be characterised by comparatively low levels of innovation, for example as measured by the number of new patents registered; and a predominantly traditional, low value product profile. Similarly, the recent Porter review of UK competitiveness (Porter and Ketels 2003: 29) emphasised that while the UK does possess strong 'clusters' in defence, healthcare and telecommunications, overall the economy's recent innovation performance 'has been disappointing.' While the UK has a strong science base it 'lags in patenting and commercialisation' (ibid: 15-16). In addition, the Porter report stressed that while British companies 'excel in generating high returns from existing assets through efficient, well established business processes', they are 'less well positioned to innovate, create new assets and compete on unique market positions' (ibid: 35). More broadly, the economy in general was seen to need to shift from being an economy competing primarily on relatively low costs to one 'competing on unique value and innovation' (ibid: 5).

Other analyses (e.g. Coates 2000; Nolan and O'Donnell 2003; Nolan and Slater 2003) accord particular attention to the continuing competitive decline of the British manufacturing industry, its ongoing failure to compete in quality-focused markets and the enormous loss of jobs resulting from these trends.

Ackroyd and Procter (1998: 170), on the basis of their review of product strategies and labour management policies at the 64 manufacturing firms forming part of the 200 largest British companies in 1996, found that only a handful of these companies adopted a strategy of making

substantial investments aimed at promoting organic development, with the vast majority in contrast 'adopting a form of organisation...in which constituent elements are thought primarily in terms of their contribution to profitability', i.e. a 'financial control' approach to management. As a consequence, most companies were found to possess a number of 'cash cow' businesses producing standard products for mature markets. In addition, as opposed to the investment of substantial funds on advanced equipment and technologies and the use of highly skilled workers, Ackroyd and Procter (1998) identified a predominant reliance on the flexible use and deployment of largely unskilled workers alongside a willingness to use external sources of production.

Relatedly, other recent studies (Heery and Salmon 2000; Burchell *et al* 2002; Beynon *et al* 2002) have highlighted evidence of growing job insecurity associated with the increasing use of flexible labour in Britain, as well as significant increases in work intensification.

Finally, it is also evident that the sharp rise in the proportion of employment accounted for by the service sector in recent decades has not led to any dramatic shift in the nature of competitive strategies adopted or skills profiles across the economy as a whole. In this regard, while highlighting the recent increase in the proportion of employment in the UK accounted for by the professions and scientific and technical occupations, Nolan and Slater (2003: 65-6, 77) note that alongside stability in the number of people working in manual positions, there has been a very substantial expansion in low-skill, service sector positions such as hairdressing and care assistants. This evidence leads Nolan and Slater (2003: 77) to conclude that the longstanding bias towards low-skill, low value-added products in the UK is arguably 'being reflected and reproduced in contemporary employment patterns by the expansion of relatively routine and poorly paid jobs in the service economy.' The ethnographic study by Toyne (2003) provides stark evidence of the low pay and poor working conditions associated with a number of such service sector positions.

In summary, the above evidence demonstrates that while a more nuanced analysis is necessary, the British economy can in the main still be described as bearing many of the hallmarks of a 'low skills equilibrium.' In particular, it is clear that the economy continues to be characterised by relatively low productivity levels, weak investment in research and development, and the adoption of competitive strategies emphasising the delivery of mainly basic, low-value products and services.

In terms of the cause or influences behind these performance outcomes, the above studies and reports typically emphasise a number of common factors, including low levels of capital and research and development investment on the part of government and private industry, and comparatively weak skills profiles among the workforce as a whole. In addition, Porter and Ketels (2003: 31) highlight the weakness of what they call 'institutions for collaboration' in Britain, for example industry associations or chambers of commerce, which they explain may 'enable more effective collaboration between parts of a cluster.'

In terms of the role of government, it is widely recognised that despite the creation of some new institutional structures such as Regional Development Agencies and Sector Skills Councils and, more recently, an increase in funding of basic research, the broad economic/industrial policy adopted by the New Labour government since its election in 1997 has demonstrated a high degree of consistency with those of previous Conservative regimes (Beath 2002; Coates 2002; Hutton 2002). New Labour is seen to have wholeheartedly adopted the Conservative's policies on deregulation and liberalization, and in particular to prioritise the free operation of market forces over other concerns (Coates 2002; Hutton 2002).

In relation to specific industrial policy initiatives or interventions, while tax credits for research and development were introduced in 2000, as yet the impact of the same is unclear (Nickell and Van Reenen 2002; ESRC 2004: 23). More broadly, the Porter review (Porter and Ketels 2003: 22) noted how 'in the recent past [the UK] has invested less public sector money into R & D than most other advanced economies.' Although recognising the recent increase in the same, Porter and Ketels (2003: 45) emphasised the overarching need to 'ramp up' investment in Britain's scientific and technological capacity and for 'sustained commitment' over time.

In the employment/skills area, a number of authors (Keep and Mayhew 1999; Brown *et al* 2001; Lloyd and Payne 2003) have highlighted how government policy has focused on the development of 'supply side' as opposed to 'demand side' measures, with the introduction of a raft of policies and targets aimed at improving and increasing the supply of skills and also the education levels of the existing labour force, but few substantial policies or measures that might prompt or stimulate a step-change in the *underlying competitive strategies* adopted by firms. In addition, the strong emphasis placed by the current government on the protection of labour market flexibility is also highlighted (e.g. Hyman 2003), with the labour market policies introduced (e.g. the national minimum wage) on the whole seen to be quite limited. The election

of New Labour in particular is not seen to have led to a change in the incentives facing employers in the direction of a greater focus on employee 'voice' or internal as opposed to external flexibility (Hutton 2002).

2.4 The Possibility of Moving to a High Skills Equilibrium: an Overview of Recent Empirical Research & Theory Development in the Skills & Employment Relations Fields

Having outlined and discussed the contemporary validity of inherited analysis of the 'British skills problem' and provided an overview of more recent empirical evidence on the extent of the same, it is now appropriate to examine the skills and employment relations literatures for evidence of empirical research and theory development in relation to the question of how British firms or industries might move to what Wilson *et al* (2003) describe as a 'higher skill trajectory.'

2.4.1 Empirical Evidence from the Skills Field

Despite the attention and acclaim accorded to the work of Finegold and Soskice both at the time of its original publication and subsequently, to date there has been a notable lack of empirical research regarding the possibilities for firms or sectors in Britain to move to a higher skills trajectory. Much recent research on the British skills problem can be described as largely *static* in nature in that it continues to emphasise the seemingly constant or ongoing interaction of various aspects of the institutional environment, which combined generate negative, equilibrium-like scenarios. This typically takes the form of replication, review or enlargement studies which, for example, set out the key features of the British LSE and trace their development over time (Glynn and Gospel 1993), review up to date evidence and emphasise particular facets such as the low consumer demand for quality products in the UK (Keep and Mayhew 1998), or highlight the problematic nature of previously undiscussed institutional influences, for example Rubery's (1994) discussion of the role of family structure in underpinning the LSE.

While this is certainly useful and important material, the continuing emphasis on the 'equilibrium state' means that these writings do not incorporate a *dynamic* level of analysis that explores the possibility of change in the LSE over time, or the manner in which change might occur. As Culpepper (1999b: 10) notes, 'while this literature [i.e. that on equilibrium analysis]

does a good job of predicting barriers to change, it is theoretically less well-equipped to explain the conditions under which change can occur.'

While a number of insightful case studies on skills trends and outcomes (e.g. Dench *et al* 2000) were conducted as part of the work of the National Skills Taskforce, it is suggested here that the research by Finegold (1999), Lloyd (1999) and Wilson *et al* (2003) constitute the most substantive recent contributions to the British skills literature in relation to the issue of the potential for Britain to move to a higher skills path. The main findings from these studies are now outlined in turn.

Finegold's (1999) Research on 'High-skill Ecosystems'

Finegold (1999) provides statistics demonstrating the high proportion of employment in high-tech, high skill industry clusters such as software, computer equipment and healthcare technologies in the US state of California in the late 1990s. In addition to being highly skill-intensive, he outlines how these sectors paid well above the average wage for the state.

Drawing heavily on theoretical frameworks and research in the knowledge creation, innovation and industrial district literatures, Finegold outlines how the development of these high tech clusters, or what he terms 'high-skill ecosystems', was attributable to a number of factors, principally the supply of a large number of highly skilled technical graduates and a favourable institutional context in the form of the existence of science or technology parks, world class university research capabilities, the ready availability of venture capital and lightly regulated labour markets. In addition, the presence within the geographic space of the region of strong networks between firms, collective business institutions and individuals, was identified as being of central importance.

While co-existing in California alongside large numbers of low paid, low skill jobs and rising income inequalities, Finegold emphasises the wealth-creating potential of such ecosystems and advocates the redistribution of some of this wealth via the creation of 'living-wage' jobs for lower skilled workers in public and private service activities (cf. Crouch *et al* 1999). Rather than attempting a wholesale economic/institutional transformation, Finegold is of the view that the evidence from California suggests that UK policymakers should arguably focus on developing similar high skill ecosystems. He is of the opinion that these could possibly be replicated in the UK due to its many similarities with the US, in particular the existence in the UK of similarly

world-class university research capabilities and the flexible/deregulated nature of its labour market. Indeed, as noted earlier, Finegold highlights what he sees to be existing, highly successful high skill ecosystems in the UK in the form of the biotechnology, computers and healthcare technology related clusters located around the research focused universities in Cambridge, Oxford and London.

Despite these positive examples, however, he highlights a number of difficulties and weaknesses in the UK context that serve to undermine the potential for the (further) successful development of these and other ecosystems. In this regard, he makes three general policy recommendations: firstly, that funding for basic research and pre-venture capital should be increased; secondly that the 'supply of entrepreneurial skills' should be expanded; and thirdly, that both regional and individual networks should be fostered.

Lloyd's (1999) Case Study comparison of the British & French Aerospace industries

Lloyd outlines the key findings of a comparative case study of the British and French aerospace industries undertaken between 1996 and 1998 (consisting of interviews at twelve of the larger British and eight of the larger French companies/divisions) with the objective of comparing the relationship between the regulation of employment security and training provision and skills outcomes in both countries. The lightly regulated nature of the UK labour market, with few obstacles to the achievement of numerical flexibility via the implementation of redundancies, and the voluntarist, employer-led British training system were compared with the existence of strong limits on the possibility for firms to undertake redundancies and a heavily regulated training system (founded on an economy-wide training levy and state provided vocational education) in France.

Other notable differences in contextual environments, namely the necessity for the UK firms studied to generate short-term profits in order to satisfy the requirements of City-based shareholders and, in contrast, the longer-term financial horizons and the existence of strong cooperation between companies at regional level in France, were also highlighted.

The differences in job security and training regulation identified were found to contribute to a notable divergence in employment and training outcomes between the two countries, with significant consequences for the skills base of both sectors: In the UK, the international recession in the aerospace sector in the early 1990s had been met by very large job losses and the

curtailment of training activity, resulting in significant skill shortages when market demand increased in the latter part of the 90s and also a notable, long-term decline of the skills base in the sector. In contrast, in France, although the picture was rather complex, employment levels had remained stable with companies continuing to train at previous levels, such that few skill shortages were evident at the time of the up-turn in demand and with the industry in a strong position to continue to compete effectively in high-quality production.

Lloyd (1999: 182) concludes that the greater regulation of employment and training in France 'does seem to encourage higher levels of job security and development of workforce skills.' In terms of the implications of the research for the UK, she expresses the view that 'fundamental changes in the UK's economic and social institutions and regulatory environment' (ibid) would be necessary in order for higher and longer-term investment in employee skills to be realised.

Wilson et al's (2003) research in the Food Processing & Business Hotels sectors

With a focus at the level of the region seen to be a sensible strategy to adopt, Wilson *et al* (2003) undertook interviews in the food processing and business hotel sectors in the East and West Midlands, with ten companies studied in each sector. These sectors were selected because they were seen to represent typical LSE sectors, being characterised by both low pay and skill levels. Strategic/purposive sampling was used to select multiple case studies of companies of different sizes operating in a number of distinct product market niches in their respective industries, with differences in product strategy *within* these niches also targeted. Case selection therefore explicitly sought to incorporate as much intra sectoral diversity and organisational complexity as possible in order to facilitate the best possible understanding of LSE issues. In food processing, for example, mass producers of 'standard' products, niche producers of specialist, low volume products and producers of 'budget' goods were studied.

Data collection centred on obtaining information on the competitive strategies pursued and the key internal and external influences on these, with a particular focus on addressing whether, and if so how, firms were attempting to move up-market into higher value niches.

In terms of the key findings, skill and wage levels were generally low for most workers in both sectors, reflecting the labour-intensive nature of the activities undertaken. Notably, the vast majority of firms in both sectors were not seeking to move up-market, but were instead focused on remaining in their existing product market niches while simultaneously seeking

improvements in operating efficiencies or undertaking minor product/service development. While existing strategies were evidently sustainable in terms of the profit margins obtained, strong obstacles in the way of the achievement of major step-changes in strategies pursued were identified. In both sectors the high level of competition from other companies was of prime importance, while in food processing *demand side* constraints, most notably the downward pressure on processors' profit margins exerted by large retailers as well as strong continuing consumer demand for basic products, were also critical. While capital constraints constituted an importance obstacle in the way of moves up-market in business hotels, in both sectors neither the supply nor level of skills was found to be a significant influence on this.

On the basis of these findings, Wilson *et al* (2003: 77-81) highlight the very great challenges or obstacles faced by policy initiatives aimed at shifting particular regions or the British economy as a whole to a 'higher skills trajectory.' They identify the need for the adoption of a 'whole business approach' to the skills problem, which would integrate government support for innovation and R & D investment with business strategies and also parallel support in the areas of organisational structures and people management systems. They argue for the Department of Trade and Industry to take a lead role in strategically coordinating the cooperation and input of a number of relevant organisations, such as the Sector Skills Councils, Regional Development Agencies and Small Business Service. While they note that through interventions such as funding public sector research and development spending, the provision of R & D tax credits and venture capital support, the UK already possesses "many of the elements necessary for generating 'high-skill ecosystems'" (ibid: 74); the same policies/interventions are seen to be both less in evidence and less suitable/appropriate for firms in the food processing or hotel sectors, which Wilson *et al* studied. Therefore they call for the expansion and tailoring of these support schemes to such sectors.

An additional area of industrial policy highlighted by Wilson *et al* (2003: 73), is the necessity to address the question of legal controls and systems of market regulation, and in particular the enormous power possessed by national retailers *vis a vis* suppliers in the food processing industry.

2.4.2 Empirical Evidence from the Employment Relations Field

Journal Articles

For the purposes of this literature review back issues of five of the main British-based employment relations journals – the British Journal of Industrial Relations, Work, Employment & Society, Human Resource Management Journal, Industrial Relations Journal and Employee Relations – were examined for the period 1995 to June 2005 in order to identify articles, either in the form of primary or secondary research studies, that addressed the ‘political economy of skills’ and in particular the potential for upskilling or ‘employment upgrading’ to be achieved for general workers in Britain. Given the fact that it is published in the UK, the European Journal of Industrial Relations (EJIR) was also examined. Particular emphasis was placed on identifying articles addressing *systemic* issues relating to the links between the institutional environment, sectoral/product market trends and substantive skills, employment and training outcomes.

The review found articles focusing squarely on these issues to be almost entirely lacking. While the articles by Gospel (1998 – case studies on the potential of ‘modern apprenticeships’ to revive the provision of employment-based initial training) and Heyes and Gray (2003 - survey examining the implications of the national minimum wage for training practices in small firms) were clearly addressed to skills/training issues, Saundry and Turnbull (1999, also Martinez Lucio *et al* 2001) and Rainbird and Munro (2003) were arguably the only recent employment relations publication that engaged directly with the relationship between the institutional context, product market trends and skills outcomes in Britain².

Saundry and Turnbull (1999) present a historical, comparative case study of the Spanish and British port transport industries, the central objective of which was, drawing primarily on the work of Streeck (1992), to explore the relationship between regulatory, industrial relations and vocational training institutions and structures and competitive performance and employment outcomes. While sharing many historical similarities, the British and Spanish port industries were found to have followed substantially different paths from the 1980s on. Specifically, while state ownership and control of the industry was increased in Spain, in Britain the industry was privatised; in addition, while industry-level collective bargaining and state-sponsored, formalised vocational training was introduced in Spain, in Britain collective bargaining was decentralised to company level, with the responsibility for training provision also being solely

² It is however necessary to note here that the research by Lloyd (1999) discussed above was published in the European Journal of Industrial Relations.

located at that level. The central finding of Saundry and Turnbull (1999) was that the 'institutionally saturated' system of production and employment in Spain had underpinned markedly superior competitive performance and employment outcomes than those associated with the deregulated, privatised environmental context surrounding the British industry.

Rainbird and Munro (2003; see also Rainbird *et al* 2005) present research findings on six public sector organisations (three local authorities and three hospital trusts) from a research project that examined the possibilities for low paid workers to engage in workplace learning. By means of interviews and observation of the work environment across a range of functional departments within these organisations, Rainbird and Munro (2003) highlight the sharp limits and obstacles that exist in the way of upskilling for general workers, most notably in the form of a combination of an acute lack of financial resources and the inherently unskilled and unchangeable nature of many of the lower level, low paid jobs and activities in the public sector (for example the sterilisation and disinfection of surgical instruments or work in the kitchen of a local authority 'cook-freeze' centre).

Although empirical studies in the employment relations literature directly addressing the potential for upskilling and employment upgrading in the UK have clearly therefore been very few in number, it is possible to identify a number of recent articles which, although primarily focused on other issues, could potentially provide some important evidence of relevance to the same issue. In this regard, a number of studies of the operation and impact of the national minimum wage (e.g. Arrowsmith *et al* 2003; Undy *et al* 2002; Heyes and Gray 2001; Edwards and Gilman 1999) are arguably of greatest relevance.

Unsurprisingly, the primary focus of these articles is an examination of the consequences of the national minimum wage (NMW) for employment and wage levels and work organisation policies, with the impact on competitive strategies adopted either not addressed at all or considered as a secondary issue. In contrast, the significance of the NMW for the product strategies adopted by firms is arguably of greater interest for skills researchers, in that the latter are primarily concerned with examining institutional changes that might have the potential to prompt British firms to adopt higher value strategies than those currently adopted, as opposed to 'merely' undertaking existing activities in a different way than before.

Arguably the most explicit treatment of this issue is undertaken by Arrowsmith *et al* (2003), who present findings from interviews in 55 small firms in the clothing and hotel and catering sectors, undertaken both before and after the introduction of the NMW in April 1999. The majority of firms studied were able to absorb the cost increase resulting from the NMW and continue in their existing product market niches, with the low initial level of the NMW (£3.60 an hour) seen to substantially account for this outcome. Notably, a small number of firms (in the clothing sector) had either rationalised/closed or moved 'down-market', while a second small group of firms (again primarily in clothing) had been prompted to move up-market into higher value market niches. While interviewees highlighted the role of the NMW in influencing these outcomes, a central, general finding of the research was the difficulty in separating out the impact of the NMW from other product market trends and influences.

While certainly insightful, the findings of this study are arguably of limited usefulness for skills researchers for two principal reasons. Firstly, as the authors themselves note (Arrowsmith *et al* 2003: 440), the design of the research did not facilitate generalisation of the findings to the wider population of firms in the sectors examined, and while gaining a detailed understanding of the micro processes of adjustment is certainly very beneficial, skills researchers are particularly interested in *quantifying* the effects of institutional adjustments - i.e. to what extent is transformation possible? Secondly, as Arrowsmith *et al* recognise (2003: 451-2), while certainly significant for many firms (particularly in the clothing sector), the relatively low level of the minimum wage in April 1999 was such that 'it did not provide a shock sufficient to jolt employers ...out of their customary practices and habits.' Examining the impact of a larger or more substantial minimum wage rate or increase in the same would be likely to generate theoretical and policy-related conclusions of greater usefulness for skills research.

In another article (published in the journal *Policy Studies*) arising from the same research project, which also draws on findings of a related project examining small, ethnic minority owned restaurants (Ram *et al* 2001), Edwards *et al* (2002) focus on what they see as one of the principal determinants of the key finding of their empirical research - the absence of substantial 'shock' effects at firm level resulting from the implementation of the national minimum wage (and also the Working Time Regulations 1998) – namely, the limited and weak role of local business associations, in order to highlight what they see as the potential for local business networks to promote economic development more generally.

Although the majority of firms studied were members of industry or trade associations, these were in general little used to assist change management or business planning. Nevertheless, business associations are seen by Edwards *et al* (2003) to be in a position to assist firms in reforming work organisation systems and adopting efficient management practices in response to the introduction of regulatory changes. Moving on from this, the potential for such associations to contribute to increased competitiveness and employment levels is emphasised, with illustrative evidence in this regard outlined in the form of an overview of the activities and impact of the Coventry Clothing Centre, which was set up by Coventry City Council in 1989 to support local clothing manufacturers, and which had evidently been successful in doing so and in both creating new and securing existing employment against the backdrop of general, industry-wide decline.

While emphasising the existence of some significant cross sectoral and regional diversity in the existence of effective business associations, Edwards *et al* (2003) make a general call for the economy-wide development of such supportive, intermediary institutions in the UK. They note that use of existing small firm support services such as Business Link is seen to be 'patchy', with the model adopted 'one of firms seeking specific pieces of advice rather than a more forward-looking approach which encourages firms to look beyond existing markets' (ibid: 18). In their view, 'a different approach would accept the value of an industrial policy', with new local associations or networks not likely to be a solution to issues such as weak technical expertise and backward working practices, 'unless they are embedded in an industrial policy' (ibid).

Employment Relations Books

As with the journals, in general terms the employment relations books published in recent years have not engaged directly with or provided substantial research evidence or analysis on the possibility for Britain to move to a higher skills trajectory; although as outlined in section 2.3, a number of such books or chapters in the same (e.g. Heery and Salmon 2000; Burchell *et al* 2002; Nolan and Slater 2003) *have* provided new or updated evidence on various problematic aspects or dimensions of the British economy/labour market.

Beynon *et al* (2002) is arguably the most significant recent contribution in terms of the extent to which that book addresses issues and trends that go to the heart of the 'British skills problem.' Beynon *et al* (2002) present findings from case study research involving over 250 interviews in seven large organisations in the north of England, based in a variety of sectors - specifically a

supermarket chain, telecoms company, media/printing firm, pharmaceutical manufacturer, healthcare trust, bank and urban council. Their overall aim is to conduct a detailed analysis of the contemporary realities of work in these organisations and 'identify the interlinkages between areas of employment policy and employment change' (ibid: 110). The theoretical framework used to support the fieldwork is based on the interaction of the 'three rings' of firm performance pressures, internal considerations (e.g. organisational culture and power relations) and external forces, i.e. product and labour markets and the regulatory environment (ibid: 26-36).

While Beynon *et al* (2002) are sensitive to the influence of context, they emphasise the commonality of certain themes and experiences across the case study organisations, which leads them to make some strong, generally applicable policy recommendations (outlined below). Specific trends/phenomena identified include the dismantling of internal labour markets and traditional career structures (closely related to 'delayering' and the removal of middle managers); the end of 'standard working time'; involvement/empowerment of employees alongside work intensification; and generalised employee dissatisfaction with opportunities for training and development. Particularly pernicious trends are seen to be the increasing deployment of temporary and low-paid labour and the *strategic* creation of lower skilled and consequently lower paying positions. An overriding theme is the dominance of considerations of competitiveness and responsiveness to market conditions over other concerns, particularly the interests of employees.

Beynon *et al* (2002) conclude their book by calling for a number of regulatory changes to be introduced in the UK, which they contend would rebalance the employment relationship to the benefit of employees, including policies to change cost structures, new rights for employees, citizens and unions (e.g. to training) and the establishment of 'new labour market institutions; with these changes being introduced within the context of a 'multilayered and multidimensional approach' (ibid: 317).

Beynon *et al* (2002) constitutes an important contribution to the skills/employment field. Its strength lies in the express incorporation of a combination of company-specific, institutional and sectoral/product market influences into the theoretical framework and research methodology adopted, and the extent to which these are then drawn out in the findings and analysis. Their research is arguably one of the few recent employment relations studies that undertakes the deep

engagement with sectoral and product market trends that is necessary in order to effectively guide theoretical frameworks and analysis into the possibility for upskilling to be achieved.

The study is, however, not without weaknesses. Its primary contribution is that it effectively highlights and discusses a number of new or pre-existing, problematic characteristics or dimensions of the British economy. It does not, therefore, systematically address the question of what potential exists for the *improvement/enhancement* of skills and employment outcomes. In addition, while there is good engagement with sectoral and product market trends, the fact that only one organisation is considered in each sector studied means that there is arguably insufficient recognition of the possible significance of intra-sectoral diversity in competitive strategies, operational policies and employment outcomes. Finally, the conclusions and policy recommendations are outlined without any in-depth analysis or explanation, a situation that is particularly unsatisfactory given the sophisticated and complex nature of the preceding findings and analysis. As Gilman (2003: 93) puts it, 'the conclusion is based more on policy prescription than an attempt to theorise their rich findings.'

2.4.3 Recap & Assessment of Empirical Research in the Skills & Employment

Relations fields

The Extent of Research

A primary finding of this review of recent research is that, in general terms, the extent of empirical research on the possibility for moving the British economy to a higher skill trajectory in both the skills and employment relations fields, has been very limited. This is highly surprising, particularly, as was highlighted in chapter one, given the high profile nature of the 'British skills problem.' That the relative lack of substantive empirical research in the skills literature is surprising can perhaps be acknowledged quite readily. However, it is also suggested here that the failure of employment relations researchers to undertake research in this area is equally notable and constitutes a major weakness or shortcoming of that particular discipline. A number of observations in this regard are now outlined.

Likely or possible reasons for the 'neglect' by the ER literature of skills issues, include the origins of industrial/employment relations as a discipline centrally focused on examining workplace rules and the regulation of collective relations between management and workers (Ackers and Wilkinson 2003), the highly complex and *interdisciplinary* nature of the issues underpinning the 'skills problem', and the increasing emphasis by publications in the main ER

journals on deductive as opposed to inductive, and discipline as opposed to policy-related issues (Whitfield and Strauss 2000). Highly notably, as Frege (2005: 202) outlines, while trade unions in Britain have experienced a dramatic decline in power and influence since the 1970s, in the main British industrial relations journals there was a significant *increase* during the 1990s in the number of articles addressing 'industrial relations' topics, and in particular articles based on trade union research.

Therefore while Marginson and Sisson (2004: xvi, 317-8) argue for a reassertion of issues of regulation or 'governance' of the employer-employee relationship as the key focus of industrial relations research (which they suggest have in fact been neglected in recent years), it is argued here that in contrast, there is a strong need for the ER field to broaden its horizons and engage with issues relating to the political economy of skills, particularly given the enormous practical importance of the latter to the day-to-day work experience of ordinary workers. In this regard, the call by Ackers (2002: 3) for industrial relations research to place greater emphasis on examining 'the relationship between employment and society' is supported.

There is, however, some more recent, welcome evidence of a broadening of focus of ER research, as evidenced by the recent *BJIR* special issue on corporate governance (September 2003) and also its September 2004 symposium on the *Quality of Working Life* (the papers from which are published in the September 2005 issue). As Heery and Wood (2003: 479) note in their introduction to the former, 'over time there has been a broadening of employment relations research'; and that 'it has become less tenable to regard the institutions and processes of job regulation as a largely autonomous, self-regulating subsystem' (see also Heery 2005).

The Specific Papers Reviewed

In terms of assessing the significance of the research reviewed, in the skills field Finegold's (1999) contribution is highly significant in terms of his development of the concept or model of 'high-skill ecosystems' and also the insightful empirical evidence presented on the existence/operation of such ecosystems in the US, and the discussion/analysis regarding the potential for the development of the same in advanced sectors such as biotechnology in the UK. However a number of weaknesses and outstanding questions in Finegold's research can be identified.

Firstly and most notably, Finegold (1999) makes no attempt to quantify or measure the level of employment or wealth potentially accounted for or created by 'high-skill ecosystems', and therefore the possibility for a wider transformation of skill levels and living standards to be achieved. Secondly, no consideration is given to the possibly negative consequences for other sectors of the institutional features/characteristics – specifically deregulated labour and fluid capital markets – which are seen to be vital in facilitating the development of high-skill ecosystems. For example, while (further) deregulation of labour markets might well underpin enhanced performance in inherently risky, fast-changing activities/product markets such as biotechnology, this would appear likely to inhibit rather than enhance skills development in the more traditional/stable sectors that account for the majority of employment in Britain, which Lloyd's (1999) research to a significant extent illustrates.

Turning to the latter, the research undertaken by Lloyd (1999) is highly instructive. It highlights the importance and potential of labour market and training regulation as well as the development of cooperative structures at regional and sectoral levels, to contribute to the development and maintenance of a strong skills base. The comparison with France directs a strong spotlight on the negative consequences for skills development and the long-term viability of high-quality production resulting from the deregulated nature of the British labour market and training system and the inflexibly short-term oriented financial performance requirements of City institutions; and identifies an alternative path that Britain might follow.

Similarly, Wilson *et al* (2003) can be seen as a significant contribution to the skills literature. The empirical evidence Wilson *et al* (2003) present is equally highly instructive. Key here is their identification of the ongoing competitive viability of low-skill, low-wage product strategies and, related to this, the determining structural obstacles existing in the way of a move up-market. In particular, the nature of intra-sectoral competition and also immediate customer and end-user strategies and demands were highlighted as being of central importance in influencing/determining skills outcomes, with the implication being that skills researchers and policy makers need to pay careful attention to issues of product market structure, dynamics and regulation.

In the employment relations field, empirical studies on the political economy of skills were found to be almost entirely absent. Nevertheless, like Lloyd (1999), the research by Saundry and Turnbull (1999) is very useful in that it emphasises how it may be necessary (but also possible)

to substantially adjust regulatory, training and labour market institutional structures, possibly on an industry-basis alone, in order for improved competitive performance and more desirable employment and skills outcomes to be achieved in Britain.

Similarly, the research by Rainbird and Munro (2003) is also helpful in that, with some parallels with the Wilson *et al* (2003) study, it highlights the extent to which the potential for upskilling of general workers may be sharply constrained due to resource constraints and, arguably more importantly, the inherently unskilled and limited nature of many lower status jobs.

Finally, although the work on the impact and operation of the minimum wage was in general terms not found to be particularly insightful in terms of the possibility to draw strong theoretical or policy related conclusions, the article by Edwards *et al's* (2002) undoubtedly constitutes one of the few recent examples of employment relations researchers engaging with the systemic and cross-disciplinary issues underpinning Britain's 'low skills equilibrium.' In this regard, Edward's *et al's* (2002) data and analysis regarding the potential role of intermediary institutions to facilitate strategic upgrading within the context of a broader industrial policy is particularly useful. However the necessity for and potential role of industrial policy is only highlighted briefly and this element of their analysis arguably therefore needs to be further elaborated/developed.

2.5 Theory Development on the Possibility for Upskilling in Britain

Introduction

Having outlined and discussed the limited recent empirical research on the British skills problem, it is necessary to combine the central findings emerging from this with the key insights arising from other contributions to the skills debate in the form of articles/books developing both theoretical and policy analysis, a number of which also comprise or are based on reviews of secondary research findings or evidence from a range of sources. In this manner, a more robust theoretical framework regarding the possibilities for upskilling to be achieved in Britain can be developed, with a view to guiding further empirical research in this area. However it is again firstly necessary to highlight the limited nature of the material available: while various authors have discussed the institutional changes or policy interventions they feel are necessary to facilitate upskilling, this has typically taken place in a rather piecemeal manner. In this regard, having undertaken a systematic review of recent skills research, Lloyd and Payne (2002: 365) conclude that "there is still some way to go in theorising a 'political economy of skill.'"

The discussion here will focus on analysis and policy recommendations relating to 'demand-side' issues, i.e. institutional changes that would increase firms' underlying demand for skills, as opposed to 'supply-side' measures, for example aimed at increasing the supply of qualified graduates (Glynn and Gospel 1993; Keep and Mayhew 1998; Ashton *et al* 2003). The reason for this is that, as Keep and Mayhew (1998; 1999) in particular have emphasised, the nature of skills profiles and skill supply are typically second or third order considerations in the formulation of firm-level product strategies; and as a consequence, an emphasis on increasing/improving the supply of skills alone is likely to be insufficient to facilitate strategic and hence employment upgrading. Rather, it is arguably more appropriate to address the more proximate influences on the product strategies adopted by firms, such as product and labour market trends, the institutional context (e.g. the nature and extent of government intervention or regulation) and the broader business environment more generally.

In this regard, two issues that are frequently highlighted in the skills literature, namely the possibilities/potential inherent in the development of an industrial policy and an increase in labour market regulation, are now considered.

2.5.1 The Potential Contribution of an Industrial Policy

Reference to the Potential of an Industrial Policy in the Skills Literature

In their initial exposition of the low-skill equilibrium thesis, Finegold and Soskice (1988) identified the importance and role of a supportive industrial policy in facilitating a move to a higher skills path. For Finegold and Soskice (1988: 50):

The problem of moving companies from a low-skill to a high-skill equilibrium involves more than training and education. It requires changes in management style, R & D, finance, marketing etc., so training policy should be seen as *part of a wider industrial strategy*. (emphasis added).

Policies to change company approaches to training would therefore 'be one part of a coordinated strategy to help companies focus on marketing, product innovation, new technology, high-quality production and the provision of long-term finance' (ibid: 43). However the details of such policy interventions were seen to be outside the scope of their paper.

As Lloyd and Payne (2002: 375-6) note, while many skills researchers have subsequently also highlighted the potential of an industrial policy (Ashton and Green 1996; Brown and Lauder 1996; Keep and Mayhew 1999), with some exceptions (Finegold 1999; Wilson *et al* 2003) they have typically not elaborated in detail on what such a policy might look like or how it would work. The general assumption made is that the introduction/adoption of an industrial policy, for example in the form of government funding of research and development, might enable firms to move into higher value market niches, and thereby facilitating upskilling or a move to a 'high skills equilibrium.'

Finegold (1999) arguably constitutes the most detailed treatment of the potential relationship between industrial policy interventions and skills outcomes. As noted in section 2.4.1, instead of attempting to achieve wholesale economic/institutional transformation, Finegold (1999) argues that British policymakers could focus on the development of high-tech, high skill 'ecosystems' around universities such as Cambridge and Oxford, and utilise the wealth generated from these in a redistributive manner, for example by creating good quality public and private service sector jobs to employ traditionally low-skilled groups of workers. He suggests that the existence in the UK of world-class university research capabilities, fluid capital markets and a flexible/deregulated labour market, provides a strongly conducive environment for the development of such 'high skill ecosystems.' With this his preferred, overarching policy solution, Finegold's (1999) more specific suggestions in relation to industrial policy are focused on remedying a number of perceived weaknesses in the UK policy context, which in his view serve to undermine the potential for the (further) successful development of ecosystems. Specifically, as outlined earlier, Finegold (1999) calls for funding of basic research and pre-venture capital to be increased, the 'supply of entrepreneurial skills' to be expanded and regional and individual networks to be fostered.

As also noted earlier, in their report on 'tackling the low skills equilibrium' Wilson *et al* (2003: 77-81) identify the need for a 'whole business approach' to the skills problem to be adopted, which would integrate government support for innovation and R & D investment with business strategies and also parallel support in the areas of organisational structures and people management systems. They argue for the DTI to take a lead role in strategically coordinating the cooperation and input of organisations such as the Sector Skills Councils, Regional Development Agencies and Small Business Service, and in contrast to Finegold (1999), call for the expansion and tailoring of public sector research and development, R & D tax credits and

venture capital support to traditional sectors such as food processing or hotels. In addition, they highlighted the need to examine the potential usefulness of legislative intervention in the area of product market regulation, in particular with a view to curbing the enormous power of national retailers *vis a vis* suppliers in the food processing industry.

The Wider Debate on State Intervention & 'Varieties of Capitalism'

Before outlining the various possible policy interventions highlighted in the skills and other literatures, it is arguably necessary to place these discussions of industrial policy against the context of broader debates regarding the role of industrial policy and the state more widely in the politics/political economy literatures.

In this regard, it is commonplace for writers on political economy to simultaneously point to a *reduction* in the influence and autonomy of national governments as a result of globalisation, and in particular the increasing international mobility of finance and power of multinational firms, and the *continuing central/determining role* played by national governments and institutional structures in influencing the manner in which national economies are located within and interact with the global economic system, and also the competitive performance outcomes they experience (Coates 2000; Hall and Soskice 2001; Dicken 2003; Fulcher 2005).

As Fulcher (2005) notes, the international political economy literature continues to be centrally based on the identification, elaboration and analysis of different 'models' or 'varieties' of capitalism, for example the 'liberal market economies' (LMEs) and 'coordinated market economies' (CMEs) identified by Hall and Soskice (2001), or the 'liberal' and 'trust-based' capitalisms highlighted by Coates (2000).

In terms of the central differences between these models, although a strongly interventionist role for the state is generally seen to be increasingly untenable/inappropriate in each (although see Schmidt (2003) for an argument that 'state capitalism' remains alive and well in France), in general terms, in coordinated or trust-based systems, there *is* greater state intervention or regulation and, alongside this, a richer or denser network of institutional structures with which businesses engage.

In this regard, the central features of the German economy outlined in section 2.2 above can again be highlighted, namely the formalised and highly regulated 'dual' system of vocational

training that produces a broad distribution of intermediate and high level technical skills; compulsory membership of local chambers of commerce which ensure that companies undertake training; statutory works councils with codetermination rights in relation to the organisation of production; industry/regional collective agreements between employers and unions that set comparatively high wages and conditions of employment; and close, cooperative relationships between companies and banks that are prepared to sanction the substantial long-term investments necessary to underpin the adoption of quality-focused competitive strategies (Streeck 1992; Culpepper 1999a; Lane 1989; Hall and Soskice 2001).

In contrast, in 'liberal market' economies such as the US and UK, the strategies and operational policies of firms are much less determined or constrained by the external institutional context. Here, membership of local business organisations is voluntary, collective bargaining typically decentralised to the level of the firm, the nature and extent of vocational training a matter of managerial discretion alone, systems of worker representation/participation largely of a voluntarist nature, and relationships between companies and financial institutions of a more short-term, fluid nature (Hall and Soskice 2001).

While clearly very different in terms of institutional makeup, Hall and Soskice (2001) in their widely heralded book on 'varieties of capitalism' (VoC), outline how in terms of aggregate levels of economic performance and welfare, the experience of coordinated market and liberal market economies over recent decades has been roughly equivalent. However behind this broad finding lie significant differences in terms of the *sectors/activities* in which CMEs and LMEs specialise and in which they best perform.

In this regard, Hall and Soskice (2001) highlight how the dense institutional structures in CMEs such as Germany and Japan give those countries 'comparative advantage' in sectors/industries characterised by 'incremental innovation' (e.g. machine tools and factory equipment) and, in contrast, how the fluid and deregulated nature of capital and labour markets in LMEs such as the US and UK give the latter comparative advantage in sectors/activities characterized by 'radical innovation' (e.g. biotechnology or semiconductors). Hall and Soskice (2001) emphasise that individual countries should focus on developing policies which support or accentuate the dominant characteristics and orientation of their existing institutional frameworks and which focus on the particular economic sectors or activities those structures best support.

Hall and Soskice (2001: 49) therefore argue that LMEs such as Britain should implement 'market-incentive' policies that 'do not put extensive demands on firms to form relational contracts with others but rely on markets to coordinate their activities.' Moreover, they contend that 'deregulation is often the most effective way to improve coordination in liberal market economies' (ibid; see also Wood 2001: 274). In order to stimulate/promote economic development in LMEs, Hall and Soskice suggest the adoption of regional development schemes based on tax incentives, vocational training programmes emphasising 'marketable' skills and government subsidies for basic research.

The VoC literature therefore arguably supports the *selective development/adoption* of industrial policy support measures in LMEs, to sectors characterized by 'radical' rather than 'incremental' innovation, alongside a policy emphasis on the accentuation of the dominant characteristics of liberal market economies, i.e. the general fluidity and deregulated nature of their capital, labour and product markets. Moreover, it advises against attempts by LME governments to expend large amounts of resources and energy in attempting to develop the dense institutional networks necessary to support strong performance in sectors characterised by 'incremental innovation.'

The similarities between the VoC literature and the analysis/recommendations of Finegold (1999) are striking in that Finegold also calls for selective industrial policy support, focused on sectors that are similar to those characterised by 'radical innovation' identified by Hall and Soskice, with the suitability/importance of the same institutional characteristics of the UK economy in underpinning competitive success in these sectors also highlighted.

In contrast, the majority of skills researchers (e.g. Lloyd and Payne 2002; Wilson *et al* 2003; Keep and Mayhew 1999) tend to support a radically different role for government intervention and industrial policy. The two major, general differences between the two fields are, firstly, that while the VoC literature recommends that governments in LMEs strengthen market mechanisms rather than attempt to develop dense institutional and collective decision-making structures, the general approach in the skills literature is to favour the latter (e.g. Keep 1999; Lloyd and Payne 2002). Secondly, while the implication from the VoC literature is that sectors in LMEs characterised by incremental innovation should *not* be the focus of industrial policy support, the skills literature supports the *cross-sectoral, generalised* development and application of industrial policy.

The principal factor accounting for these differences in approach is the divergent emphasis/focus in each literature. Hall and Soskice (2001) are concerned with those policies that best enhance *aggregate economic performance/welfare*. As a consequence, although they recognise that it is problematic that LMEs such as the US and UK have achieved comparable economic performance with CMEs such as Germany and Japan on the basis of higher levels of labour utilisation and working hours, their discussion of policy options for governments in LMEs does not address these issues; in essence, the 'end' justifies the 'means.' In contrast, skills researchers are expressly concerned with issues of *process* and the nature of skills/employment outcomes at micro as well as meso and macro levels, with the promotion of *generalised upskilling* the overriding policy objective. As a consequence, they tend to support *economy-wide* solutions as opposed to a focus on some sectors to the exclusion of others, i.e. they are typically not prepared to allow certain sectors to 'languish' in low skill equilibrium scenarios.

As outlined in section 2.3, the British economy continues to suffer from serious competitive weaknesses, most notably low productivity levels and a relative failure to compete in quality-focused international markets, with many sectors of the economy continuing to exhibit many of the characteristics of the stereotypical 'low skills equilibrium.' Therefore despite the economy's success in some high-tech areas, it is clear that in general terms the institutional/governmental framework in Britain does not effectively facilitate or support the achievement of desirable skills and employment outcomes for the majority of workers. From this it can be concluded that while the analysis of Finegold (1999) and Hall and Soskice (2001) provides an important counterbalance to possibly over optimistic or naive belief in the potential of an industrial policy to promote upskilling, it is nevertheless appropriate to examine in detail the manner in which industrial policy measures might support British firms in moving up-market, and consequently promote upskilling. This task is undertaken next.

Summary of the Key Elements of an Industrial Policy

For Lane (1989: 251) industrial policy 'is a wide-ranging field and the variety of measures encompassed by it can only be caught by a very loose definition.' Similarly, Coates (1996) points to the existence of widespread disagreement in the academic literature regarding the definition of an industrial policy. There is not space to undertake a detailed or comprehensive examination of the nature and features of industrial policy and this sub-section will therefore limit itself to highlighting a number of central aspects or dimensions of industrial policy that have been highlighted in the skills literature, broader political economy literature and by the

renowned strategy analyst Michael Porter (Porter 1990; Porter and Ketels 2003), as being of potential significance in moving firms/sectors to a high-quality, high-skills path. Table 2.1 below outlines a number of key components of industrial policy identified in this body of work.

Table 2.1: Key Features of an Industrial Policy

Aspect	Summary	Key References
Provision of direct financial support to firms; creation of financial incentives to innovate	Provision of grants, loans or subsidies, in particular to support research & development; or incentives such as R & D tax credits	Schmidt (2003); Wilson <i>et al</i> (2003)
Public investment in research & development	Strategic investment by government in basic research in high-value or expanding areas	Wilson <i>et al</i> (2003); Porter and Ketels (2003); Finegold (1999); ESRC (2004); Nickell and Van Reenen (2002)
Developing 'clusters', networks & 'institutions for collaboration'	Creating & strengthening links between firms in the same industry or region; developing intermediate institutions to coordinate firms & undertake 'public good' activities (e.g. establishment of industry research committees)	Porter (1990); Porter and Ketels (2003); Cooke and Morgan (1998); Maskell and Malmberg (1999)
Strengthening 'factor conditions'	Investing in general & industry-specific education & training; public investment in science & technology, e.g. creation of research institutes	Porter (1990); Porter and Ketels (2003)
Stimulating product market competition	Deregulating & opening industries to competition in order to promote dynamism & creativity	Porter and Ketels (2003); ESRC (2004); Nickell and Van Reenen (2002)
Regulation of product/service standards	Imposition of exacting quality standards, leading to comparative advantage in these areas	Porter (1990); Porter and Ketels (2003); Wilson <i>et al</i> (2003)
Development of sophisticated downstream/consumer demand	Use of government purchasing/procurement policy to drive up standards, e.g. in the manufacture of health care technologies	Porter (1990); Porter and Ketels (2003); Wilson <i>et al</i> (2003)

As is evident from the table, the types of interventions governments can potentially make in support of competitive performance are many and varied, but particular emphasis is placed in the

literature on the promotion of private investment in research and development, high levels of government investment in the same, the development of clusters/networks and supportive intermediary institutions, and the strengthening of factor conditions (e.g. Porter 1990; Porter and Ketels 2003; Nickell and Van Reenen 2002; Cooke and Morgan 1998; Maskell and Malmberg 1999). In addition, the potential offered by the regulation of product standards and the development of sophisticated consumer demand is frequently highlighted (Porter 1990; Wilson *et al* 2003). With regard to the stimulation of product market competition, as Porter and Ketels (2003) note, while deregulation and the enhancement of product market competition is important in promoting dynamism and efficiency, a reliance on this alone is insufficient to move economies into more higher value and sophisticated market niches.

Alongside increasing investment in research and development and the strengthening of factor conditions, the stress placed by Porter and Ketels (2003) on the development of public good institutional structures and, additionally, close links between private businesses, government and the same, is arguably particularly noteworthy. As they explain (*ibid*: 30):

In modern competition...improving competitiveness becomes a collaborative process involving multiple levels of government, companies, educational institutions and institutions for collaboration.

2.5.2 Labour Market Regulation

In brief, two central strands to the discussion of the potential usefulness and role of labour market regulation are identifiable in the skills literature. Firstly, the potential 'shock' effects of the introduction or raising of the level of a minimum wage are emphasised, with this seen to potentially cause firms to move up-market in search of higher value and higher paying market niches and thereby facilitate upskilling (e.g. Lauder 1999; Payne and Keep 2003; Wilson *et al* 2003).

Secondly, the potential for labour market regulation to set wage levels and increases at a level above the firm and, alongside this, limit the extent to which companies can resort to numerical flexibility and provide for increased 'employee voice' in decision making, is highlighted. The most common reference point here is Streeck's (1992) exposition of the role of the industry/regional collective bargaining system in Germany in underpinning the adoption of a

strategy of 'diversified quality production' in the German manufacturing sector, by imposing high wages as an externally mandated, fixed constraint which firms have to accommodate (Keep 1999: 337; Ashton *et al* 2003: 5). Also identified as relevant in the German case are the strict limits/controls on the making of redundancies and also the statutory system of worker representation in the form of works councils, with the latter features of the German institutional complex also seen to underpin the adoption of high investment, quality-focused strategies. The more recent comparative research by Lloyd (1999), summarised earlier, also highlights the potential role of labour market regulation in facilitating upskilling.

In summary, in general terms it is argued that if wage levels and/or increases in Britain were set outside the firm (for example at national or sectoral levels) and at a relatively high level, and if there were tighter regulation of redundancies and either a strengthened role for trade unions at workplace level or the institutionalisation of mechanisms for employee voice/participation, then British firms might be similarly prompted to adopt innovation focused strategies (Finegold and Soskice 1988: 44; 48; Lloyd and Payne 2002: 385).

2.5.3 Summary & Identification of Key Gaps in Knowledge

The above review of both empirical and desk/theory based research on the potential for Britain to move towards a higher skills trajectory has highlighted a general lack of substantive empirical research and theory development on this issue in recent years. Despite this, however, a number of pieces of insightful primary research were identified, with the review of theory development also highlighting a number of pertinent issues or themes that could arguably form the basis of future research.

In particular, the case study research by Lloyd (1999) and Saundry and Turnbull (1999) was found to demonstrate the potentially positive consequences of an increase in or higher levels of labour market regulation, while the review of more theory-based writings in the skills field as well as the broader body political economy and strategy literatures, highlighted the specific ways in which an industrial policy might contribute to strategic and hence employment upgrading. While this research and theory development provides a useful analytical framework for skills researchers, there is clearly an overriding need for more applied, empirical to be undertaken on the issues raised, and in particular on the question of the potential of an industrial policy. In addition, such research should arguably be conducted in relation to 'traditional' low skill

equilibrium sectors, for example food processing, engineering or clothing and textiles; or in the service sector, hotels and catering or 'mainstream' retailing. In the following section the potential for the adoption of comparative research designs to provide an opportunity to collect theoretically interesting or insightful data is discussed.

2.6 Towards a Research Agenda & Methodological Framework for British Skills Research: Comparative Research at the Level of the Sector

2.6.1 *The Potential of Comparative Research*

The potential usefulness of comparative research in facilitating an understanding of the complex interactions between institutional structures, product market trends and employment/skills outcomes has long been recognised in both the skills (Ryan 1991; Keep 1991; Ashton *et al* 1999; Crouch *et al* 1999; Brown *et al* 2001) and employment relations literatures (Edwards 1992; Locke and Thelen 1995). The particular strength of comparative research is that it facilitates an understanding of how country-specific institutional structures interact with and mediate common economic, product market and technological trends, and in this way influence or determine skills and employment outcomes.

As noted in section 2.4, the comparative research by Lloyd (1999) and Saundry and Turnbull (1999) in France and Spain was found to be particularly helpful in that it provided strong evidence as to how different institutional structures and policies in countries of a similar size to the UK led to comparatively better skills and employment outcomes there than in the latter. In terms of considering the potential for future research, the key question that might be posed is therefore 'what other countries (or sectors within these countries) might also serve as useful objects of comparison for the UK?'

It will be apparent from the discussion in this chapter so far that Germany, an institutionally dense, 'coordinated market economy', has often served as a point of reference for British skills researchers (see also Keep 1991; 1999). However as Keep (1999) notes, the usefulness of such comparisons is questionable. In summary, as the preceding discussion has outlined, it is the *simultaneous existence and interaction* between a large number of individual institutional structures or components (i.e. the regulated training system, works councils etc.) that underpins 'high skills' outcomes in Germany. Therefore UK-German comparisons might be seen to

provide only limited potential for findings/conclusions of theoretical relevance to UK debates to be made or for 'policy borrowing' to be facilitated, as the copying or adjustment of one or two such institutional features or components alone, which is likely to be all that is possible at any given time, would be unlikely to facilitate the achievement of similar skills outcomes in the UK.

There are therefore arguably both theoretical and policy-oriented reasons to support comparisons between countries that are in institutional terms 'close-pairs' (Strauss 1998), or at least which do not possess radically different institutional structures across a range of dimensions. In this regard, while further comparisons with France and Spain such as those undertaken by Lloyd (1999) and Saundry and Turnbull (1999) might be supported, it is arguably the case that British skills researchers should firstly direct their attention to other 'liberal market economies' in order to examine whether these countries are characterised by institutional or policy-related innovations that facilitate 'good' or 'better' skills outcomes. British researchers might therefore consider comparisons with countries such as the US, Canada, Australia, New Zealand or the Republic of Ireland. As well as obvious considerations of practicability, the key criterion for choice of comparator country would be that the country in question possesses particular institutional or policy differences of note compared to the UK, and that such differences would be of 'theoretical relevance', i.e. that they would facilitate the collection of data relating to some of the research questions thrown up by existing skills research, for example concerning the potential effectiveness of an industrial policy.

For example, British researchers could examine and follow up the research by Parker and Rogers (1999) on the role played by 'sectoral consortia' such as the Wisconsin Regional Training Partnership (WRTP) in promoting upskilling in the US. Parker and Rogers (1999: 349) outline how the WRTP, a training partnership between unions, employers, public officials and education and training providers aimed at enabling companies in the Milwaukee area to follow 'high-road' competitive strategies, has had considerable success in embedding an 'emerging norm of industrial governance' in which firms engage in benchmarking of their training efforts and 'administer their growing investments in human capital budgets' through joint labour-management committees.

In a European or domestic context, while devolution certainly makes a comparison with Scotland or Wales of potential value, the most obvious comparator country is arguably the Republic of Ireland.

2.6.2 Considerations Supporting an English-Irish Comparison

For historical reasons, England and Ireland have traditionally shared many strong similarities in terms of institutional structures, the nature of business organisation and competitive, skills and employment outcomes. In terms of institutional structures, key similarities have historically existed between the two countries in relation to the nature of collective bargaining and industrial relations approaches at company/workplace level, namely the dominance of a 'voluntarist' system of collective bargaining and adversarial, negative-sum relations between management and unions (Gunnigle *et al* 1999). The two countries have also much in common in terms of the nature and regulation of vocational training, i.e. an inherently weak/undeveloped system of vocational training;, with industrial training boards having been developed from the 1960s but subsequently dismantled (Keep and Rainbird 2003; Garavan *et al* 1995).

In relation to strategy and employment outcomes, partly related to its comparatively recent industrialisation (or economic 'latecomer' status) and origins as a predominantly agricultural society, indigenous industry in Ireland has historically focused on the production of low value, basic products, particularly foodstuffs (O'Malley 1989). In addition, while the high level of inward foreign direct investment by multinational companies in recent decades has underpinned the creation of substantial numbers of medium-high skilled and well paid jobs (particularly in more recent years), large swathes of the Irish economy and of the indigenous sector in particular, are characterised by the ongoing production of low-tech, low value-added products, with negative, 'low skill equilibrium' type consequences resulting from this (O'Connell and Lyons 1995; Barry *et al.* 1999; NESC 1999; Roche and Geary 2000).

However in marked contrast to British government policy, the economic policy adopted by the Irish government over the last decade and a half has been characterized by the development and pursuit of a strategic industrial policy vision for the Irish economy. The widespread recognition of the urgent need to increase levels of economic welfare, reduce unemployment and improve competitive performance, alongside the absence of exaggerated class-based schisms in the political system, led in the mid 1980s to the formation of cross-partisan commitment to the 'national project' of increasing employment and welfare and improving competitive performance (MacSharry and White 2000). A central pillar of this project has been 'social partnership' agreements between employers and trade unions at a national level from 1987, aimed at combining the agreement of moderate wage increases for 2-3 year periods with reform

of the tax system designed to reduce the tax burden on general workers (Hardiman 2000). This contrasts with a decentralised system of collective bargaining that was in operation for much of the 1980s and a less coherent and strongly implemented system of national pay agreements during the 1970s (Gunnigle *et al* 1999). Secondly, the development and implementation of a multi-faceted industrial policy has also been central. In this regard, in a policy of arguably greatest vintage, the Irish government has been highly successful in attracting inward foreign direct investment from large multinational companies such as Intel and Hewlett Packard and a number of large multinational chemical/pharmaceutical manufacturers, among others. Key here has been the establishment and resourcing of the Industrial Development Authority (IDA), which has the role of attracting and retaining multinational investment (O'Riain and O'Connell 2000).

Following the report of the Industrial Policy Review Group in the early 1990s (IPRG 1992), a similarly concerted effort was made by successive governments to strengthen the competitive capabilities and performance of *indigenous* industry (O'Riain and O'Connell 2000; Fitzgerald 1999; O'Malley 1998). The development agency for indigenous industry, Enterprise Ireland, has therefore like the IDA been the beneficiary of strong government funding and support (MacSharry and White 2000). As O'Riain and O'Connell (2000: 321-2) outline, the Irish government has facilitated/directed competitive performance in three ways: by 'defining the character of industrial strategies' (for example by providing incentives for private firms to specialise in advanced areas such as software design); by implementing company development through grant aid; and by creating 'an associational infrastructure for innovation.'

In relation to the provision of grant aid, the industrial development agencies have promoted a general company development programme by providing funding to private businesses in the areas of marketing, research and development and management development (*ibid.*). With regard to the creation of an 'associational infrastructure', O'Riain and O'Connell (2000; also O'Riain 2000) highlight the creation of a range of innovation and technology centres such as the National Microelectronics Research Centre and, as importantly, the development of strong networks between such technology centres, industry and trade associations, universities and government departments.

Notably, O'Riain and O'Connell (2000: 322) conclude that by the adoption of the above policies/initiatives, 'the state has been able to contribute handsomely in the 1990s to the

development of indigenous industry and the upgrading of the national system of innovation more generally.' In particular, O'Riain (2000) provides a detailed account of the manner in which the Irish industrial policy matrix facilitated the development of a strong, high value indigenous software industry during the 1990s. Similarly O'Malley (2004), in contrast to the more gloomy assessment of the recent performance of indigenous industry offered by the government sponsored Enterprise Strategy Group (ESG 2004), outlines how in general terms indigenous manufacturing industry in Ireland has outperformed the European Union manufacturing industry as a whole since the early 90s.

More broadly, it is evident that, albeit as only one of a number of separate factors/influences, Irish government policy has underpinned extremely rapid economic growth and increases in levels of economic welfare in recent years. As Haughton (2005: 108) outlines, GDP per capita rose by an average of 9% a year between 1994 and 2002, a consequence of which is that having only recently been one of the poorer countries in Europe, Ireland is now 'undisputedly' one of the five most affluent countries in the world as measured by GDP per capita; having overtaken the UK in this regard in the late 1990s (ibid: 112-3).

It is clear that the presence and, more importantly, evident *impact* of the strong, resource-intensive industrial policy means that Ireland possesses an institutional feature or characteristic which the skills literature hypothesises might help the UK economy move to a higher skills path, i.e. an industrial policy incorporating the provision of direct financial assistance to firms, the strengthening of 'factor conditions' and the development of supportive institutional structures, that has tangible consequences in terms of the extent to which it has been shown to facilitate (at least a significant number of) indigenous firms in moving up-market.

Therefore, while the clear structural difference between the two countries in terms of their respective size (i.e. Ireland's status as a small economy and England's status as a medium/large economy) would need to be taken into account, the strength of the similarities between Ireland and England and the *theoretical relevance* of this difference between them, means that for British skills researchers interested in examining the potential for upskilling there are strong reasons to make the Republic of Ireland one of the first ports of call.

In relation to the other key notable feature of the Irish institutional context, namely the system of national wage agreements, as indicated above the majority of wage agreements since 1987 have

involved low/modest wage increases. It is only since 2000 that the annual wage increases have been set at a high level, with increases averaging 6% a year in the 2000-2002 period. This was followed by a 7%, 18-month pay deal for the period 2003-2004; and more recently by a 5.5-6% increase over 2004-2005 (figures taken from the EIRO Online website, www.eiro.eurofound.ie). It is therefore only latterly that the 'required' condition of theoretical interest in this regard, namely high wage levels or increases being imposed on firms, has been satisfied. In contrast, the adoption of a strategic industrial policy has been in evidence since the early 1990s.

Therefore in relation to what specific issues an Anglo-Irish comparison might address, although an examination of the consequences of the manner in which the national wage agreement system is shifting Ireland to a 'high wage economy' would be potentially highly informative, it is argued here that to attempt to address both this and the significance/contribution of the industrial policy would involve covering too many issues for inclusion in one thesis. Therefore it is suggested that the more established 'key institutional difference', i.e. the industrial policy, should form the primary focus of enquiry, albeit with the design and conduct of research remaining open and sensitive to the potential significance of labour market regulation.

2.6.3 Research Strategy for an Anglo-Irish Comparison: The Potential of Sector-based Studies

Having concluded that a comparison between England and Ireland offers strong potential for the generation of theoretically interesting research findings, it is necessary to consider how such a study might be operationalised. As has been discussed previously, it is arguably desirable that research be conducted in 'traditional', low skill sectors or activities.

In terms of the rationale for sector-based studies, a growing body of research in the employment relations field points to increasing levels of within-country variation in employment relations and human resource management outcomes and practices, and at the same time increasing cross-national *convergence* in outcomes and processes in specific economic sectors (Katz and Darbishire 2000; Locke 1992; Locke *et al* 1997; Roche 2001); a trend which Katz and Darbishire (2000) label 'converging divergences.' It would therefore seem appropriate for international comparisons to be undertaken at sector level.

The recognition of the increasing importance of sectoral characteristics and dynamics has led a number of employment relations researchers (Arrowsmith and Sisson 1999; Arrowsmith *et al* 2003) to support the generalised adoption of the 'firm in sector' approach utilised by Smith *et al* (1990) in their study of Cadburys. This approach advocates the conduct of case study research at company level that expressly recognises and accounts for the extent to which the surrounding sectoral context has a determining influence on employment relations and personnel management practices, hence the 'firm in sector' description. Similarly, Boxall and Purcell (2003) in their recent book on strategy and human resource management also flag up the significance of sectoral context in influencing the types of human resource management policies it is feasible for managers to adopt. The 'firm in sector' approach is therefore favoured here, together with the analytical framework developed by Locke *et al* (1997: xxvii) for the conduct of comparative research at the sector level. Combined, these highlight that comparative research designs at sectoral level need to be sensitive to and account for general, economy-wide institutional structures and influences, sectoral institutions and characteristics, and also firm-level strategies and dynamics.

2.6.4 Choice of Case Study Sector

It is suggested that dairy processing could serve as a suitable case study sector for a number of reasons. A significant industry in economic terms in both countries, it is also an industry that can be described as a typical 'low-skill equilibrium' sector, in that the large majority of firms in both England and Ireland have traditionally relied on the production of commodity-type as opposed to high quality/differentiated products (Oliver, 2000; House of Commons, 2000; Banks, 2000; O'Connell *et al* 1997; Department of Agriculture, 1998, 2000a and b). Secondly, mirroring broader national trends in both countries, very significant differences in the industrial policy context of both industries have emerged over recent decades.

Highly notably, government policy/intervention *has* historically played a central role in the British dairy industry, in that from the 1930s until 1994 the British sector operated as a regulated monopoly/duopoly in the form of the operation of Milk Marketing Board (MMB) system. Milk Marketing Boards operated as monopoly purchasers of raw milk in England, Wales, Scotland and Northern Ireland, and (towards the latter part of this period) in conjunction with the Dairy Trade Federation (representing processor interests), set the farmgate price of milk for both the

liquid and manufacturing sectors in a system of 'end-use pricing' (Oliver 2000; Banks 2000). The initial, central objective of the system was to secure a high milk price for farmers. While the operation of the MMB system cannot be outlined at length here, there existed a complex set of rules and regulations, the consequence of which was to effectively guarantee processors a fixed, high level of profit relating to the specific activities undertaken. However after the UK's entry into the EU and the introduction of milk quotas in the mid 1980s in particular, for competitive reasons the MMB system came under increasing strain; with the rigidity of the pricing system seen to both lead to low milk prices for farmers and also impede investment in the development of higher quality, more advanced products (Ritson and Swinbank 1991, cited in Oliver 2000). As a consequence, the Conservative government took the decision to deregulate the industry in 1994, and since then a free market for the purchase and supply of milk has operated, with government policy focused almost exclusively on enhancing efficiency levels via the promotion of competition (DEFRA 2002a and b).

Notably, the MMB system also historically incorporated a number of collective or 'public good' features and resources, namely a collaborative research and development programme and the existence of shared-use pilot plant facilities. However these were broken up upon or shortly after deregulation, and have since not been replaced (Armstrong 2003).

In contrast, the dairy industry in Ireland is located within the context of the consistent adoption and implementation of an industry-focused industrial policy over time. The broad food processing industry in Ireland has been identified as a particularly important sector for national economic welfare (e.g. IPRG 1992) and there have been numerous government-sponsored reviews and reports examining and making recommendations on its competitive position, with dairy typically highlighted as an industry of particular strategic importance (e.g. Department of Agriculture and Food 1998, 2000a and b).

As a consequence, a range of initiatives and supports have been developed by state agencies (for example funding for research and development and marketing) with the intention of enabling dairy processors to move into higher value, more advanced market niches. In addition, a number of industry-dedicated research institutes and facilities have been established, for example the Moorepark Dairy Product Research Centre and Moorepark Technology Limited, a pilot plant facility. Further, similar to software, the Irish dairy industry is also characterised by the presence of significant 'associational economies' (Cooke and Morgan 1998) in the form of strong social

and policy networks, in addition to close links between institutions such as those mentioned above and individual processors (O'Connell *et al* 1997).

In summary, the English and Irish dairy industries arguably therefore closely fit with the prevailing 'national type' in their respective countries and a comparison between them could potentially facilitate the generation of important data and insights regarding the question of the potential for an industrial policy to promote upskilling.

2.7 Overarching Research Question & Analytical Framework

2.7.1 *Overarching Research Question*

Having outlined the rationale for a comparison between the English and Irish dairy processing industries, it is possible to set out an overarching research question to guide such a research project:

Does the presence of a strong industrial policy framework and rich institutional architecture in the Irish dairy industry lead to greater upskilling and 'better' employment outcomes for general workers there than in the English industry, where no similar industrial policy or supportive institutional architecture is in evidence and where government policy is characterised by a predominant focus on the promotion of competition and efficiency?

2.7.2 *Analytical Framework to Guide Research Fieldwork*

Before proceeding to undertake a more detailed overview of the institutional context and key features of the dairy industry in both countries, it is firstly necessary to discuss the analytical framework to be used in guiding research fieldwork. In this regard, three issues of importance can be identified: firstly, the exact meaning and definition of 'upskilling' or 'better' employment outcomes; secondly, the relationship between strategic upgrading and substantive skills outcomes; and thirdly, the potential scale or scope of impact of a strategic industrial policy.

In relation to the meaning or definition of 'upskilling' or 'better' employment outcomes, three separate elements or strands can be identified, namely the skill levels involved in relevant jobs or activities (whether measured by the formal qualifications required or on the basis of a detailed analysis of the degree/extent of complexity involved in job performance), wage levels and employment outcomes.

Firstly in this regard, the generally implicit benchmark of skills research is the creation/development of jobs that either require qualifications or involve high levels of complexity in terms of their day-to-day performance, thereby leading to high levels of job satisfaction and self realisation for the workers undertaking them.

Secondly, the creation of highly paid jobs that can support a high standard of living is emphasised. Thirdly, while considered less in the literature, the issue of employment outcomes is also relevant, i.e. what is the level of employment or unemployment associated with the particular industry or activity in question? And how does the institutional context affect/determine employment levels?

With regard to the relationship between strategic upgrading and substantive skills outcomes, a common assumption in the literature is that the production of more advanced or higher value products will unproblematically lead to the creation of more skill-intensive, interesting and satisfying work for general workers (Coates 2000: 110-8). However as Lloyd (2003: 3-8) outlines, there is in general little research evidence available on the relationship between product strategies and skills outcomes.

At a theoretical level, the assumption that the production of high quality products or services either requires or leads to higher skill levels than the production of more basic products, might appear to be valid, while empirical evidence from the strategy field (e.g. Porter 1990: 627-30), the NIESR matched plant studies noted in section 2.2.1 above (Prais 1995: 65-72) and Streeck's (1989, 1992) research on 'diversified quality production', has indeed highlighted the close association between competitive success in quality/innovation focused market niches and investment in advanced skills sets.

However (other) comparative research on the relationship between product strategies, technological trends, institutional influences and work organisation/skills outcomes, most notably Regini (1995, 1997) and Thompson *et al* (1995), has clearly demonstrated the contingent/indeterminate and complex nature of these relationships. This research as well as the broader body of research in the labour process tradition (e.g. Wood 1989; Thompson and Warhurst 1998) highlights the heavily contested nature of skills and work organisation outcomes, and in particular the relative ease and extent to which work in institutionally weak, liberal market economies such as the UK that lack robust mechanisms for the exercise of

employee voice at company/workplace level, may be structured in a low-skill, low autonomy manner, even where so called high quality products or services are being produced.

In addition, aside from considerations of the contested nature of skills outcomes, as Boxall and Purcell (2003) highlight, the overarching structural features and in particular the dominant technologies utilised in specific industries or sectors, will heavily determine the type of work organisation systems and human resource management policies adopted.

The implication of the above is that an industrial policy facilitated move into the production of high quality, up-market products cannot be expected to result in an unproblematic or straightforward manner in upskilling for the workers affected, but rather that work organisation and skills outcomes are likely to be the result of complex, contested and contingent processes.

Also relevant in this regard is the possible tension between the introduction of more advanced, complex products and the weak, 'voluntarist' nature of vocational training systems in both England and Ireland, highlighted in section 2.6.2 In short, if more complex or sophisticated products are introduced without any accompanying improvement or adjustment of training policies and systems, then dissatisfaction and frustration might be seen to be likely to result for production operatives.

Finally, in relation to what might be termed the 'transformative potential' of industrial policy, alongside the research demonstrating the importance of structural features and the dominant technologies employed, some of the tools/techniques used in strategy analysis, such as Porter's (1980) 'five forces' model or the 'product life-cycle' model (Grant 2002: 305-16; Johnson *et al* 2005: 86), can be utilised in examining the industry under consideration. In this regard, similar to the broader food processing industry in general (cf. Smith *et al* 1990: 314, 320; Wilson *et al* 2003) as a mature industry faced with increasingly powerful downstream customers and largely stable end-user demand, the dairy industry might be expected to demonstrate sharp obstacles/limitations in the way of upskilling.

It will be necessary to bear the above issues in mind in the design and conduct of fieldwork in this project.

2.8 Conclusion

This chapter began by outlining the emergence and key features of academic analysis on the 'British skills problem', with particular reference being made to the NIESR matched plant studies and the Finegold/Soskice 'low skills equilibrium' thesis. Next, the contemporary relevance and validity of the low skills equilibrium analysis was examined with the aid of recent reviews of the competitive performance of the British economy. In this regard, while Britain's success in a number of advanced, high tech sectors was highlighted, the evidence demonstrated that the economy as a whole continues to suffer from very significant weaknesses in the form of a predominance of competitive strategies based on the production/delivery of low quality, low value goods and services. Further, the evidence collated illustrated how negative skills and employment outcomes, in the form of low skill levels and limited opportunities for upskilling, also continue to be a strong feature of the British economy.

In light of this evidence, the chapter went on to consider recent empirical research and theory development in the skills and employment relations fields addressing the issue of how Britain might move to a higher skills trajectory. The extent of both empirical research and theory development on these issues was found to be very limited. This was seen to be highly surprising and to mean that there exists a large gap or weakness in the existing body of research in both of these areas.

This consideration aside, a number of important themes emerged from this part of the literature review. Specifically, the potential for the introduction of changes to institutional structures in the form of a strategic industrial policy or an increase in labour market regulation were highlighted. Particularly important or potentially beneficial elements of an industrial policy identified included the provision of direct financial support for research and development, strengthening of 'factor conditions' and creation/development of 'institutions for collaboration.' In relation to labour market regulation, the potential inherent in the setting of wages at a level above the firm and to high levels was emphasised.

With these issues in mind, the chapter next considered the potential of comparative research to facilitate further empirical research and theory development regarding the British skills problem to be undertaken. Comparisons between Britain and other liberal market economies at the level of the economic sector were seen to arguably offer the greatest potential. More specifically, a

comparison between Ireland and England and the respective dairy sectors of both countries, was put forward as a research design that could lead to the generation of theoretically insightful data. It was outlined how in contrast to England, Ireland is characterised by both the existence of a strong industrial policy and centralised labour market regulation. The former was found to be of particular significance, in particular the extent to which Ireland possesses a strategic, resource-intensive industrial policy consisting of the provision of financial support to firms, the strengthening of factor conditions and the development of strong institutional structures and policy networks; that has been shown to enable indigenous firms to move into higher value market niches. These features were found to be replicated in the Irish dairy industry, which as a traditional 'low skill' sector, was seen to constitute an ideal location for empirical research to be conducted.

Finally, a number of conceptual/analytical issues needing to be addressed prior to fieldwork in the Irish and English dairy industries being undertaken were highlighted and discussed.

Chapter Three: Institutional Context of the English and Irish Dairy Sectors

3.1 Introduction

Chapter two has already discussed some of the more problematic features of the British institutional context. This chapter will not repeat these but will provide an overview of the key (remaining) features of the institutional context within which British and Irish dairy firms operate. The chapter will begin by providing an overview of industrial policy measures relevant to the dairy sector in Ireland and England. The second section of the chapter will consider the vocational training system in each country. The final section will outline some of the key sectoral bodies and government agencies operating in each country.

3.2 Industrial Policy

Introduction

The vast range of potentially relevant schemes, agencies and funding sources and the complex rules governing the same, make an examination of sectoral industrial policy a difficult task to undertake. The possibility for and content of industrial policy measures accessible by dairy firms in England and Ireland is greatly influenced by European Union policies and regulations and in particular by the EU's agricultural policy, regional development policy, general competition policy, and programmes and initiatives in the area of research and development (Wren 2001). While a number of specific points relating to EU policies and regulations are elaborated here and some EU funded initiatives outlined below, the central focus of this section is on *domestic* industrial policy measures towards the dairy sector.

3.2.1 The European Dimension

EU regulations on state aid mean that clear rules, limits and restrictions exist regarding the scope for member states to provide financial and other support measures to private companies (Dunford *et al* 2001). Due to the perceived social importance of agricultural production, the European food/dairy sector has however been traditionally subject to its own distinct system of

rules and regulations, centrally constituted by the Common Agricultural Policy (CAP), meaning that only some of the general rules on state aid apply to it.

The CAP systems of intervention support - whereby the EU agrees to purchase produce from EU member states if world market prices for particular products (butter and skim milk powder in the dairy area) go below a certain level - import tariffs, export refunds and production subsidies, have traditionally heavily influenced the structure of and competitive strategies adopted in the dairy industries of the EU member states. Substantial reform of the CAP has taken place over the last two decades, with the introduction of quotas in the mid 1980s placing a limit on milk production a particularly significant development for the sector. The reform process is ongoing with the 'Luxembourg Agreement' in June 2003 leading to the reduction/phasing out of market support measures to dairy processors, with part of this reduction being compensated for by the introduction of direct payments to dairy farmers. A central theme of the CAP reform has been a movement towards an increased focus on the promotion of rural development (DEFRA 2002a; Department of Agriculture and Food 2000a). In general terms the reforms of the CAP mean that dairy processors now face a much more challenging competitive and operational environment than before.

The mechanism through which the CAP is implemented in both England and Ireland is the European Agricultural Guidance and Guarantee Fund (EAGGF, also known as FEOGA). This fund is made up of two components, a Guidance section and a Guarantee section. The former is one of the European Union's 'structural funds' and is concerned with the provision of finance for investment in farm structures, rural development and processing/marketing of agricultural products in 'objective one' areas of the EU (those areas where average levels of GDP per capita are below 75% of the EU average), while the latter involves the provision of market support measures (for example intervention support) and direct payments to farmers in all areas and also funding for the development of farm structures, rural development and processing/marketing of agricultural products in non objective one areas.

Against this context, in addition to permitting funding support of 40-50% for capital investment projects (which it should be noted may be substantially made up of EAGGF funding), the *Community Guidelines for State Aids in the Agricultural Sector* (Official Journal C 28, 1st February 2000) outline that European member states may currently provide state aid of up to a total of 100,000 euros over a three-year period in relation to expenditure by dairy processors on

specified marketing related activities including market research or product design projects (but not advertising), and the same amount in relation to 'technical support' activities such as attendance at trade fairs (interview with European Commission State Aid official)³. In addition, the Guidelines and other official rules and regulations provide that national funding of research and development projects (both basic and applied), employment creation and training initiatives is permissible (see Department of Trade and Industry 2005; Quigley and Collins 2003). National schemes in the latter areas may benefit from part EU funding.

As a general rule, member states are required to inform and get approval from the European Commission in relation to proposed funding initiatives or measures, and the Commission closely monitors member state activity to ensure that it does not breach state aid rules. Notably, less developed countries/regions in the EU are presently and historically have been subject to more lenient limits on permissible aid intensities provided than more developed countries or regions (an additional 10% of aid is currently permissible in such areas). This has historically been of particular relevance to Ireland as up until 2000 the whole of Ireland was classified as an 'objective one' region. However the majority of the country has now lost this designation, with only the 'Border, Midlands and West' region retaining objective one status.

Finally in relation to the European context, it is necessary to note that Ireland has historically received very substantial financial support under the Common Agricultural Policy, reflecting the importance of agriculture to the country's economy and the success of the Irish government in negotiating on behalf of the sector at European level. In terms of the dairy industry, the latter activity has been primarily focused on securing the continuation of high levels of market support measures, i.e. intervention, production subsidies etc. In addition to market support measures, the Irish dairy industry has in the past benefited from very large amounts of EAGGF funding for capital investment in processing factories and facilities, and this has been of great importance in supporting the development of the industry. However it is necessary to note, firstly, that EAGGF funding of dairy sector capital investment projects has been and remains available on a Europe-wide basis (and therefore continues to operate in England); and secondly, that due to the country's recent economic success, since 2000 EAGGF funding for capital investment projects has no longer been available in the Irish industry (interviews with Enterprise Ireland and Department of Agriculture and Food officials).

³ Under previous rules member states were allowed to provide greater financial support for marketing activities (interviews with officials from Irish food agency Bord Bia).

3.2.2 *Industrial Policy in the English Dairy Sector*

Policy Overview

As outlined in chapter two, in contrast to the 'national type', the British government has historically played a central role in the fortunes of the British dairy industry. Specifically, from the 1930s until 1994, the British dairy sector functioned as a regulated monopoly/duopoly via the operation of Milk Marketing Boards (MMB) in England, Wales, Scotland and Northern Ireland. These were set up in order to secure high milk prices for farmers and functioned as monopoly purchasers of raw milk, setting the farmgate price of milk for both the liquid and manufacturing sectors (towards the end of this period together with the Dairy Trade Federation) in a system of 'end-use pricing' (Oliver 2000; Banks 2000). Notably, the British government also supported a system of retail milk price setting which was implemented jointly by government and the dairy industry up until 1984 and which underpinned traditionally very high levels of profitability in the sector.

The MMB system operated on the basis of a number of highly complex rules and regulations, the consequence of which was to effectively guarantee processors a fixed, high level of profit relating to the specific activities undertaken. However after the UK's entry into the EU and the introduction of milk quotas in the mid 1980s in particular, for competitive reasons the MMB system came under increasing strain, with the rigidity of the pricing system seen to both lead to low milk prices for farmers and also impede investment in the development of higher quality, more advanced products (Ritson and Swinbank 1991, cited in Oliver 2000). As a consequence, the Conservative government took the decision to deregulate the industry in 1994, with the MMBs being dismantled, and since then a free market for the purchase and supply of milk has operated, with government policy primarily focused on enhancing efficiency levels via the promotion of competition.

Since its election, the policies adopted by the Labour government with regard to the dairy industry have been largely consistent with its predecessor Conservative governments. Labour's policies have been directed more towards *agriculture* than food processing, with the key policy goals including a reduction of direct financial supports to farmers via reform of the CAP system and a 'reconnection' of farmers with the market and consumers; and ensuring the production in a sustainable and environmentally friendly manner, of nutritious and quality-assured food (DEFRA 2002 a and b).

Regarding the food industry, the achievement of an efficient and effective food chain is the central policy goal. British government policy documents on the food sector (e.g. DEFRA 2002 a and b) are in general characterized by the absence of specific targets or objectives relating to industry productivity and performance levels, new business areas or the product mix. The overall thrust of policy appears to be a desire to achieve a situation whereby the industry is more efficient and cost effective at doing what it is already doing, without considering what activities or product markets it may be desirable for the sector to be involved in future years. In this regard the touchstone for policy appears to be the conviction that government's role is not to determine competitive strategies and strategic direction but rather to set the general competitive and regulatory context within which industry can operate freely and in a safe and efficient manner. Although the establishment in 2002 of a Dairy Supply Chain Forum that comprises a 'Market Innovation' sub-group (see further below) arguably reflects a greater recent willingness on the part of government to support the industry's development, the government's role here remains primarily focused on facilitation as opposed to more hands-on direction.

Specific Policies and Initiatives Adopted

Table 3.1 below outlines the most notable initiatives and schemes relating to a number of policy areas. It should be noted that there are also a range of other economy-wide and regional programmes or initiatives, such as the Business Link service for small businesses that dairy companies can access and which provide support across a number of functional activities/areas.

As is evident from the table, in general terms there are few specific support schemes or initiatives targeted directly at the dairy sector, and in particular few schemes which larger companies can draw on. In addition, the central focus of those initiatives that *are* addressed to the industry, such as the Dairy Chain Initiative, is the targeting of increased communication, cooperation and efficiency across the dairy chain, as opposed to the facilitation of strategic upgrading or a move into higher value market niches. In addition to attempting to promote greater cooperation within the notoriously competitive and fractious dairy supply chain, the recently established Dairy Supply Chain Forum has successfully addressed a number of specific issues/problems such as the difficulties caused by the seasonal nature of milk production in the UK. In addition, as noted above the Forum has involved the establishment a Market Innovation subgroup, which has recently commissioned research on barriers to innovation in the UK dairy industry. Although as discussed, this arguably reflects a greater recent willingness on the part of government to support the industry's development, an analysis of minutes of meetings of both

Table 3.1: Overview of Industrial Policy Initiatives in the English Dairy sector

Policy Area	Agencies Involved	Summary of Policy Initiatives
Capital Investment in processing facilities	DEFRA	<ul style="list-style-type: none"> Processing & Marketing Grant scheme (part of the English Rural Development Programme & drawing on EU funding): support for capital investment; grants at rate of 30% up to a maximum of £1.2 million; £44 million for English projects (including other agricultural products) in 2000-2006 period
Promotion of increased efficiency & collaboration in the Dairy chain	DEFRA, Food Chain Centre	<ul style="list-style-type: none"> DEFRA Agricultural Development Scheme: umbrella programme focused on enhancing marketing, efficiency & collaboration across the agrifood sector, which has included funding for: <ul style="list-style-type: none"> Dairy farm quality/safety assurance schemes Establishment of Milk Task Force which reported in 2001 on increasing efficiency in the dairy chain Dairy Chain initiative: £500,000 funding to Food Chain Centre in 2002 to undertake a Dairy Value Chain project over three years involving industry & research partners DEFRA sponsored Dairy Supply Chain Forum: set up in 2002 with purpose of promoting dialogue & cooperation across the dairy chain; involving establishment of sub-groups to address particular issues/problems (see further below)
DEFRA Research & Development/technology transfer:	DEFRA	<ul style="list-style-type: none"> Annual budget of circa £2.8 million for food processing R & D made up mainly of the LINK collaborative joint government-industry funded scheme involving research sector participation LINK funding focused on projects with potential to provide general/industry-wide in addition to applicant-specific benefits; principal programmes the Food Quality and Safety LINK and Advanced Food Manufacturing LINK (succeeded in 2005 by the Food Quality and Innovation LINK)
DTI Research & Development/technology transfer:	DTI	<ul style="list-style-type: none"> R & D Tax Credits – tax relief on R & D related expenditure; introduced for SMEs in 2000 & larger firms in 2002 R & D funding for SMEs (less than 250 employees), e.g. Grant for Research & Development (previously the Smart scheme); including grants of up to £200k for development of pre-production prototypes involving a significant technological advance
Facilitating linkages between firms & the research sector	LINK; Food Processing Faraday Partnership	<ul style="list-style-type: none"> In addition to LINK, the government funded Food Processing Faraday Partnership (shortly to be renamed the Food Processing Knowledge Transfer Network) promotes industrial & research sector collaboration in food processing research; but focus on issues of concern to food industry in general

this sub-group and the general forum suggest that thus far this has not and is not in the future likely to involve government adopting a more hands-on, proactive role in shaping the direction of the industry.

It is necessary to note that the English government also runs some other schemes not listed in the table, such as the Rural Enterprise Scheme, that are of relevance to the sector. The latter scheme forms part of the English Rural Enterprise Programme, which implements England's commitments to enhance rural development under CAP reform and is primarily targeted at farmers and the rural economy. There have been examples of the production of dairy products being supported under this scheme, for example on-farm production of speciality cheese, and the schemes are therefore potentially highly significant for the funding of small, niche dairy producers/products. However there are few, if any, examples of 'mainstream' processors being supported. Support for farmers/niche food producers has also been recently enhanced by the adoption by Food from Britain (FFB) of an increased responsibility for the promotion of local/regional foods. FFB is to work with regional development agencies (RDAs) in developing regional food strategies, a development which may see the RDAs generate a higher profile in the sector.

While a number of the latter, such as East Midlands Development Agency and Advantage West Midlands have formulated policies targeted at supporting the food industry (Wilson *et al.* 2003), the impact of these is as yet unknown and to date there has been a lack of noteworthy or high profile examples of RDAs engaging with the dairy sector in a significant way.

The Funding of R & D, Research Institutes & the University Sector

In terms of the potential for dairy firms to harness financial support for research and development, it is evident that smaller companies can potentially avail of a wider range of supports than larger businesses. While the introduction of R & D tax credits for larger firms in 2002 can be seen to be potentially significant, apart from this there are effectively no sources of substantial, strategy-related R & D funding for these companies. Although larger firms may participate in LINK projects, there is a strong emphasis in this programme on the generation of industry-wide in addition to firm-specific benefits, which means that it is not of great value to companies seeking to gain competitive advantage, for example by the development of a particular product or process (interview with DEFRA official). In addition, as outlined in table 3.1, DEFRA has a total annual budget of around £2.8 million for the funding of total food

industry research and development and there is no dairy specific budget. Funding levels are therefore clearly low and notably, while levels of funding were decreasing before 1997, they have continued to decrease, albeit only slightly, since the election of Labour (interview with DEFRA official)⁴.

The technology transfer programmes that dairy firms can draw on are also in general horizontal, cross-sectoral schemes and in addition to LINK and the Food Processing Faraday include Knowledge Transfer Partnerships (whereby small businesses can get funding to employ a university graduate for 1-3 years to work on a particular project) and Regional Technology Transfer Centres (which are aimed at improving technology transfer into the SME sector).

With regard to the research infrastructure, historically the British dairy industry could draw on a very strong and well-resourced array of dairy-focused research institutes and university departments. Throughout the 1960s and 70s and into the 80s government funded institutes and universities such as the National Institute for Research in Dairy (NIRD), the Hannah Research Institute in Scotland and the University of Reading were conducting important basic dairy research and had strong international reputations for research excellence, and provided the industry with a steady supply of highly qualified technical personnel. However during the 80s and 90s the level of funding to these institutions was greatly reduced. Funding cuts led to the closure of the NIRD in the mid-80s and very significant reductions in the numbers of personnel working at the Hannah. While some, more general food research organizations, such as the Institute for Food Research have in recent years been well supported, and while other food research organizations such as Leatherhead Food International and Campden & Chorleywood Research Association continue to be active, no well resourced, dairy-dedicated research institute remains in the sector today.

Also significant, as outlined in chapter two, deregulation of the English industry had led to the ending of the industry's common/public collaborative research programme and also the closure

⁴ Although as noted in chapter two, at a general level government intervention in industry remains comparatively weak in Britain, it is important to highlight here that in recent years the British government *has* developed a number of strategic plans and resource intensive support measures and initiatives with regard to a number of selected, advanced sectors such as bioscience or nanotechnology. An examination of the DTI's website (www.dti.gov.uk) demonstrates how larger firms in these sectors *are* able to benefit from financial assistance for near-market research and development. As Wilson *et al* (2003) highlight, it is evident that while there has in recent years been a tangible increase in government involvement/support of industry, this has in the main been targeted at 'high tech' sectors/activities as opposed to 'traditional' sectors such as food or dairy.

of the Milk Marketing Board's shared-use pilot plant facilities, which had existed as a resource supporting product development in the sector. It was apparent that no efforts had since been made by government to establish or provide financial support to any similar research programme or dedicated research facilities. As a consequence, although the Dairy Industry Association (now Dairy UK) directed a small research programme examining important basic issues such as food safety, no substantial/strategic, industry-wide research programme or research facilities were in evidence.

In summary, combined the various policies, support programmes and initiatives arguably cannot be said to constitute a substantial or coherent industrial policy for the English sector, while the reduction in government funding for dairy-related research institutes and university departments and failure to secure the continued existence of industry research and common use pilot plant facilities, can possibly be seen to point towards a serious failure on the part of government to adequately support the industry's ongoing development.

3.2.3 Industrial Policy in the Irish Dairy sector

Policy Overview

In contrast to the English sector, the dairy industry in Ireland is located within the context of the consistent adoption/implementation of an industry-focused industrial policy over time. The broad food processing industry in Ireland has been identified as a particularly important sector for national economic welfare (e.g. IPRG 1992) and there have been numerous government-sponsored reviews and reports examining and making recommendations on its competitive position; with dairy typically highlighted as an industry of particular strategic importance.

As a consequence, a range of initiatives and supports have been developed by state agencies (for example funding for research and development or marketing) with the intention of enabling dairy processing firms to move into higher value, more advanced market niches. In addition, a number of industry-dedicated research institutes and facilities have been established, for example the Moorepark Dairy Product Research Centre and Moorepark Technology Limited, a pilot plant facility. Further, the Irish dairy industry is also characterised by the presence of significant 'associational economies' (Cooke and Morgan 1998) in the form of strong social and policy networks, in addition to close links between state agencies, research institutions and individual firms (O'Connell *et al* 1997).

Specific Policies and Initiatives Adopted

Table 3.2 below provides an overview of some of the key programmes in the Irish sector, relating to specific areas of activity.

Table 3.2: Overview of Industrial Policy Initiatives in the Irish Dairy Sector

Policy Area	Agencies involved	Summary of Policy initiatives
Financial support for capital investment	Enterprise Ireland	<ul style="list-style-type: none"> • Support for capital investment limited to ground-breaking/innovative projects, i.e. a 'functional food' as opposed to a 'me too' cheddar
Financial support for R & D	Enterprise Ireland	<ul style="list-style-type: none"> • EU funded Research Technology & Innovation (RTI) Competitive Grant Scheme – designed to increase levels of R & D activity in industry (grant of up to €400k in 2004) • R & D Capability Scheme – support for investment in buildings, equipment, & people to build R & D capability (up to 45% funding for projects valued in excess of €3 million)
Support for marketing and promotion	Bord Bia	<ul style="list-style-type: none"> • BB undertakes strategic research reports on consumer trends • Trade development & promotion: coordinates 'Irish' stalls at international trade fares and exhibitions; launched <i>Ireland the Food Island</i> umbrella brand for Irish food and drink; facilitates links between food manufacturers and retail buyers • Establishment of Brand Forum dedicated to food and drink brand issues • Specific support for SMEs and speciality food firms
Promoting the development of new product areas	Enterprise Ireland; Teagasc Dairy Products Research Centre (DPRC)	<ul style="list-style-type: none"> • EI is proactively promoting the development of a vibrant 'functional foods' sector in Ireland • DPRC involved in ground-breaking development work in the infant formula and functional foods areas
Attraction of inward investment in food sector	Enterprise Ireland	<ul style="list-style-type: none"> • EI is endeavouring to attract global food companies, particularly those in advanced/high tech sectors to set up in Ireland
Facilitating linkages between indigenous firms, downstream suppliers & research institutes	Enterprise Ireland; DPRC	<ul style="list-style-type: none"> • EI has formal role of promoting networks and linkages between Irish processors, research institutes and upstream suppliers

The substantive nature of industrial policy support for the food sector is reflected in the fact that the current national development plan makes specific provision for the food sector, with funding of €358 million allocated to the sector for the 2000 – 2006 period. The money allocated breaks down to €152m for capital investment; €105m for research and development, €61m for marketing/promotion and €39m for HRD. The R & D funding is made up of €70 million for institutional or ‘public good’ expenditure and €35 million for in-company research and technology transfer (Department of Agriculture and Food document).

As a consequence of Ireland’s recent reclassification for the purposes of EU state aid rules, mentioned above, since 2000 the industrial development agencies in Ireland have been required to shift funding support programmes away from capital investment projects emphasising large-scale employment creation to those promoting an increase in investment in research and development and human capital among indigenous firms.

In general terms, the primary form of industrial policy support that the EU member states are currently permitted to adopt is funding for research and development and human resource development.

The Funding of R & D, Research Institutes & the University Sector

As outlined in table 3.2, Enterprise Ireland, the development agency responsible for indigenous industry, operates a number of research and development funding schemes which dairy processors can draw on and which can make a significant contribution to the product strategies adopted by individual companies in the form of the provision of substantial funding in support for strategic R & D projects.

As indicated at the beginning of this section, the Irish government has also dedicated very significant resources to creating a strong dairy research infrastructure, most notably through its funding of the Teagasc Dairy Products Research Centre (DPRC, now known as Moorepark Food Research Centre) and Moorepark Technology Limited (MTL). MTL was set up in 1993 as a joint government-industry funded venture and consists of a range of pilot plant facilities that dairy and food processors can utilize. The policy of investing heavily in the research infrastructure has continued with the opening of the Moorepark Biotechnology Centre and the Centre for Alimentary Pharmabiotics in 2002, which are intended to enhance Ireland’s

participation and expertise in the emerging functional foods sector. Both these organisations involve close links between the university and research institute sectors.

Characterizing Industrial Policy in the Dairy sector

In addition to the allocation of very substantial financial resources, Irish industrial policy for the dairy sector is characterized by three distinctive features: by a hands-on and detailed approach to support by state agencies and government officials; by its proactive and strategic nature; and by its facilitative and network-based orientation. These three characteristics are elaborated briefly here.

The work of Enterprise Ireland bears the hallmarks of each of the above features. Its hands-on approach is evident in the manner in which it interacts with client companies. Indigenous companies contacting Enterprise Ireland are allocated a Development Adviser who acts as the primary source of assistance and advice. Advisers work within a 'business development model' encompassing the six areas of business planning, research and development, production/operations, marketing & business development, human resource development and finance. Companies are audited according to their needs in each of these areas and a development plan to target the needs/deficiencies identified is created.

Regarding the proactive and strategic nature of industrial policy, recognizing its growth potential and high value added nature, Enterprise Ireland has been at the forefront of efforts to establish a vibrant 'functional foods' sector in Ireland and development plans are in place to expand functional food sales to 200 million euros in five years (Moorepark Food Research 2003).

Regarding the facilitative and network-based orientation of industrial policy, a notable feature of policy in the sector has been the attraction of inward investment by foreign firms in related industries, in particular the infant formula sector. Multinational babyfood manufacturers including Wyeth, Abbott and Nutricia were attracted to set up in Ireland in the 70s (Foley 1993). These firms have since stayed in Ireland and a key aspect of Enterprise Ireland activity is the promotion of links between the infant formula sector, indigenous processors and research institutes.

3.3 Vocational Training

National Training Frameworks

There has traditionally been a high degree of similarity between the British and Irish training systems. Both countries have historically favoured the adoption of voluntarist rather than statutory approaches to training provision, giving employers the key responsibility and decision-making autonomy regarding training policies (Keep and Rainbird 2003; Garavan *et al.* 1995). In particular in both countries there is a notable lack of a strong tradition of occupational training and associated qualification structures and institutions that are common in much of continental Europe, with the historical exception of the craft trades. The lack of training structures and qualifications can be attributed to the voluntarist training approach adopted by the state as well as a number of other factors, including the absence of institutional architecture such as strong sectoral associations or local employer organizations which underpin the industrial training systems in countries like Germany (e.g. Streeck 1992); the lack of a strong training culture among workers and managers alike; and the adversarial orientation and narrow focus of the industrial relations system (Keep and Rainbird 2003; Rainbird 1990; Garavan *et al.* 1995).

Training in the Dairy sector

England

Qualification structures for general workers have traditionally been underdeveloped in the British dairy industry, however significant numbers of operators historically attended training courses at Reaseheath and other FE (Further Education) colleges (interview with Reaseheath trainer). Regarding current vocational qualification structures, there is no dairy specific NVQ (National Vocational Qualification) and firms generally adopt the NVQ in food and drink manufacturing operations.

In institutional terms, in 2002 the Dairy Training & Development Council, which was a national training organization and run by the Dairy Industry Association (DIAL), was abolished and has been replaced by dairy industry participation in the broader based Food and Drink Sector Skills Council, Improve.

Ireland

The Irish industry has also traditionally lacked qualification structures for operators. In order to address this situation, in 1990 the Dairy Industry Training Managers Advisory Group

(DITMAG), which was a sub-structure of the Irish Cooperative Organisation Society (ICOS) but which is no longer operational, together with FAS (the national training agency) and Teagasc (a food industry research and training body), established a set of five two/three day short courses on various aspects of dairy production, including basic milk processing, natural cheese making etc, with the courses delivered by personnel from the Teagasc Dairy Products Research Centre in Moorepark and jointly certified by FAS & City and Guilds.

3.4 The Institutional Architecture of the Dairy Sector

Tables 3.3 and 3.4 below, provide a brief description of the main agencies/bodies of relevance in the English and Irish sectors.

England

The British dairy sector has historically been characterised by the existence of strong organisational capacity and collective/‘public good’ structures. Until deregulation the Milk Marketing Boards and the equally powerful Dairy Trade Federation, came together under ‘joint committee’ structures to sponsor and undertake various industry-wide activities, most notably marketing/promotion and research and development, the latter through the United Kingdom Dairy Research Policy Committee. Deregulation of the sector brought the dissolution of these structures and while the Milk Development Council (MDC) was established by the government to take on activities such as R&D, the sector at present is in general characterised by a lower level of public good structures and activities.

Table 3.3: Main Sectoral Organisations and State Agencies in the English Dairy Sector

Organisation	Role
Dairy Industry Association Limited (DIAL) (now Dairy UK)	Employer body/trade association
Dairy Supply Chain Forum	DEFRA sponsored body set up in 2002 with purpose of promoting dialogue & cooperation across the dairy chain; involving establishment of sub-groups to address particular issues/problems (see above)
Department of the Environment, Food & Rural Affairs (DEFRA)	Government department with responsibility for dairy sector
Milk Development Council (MDC)	Producer-funded body set up by government to carry forward the public good R & D and promotional activities of the MMBs; R & D activities directed at primary producer issues

Food from Britain (FFB)	Government funded agency with role of promoting food exports & regional foods
Food Chain Centre	Independent agency funded by DEFRA to enhance communication and efficiency across the food chain
Provision Trade Federation (PTF)	Trade association which provides a price monitoring service that strongly influences price trends in the commodity sectors
University & research sector: University of Reading, University of Huddersfield, Hannah Research Institute, CHARIS (a food research consultancy linked to the Hannah), Reaseheath College etc.	State funded universities, research institutes and FE colleges

Ireland

The Irish dairy sector is characterized by a high degree of ‘institutional thickness’, with the existence of a large number of sectoral organizations and state agencies that dairy processors can draw on and which have close links between each other.

Table 3.4: Main Sectoral Organisations and State Agencies in the Irish Dairy Sector

Organisation	Role
Irish Dairy Industry Association	Employer body/trade association
Irish Cooperative Organisation Society (ICOS)	Coordinating body for cooperatives in Ireland
Department of Agriculture and Food	Government department with responsibility for dairy sector
Enterprise Ireland	State agency responsible for promoting the competitiveness of indigenous firms & attraction of inward FDI (Foreign Direct Investment) in the food sector
Bord Bia (Irish Food Board)	State agency responsible for marketing and promotion of Irish food products
Teagasc Dairy Products Research Centre (DPRC; now Moorepark Food Research Centre)	Teagasc is a state agency that provides research, advisory and training services for the agrifood industry. The DPRC is a research centre that undertakes basic & applied dairy research, frequently in collaboration with dairy processors & the infant formula sector & also runs training courses for the sector
Moorepark Technology Limited (MTL)	Joint Teagasc-industry funded venture, consisting of pilot plant provision for use by dairy firms
University sector: University College Cork (UCC), University College Dublin (UCD) etc.	State-funded universities

3.5 Conclusion

This chapter has outlined the institutional frameworks within which the English and Irish dairy sectors operate. It has highlighted how while the English industry was once characterised by heavy government intervention and the existence of strong 'public good' facilities and activities, in recent years government policy towards the industry has reflected a reluctance to become involved in shaping the strategic direction of the industry and has emphasised the promotion of competition and enhancement of efficiency over other considerations. In addition, it was highlighted how there were few industry support measures that English dairy firms could draw on and how the dairy-related research institute and university sector had been significantly weakened over recent decades.

In contrast, government policy towards the industry in Ireland was found to be centrally based on the implementation of a strategic and resource intensive industrial policy for the industry, in the form of the identification by government agencies of activities or niches of strategic importance, the provision of well-resourced research and development funding programmes and the ongoing strengthening of the dairy-related research institute and university sector.

Chapter Four: Overview of Key Trends in the Irish & English Dairy Sectors

4.1 Introduction

This chapter aims to do four things. Firstly, it will provide an overview of key structural characteristics and general competitive trends in the world and European dairy industries. Secondly, it will examine more specific, product market trends in the world industry in some detail. Thirdly, the main structural and ownership characteristics and competitive, turnover and employment trends in the English and Irish sectors in recent years will be outlined. Fourthly, a number of distinctive characteristics of the dairy industry will be examined.

4.2 Key Structural Characteristics & General Competitive Trends in the World & European Dairy Industries

Levels of International Competition

While restricted by the costs and difficulties associated with transporting bulky and perishable products, significant international trade in dairy products does occur. However, overall this is limited and most trade takes place within the major trading blocs such as NAFTA and the EU (Promar and Prospectus 2003). Overall only around 7% of world dairy production is moved around the globe (ibid: 63). An important reason behind the 'regionalisation' of dairy trade is the adoption of trade protection policies by national and regional governments, such as the EU's CAP system. The international trade that does occur is concentrated in bulk products such as skim milk powder (SMP), whole milk powder (WMP) and casein, although there is a significant international market for cheese and butter also.

Within the EU, it is widely predicted that enlargement will lead to significant increases in trade and competition in the European dairy sector, with the potential for cheap imports from large dairy producing countries such as Poland seen to pose particular challenges for Western European producers (ibid; ICOS 2000).

The Supply Structure

The world dairy sector is highly fragmented in terms of ownership, reflecting the localised nature of production and consumption of most dairy products. While there are a limited number of 'global' dairy companies such as Danone or Nestle, a significant number of companies are active on a regional basis (Euromonitor 2003a: 142). The global companies that do exist account for a relatively small share of the overall world market, although their share is increasing. Danone has the largest market share at 4.8% in 2001, followed by Nestle, Kraft Foods and Dean Foods with 4.4%, 3.7% and 3.3% respectively (ibid: 141).

In terms of products, the manufacture of milk, due to its bulky and perishable nature, tends to be local and have a limited import/export market. Cheese is somewhat more concentrated, with Kraft Foods having a 10.6% share in global cheese sales in 2000, a share that is significantly accounted for by its processed brands such as Philadelphia (Euromonitor 2003a: 85). However, the remaining 'big' players in the sector each account for less than 3% of world sales (ibid.).

Concentration of market share is markedly higher in yoghurt than in either liquid milk or cheese. Danone held over 19% of global sales of yoghurt in 2001, with Sodiaal and Nestle accounting for 8.4% and 5.5% respectively (ibid: 91). In general terms, developments in the yoghurt sector represent a trend towards the increased significance of global dairy firms and it is predicted that in future there will be a trend towards increased global branding of products (ibid: 177).

Consolidation and Concentration of National Dairy Sectors

Consolidation in the number and market shares of dairy processors operating in national markets has been a pervasive trend across the world dairy sector in recent years, with numerous mergers and acquisitions taking place. The principal cause of this trend has been the emergence of scale and the achievement of cost efficiencies as the primary source of competitive advantage in many international dairy product markets, with changes in retail structures, outlined below, also important in driving the strong emphasis on achieving scale and reducing costs (Promar and Prospectus 2003).

Notable examples of consolidation have been the merger in 2001 between the New Zealand Dairy Board and Kiwi Cooperative Dairies to form Fonterra Cooperative Group, which processes over 90% of New Zealand milk, and the merger in 2000 between MD Foods of Denmark and Arla of Sweden to create Arla Foods. Significant consolidation has also occurred

in the German, Australian and American sectors (ICOS 2000). The process of consolidation has led to previously predominantly nationally focused companies, such as Fonterra and Arla Foods, adopting a more regional or international focus, as indicated above.

Trends in Distribution

The dairy sector is heavily influenced by competitive trends in the wider food retailing sector. A key trend in food retailing is the increasing market share of multiple grocers and the corresponding decline in share of independents. This trend has been mirrored in terms of the sale of dairy products, with multiple grocers accounting for 64% of dairy sales in Western Europe in 2002, compared to 12.6% for independent food stores (Euromonitor 2003a).

A highly significant development in food retailing has been the trend towards increased consolidation and competition in the world sector and the emergence of multinational retail players (ibid; Promar & Prospectus 2003). The aggressive expansion into Europe by US company Wal-Mart, the world's largest retailer, is the most obvious manifestation and stimulus of this trend, which has also seen the development of Auchan and Royal Ahold into pan-European operators. The international expansion of Wal-Mart has coincided with the growth of discounters such as Aldi and Lidl. Discounters accounted for 12.5% of dairy sales in Western Europe in 2002 (Euromonitor 2003a: 156).

Wal Mart's competitive strategy is based on aggressive international expansion and the driving down of costs through economies of scale, and its arrival and the expansion of discounters has greatly intensified competition between retailers in Western Europe and placed a premium on scale, cost reduction and improving profitability (ibid). A consequence of these developments has been very substantial consolidation of domestic retail sectors.

The fall-out from trends in the world retail sector have been experienced at first hand by food and dairy suppliers, in the form of intense price pressures and increased costs in the form of increased quality and service requirements and the general passing-on of costs, and 'own-label' suppliers have been particularly affected by these trends. The impact of consolidation has been to increase the emphasis on the relationship between food manufacturers and a small number of increasingly important retail accounts (Promar and Prospectus 2003: 169).

In general terms, the negative consequences of retail trends for suppliers are evident in the fact that the 2003 Euromonitor *World Market for Dairy Products* (Euromonitor 2003) report outlines that intense retail competition, which resulted in widespread discounting across the food sector, contributed directly to a reduction in retail sales value of dairy products over the period 1998 to 2002.

The Continued Importance of Small Firms

While the trend towards consolidation and increased scale of operations, alongside the concentration in retail structures, has placed great challenges in the way of small dairy firms and led to many of the same closing down, small firms that manufacture speciality or niche products such as farmhouse cheese or organic yoghurt, continue to survive and indeed thrive (ICOS 2000; Promar and Prospectus 2003).

4.3 Product Market Trends in the World Dairy Sector

A review of trends in the dairy sector reveals that behind the aggregate figures on dairy production and trade lie many distinct competitive trends and dynamics. At a general level, it is possible to distinguish between consumer-focused and products, often in bulk form, sold for industrial uses. Identifiable trends within these two broadly distinct areas are now examined.

Consumer Products

In the consumer products area, the main product market and consumption trends that are evident from market reports and reviews of trends at a world level (e.g. Euromonitor 2003a; Forfas 2003; Promar and Prospectus 2003) are as follows:

- A decrease in volumes of dairy products consumed and of liquid milk, butter and cream in particular, alongside an increase in *value* of products consumed. This is particularly evident in developed regions such as Western Europe where growing levels of disposable income are leading to consumers 'trading-up' in the products they consume. Consumers are increasingly looking for innovative, speciality/niche and indulgent products, while at the same time expecting value for money from 'staple' products such as butter, milk and cheese
- Alongside the growth in indulgent products, a growth in consumption of health promoting products, for example vitamin-enriched milks or 'functional food' products such as prebiotic or probiotic yoghurts

- In part linked to the growth in disposable income, a growing *segmentation of demand* and as a consequence, a growth in dairy products targeted at particular groups of consumers or market needs
- An increased consumer concern regarding mass-produced products resulting from food scares such as BSE and foot and mouth and a resulting desire to consume natural or 'authentic' produce, such as organic products produced by small-scale artisanal or farmhouse producers
- Increased consumption of dairy products in non-conventional ways, resulting from changes in lifestyles and eating patterns, e.g. portable, re-usable products and single-serving products

These trends have had significant consequences for the consumption, production and marketing of generic dairy categories such as butter, milk, cheese and yoghurt. Volumes consumed of basic, staple products such as butter and milk have declined and consumers demand low prices for these as well as mainstream/standard cheeses. Chief beneficiaries of the trends towards indulgent and healthy products have been yoghurts, fermented dairy drinks and dairy desserts (Euromonitor 2003a; Promar and Prospectus 2003). In particular, the demand for healthy products has been crucial to the large recent increase in yoghurt and short life dairy product (SLDP) consumption. The chemical and biological properties of yoghurt and fermented dairy drinks make them particularly effective for the delivery of health-enhancing pre- and probiotic cultures as well as vitamin and mineral supplementation. The fermented milk drink sector, for example, which has experienced enormous growth in recent years, is dominated by probiotic products, most notably Actimel from Danone. The increase in demand for speciality and 'authentic' products has driven strong growth in sales from small, farmhouse and organic producers, with strong growth in the organic yoghurt market in particular.

Regarding the packaging of products, liquid milk, cream, butter and many cheeses continue to be packaged and consumed as commodity/staple products and are characterised by a high share of own-label sales. This is a general trend worldwide, although there are some exceptions (Euromonitor 2003a) and competitive strategies and positioning in these sectors is centrally founded on price competitiveness.

In the yoghurt/SLDP sector, while own-label products continue to be significant, in recent years there has been a shift towards branded products. This change is related to the consumption trends

mentioned above, as well as to the competitive strategies and responses of retailers, own-label producers and branded players alike. Own-label manufacturers have been less effective than branded producers in responding to consumer demands for innovative and sophisticated products and ease of consumption. Branded producers have been central to the development of the many novel dairy products introduced to the market in recent years, and in particular the 'functional' consumer products such as probiotic yoghurts and fermented milk drinks. As partly indicated above, multinational companies such as Danone, Nestle and Muller that possess such brands are driving the development of the SLDP sector (Euromonitor 2003a).

The Bulk Product Sector

Traditionally a very high proportion of dairy production, in addition to bulk butter and cheese, has been made up of basic powder products such as skim milk powder (SMP), whole milk powder (WMP), casein or basic whey powder; and this has particularly been the case in export-oriented countries. Together with basic/traditional consumer products such as milk and cheese, the above products continue to dominate the production and sale of dairy products in general in both volume and value terms (Jansen and Krijer 2003). The dominant trend in the production and marketing of bulk products in recent years has been the pursuit of low costs and economies of scale. As outlined above, this has been achieved via the merger of processors and the concentration of production into a smaller number of large-scale units (Promar and Prospectus 2003).

While the production of commodity-type products is likely to remain important in the medium to long term, there is a growing shift away from the production of the same towards the manufacture of tailored ingredients products and powders with specific 'functional' properties. In addition to increased environmental regulation, which is considered in section 4.6 below, the key drivers behind this trend have been the growth in the food service, prepared consumer foods (PCF) and functional foods/ 'nutraceutical' sectors (Jansen and Krijer 2003).

The growth of the PCF sector has contributed to increased demands on suppliers to provide tailor-made products – *ingredients* as opposed to mere commodities - with functional particular properties such as water solubility or heat stability, which PCF manufacturers require for the ready-meal or pizza they are making. This has led to an enormous growth in partnership-style collaborations between ingredients producers and food manufacturers. Dairy producers have

been strong beneficiaries of this trend due to the particular nutritional and functional properties of dairy products (Jansen and Krijer 2003).

Alongside the rapid growth in consumption of functional *consumer* dairy products, there has been an enormous growth in the supply of dairy products as *ingredient* inputs to the functional food and 'nutraceutical' sector. Jansen and Krijer (2003) trace the development over the last number of years of 'non traditional dairy (NTD) products', which they define as 'those products that emerge from the ongoing fractionation of milk into its various constituents.' (ibid: 19). They outline how in recent years there has been an increasing trend by dairy companies across the world towards the extraction/capture of specific protein or mineral fractions from milk and its constituents. The most prominent among the NTDs is whey. Whey is the watery part of milk that is left after the production of cheese and casein and is rich in lactose, proteins, minerals and vitamins.

While until a few decades ago liquid whey was regarded as a waste product, increased environmental legislation has meant that dairy companies have been forced to examine alternative uses of the product. Technological developments have enabled dairy companies to break whey down into its various components, moving the sector on from the production of basic whey powder. While initially this development focused on the extraction of macrocomponents such as proteins and lactose, in recent years refined techniques mean that microcomponents such as milk salts, peptides, immunoglobulins and lactoferrin can be targeted and extracted. Whey protein is a very pure protein and its microcomponents contain specific health-enhancing properties, and as a consequence recent years have seen the development of close partnerships between dairy processors, PCF, infant formula and other 'nutraceutical' manufacturers with the goal of harnessing these functional properties (ibid.).

4.4 Overview of the British and Irish Industries⁵

4.4.1 Britain

Key Features

The dairy industry in Britain has traditionally been focused on the production of consumer products for the domestic market, with liquid milk accounting for the bulk of production. Liquid

⁵ Note that this section focuses on outlining the key characteristics of the *British* or *UK* industry as opposed to the *English* industry alone. This is because the information available was generally not disaggregated to an individual country level. However as England is by far the largest part of the British/UK market this approach is arguably relatively unproblematic.

milk accounted for 49% of all milk used by dairies in 2001, with the balance accounted for by cheese (21%), milk powders (11%), condensed milk (4%), yoghurt (2%) and other products (6%) (Dairy Council 2003: 122). Britain is a net importer of dairy products, having a negative trade balance of £564 million in 2001 (KPMG 2003: 21).

Key Trends in the Sector since Deregulation

As outlined in chapter three, the British dairy sector operated as a regulated duopoly up until 1994 and had a number of institutional structures to support this system. This institutional context traditionally underpinned high levels of profitability in the sector and in addition to the system of 'end-use' pricing, the CATFI (common approach to financial information) system for the production of butter and powder was central to this. CATFI involved the operation of a formula-based system that guaranteed processors a fixed operating margin for the production of butter and powder.

Both CATFI and end-use pricing came to an end with deregulation. The government gave the producer sector (i.e. milk farmers) input regarding the structures that would be adopted after deregulation and what resulted was the establishment of producer groups in England and Wales, Scotland and Northern Ireland, within the context of a formally open market for milk purchasing. After deregulation therefore the resulting producer group in England and Wales, Milk Marque, succeeded in signing up a large number of farmers, although a significant number of farmers entered into direct supply relationships with processors.

The deregulation process did not go as planned however and in 1999 the Monopoly and Mergers Commission found Milk Marque to be effectively acting as a monopoly seller of milk. Milk Marque was subsequently broken up into a number of regional producer groups, which remain active in the sector today. Overall the first 6-7 years after deregulation were characterised by extreme instability and turbulence, principally caused by conflict between Milk Marque and its successors and dairy processors regarding the operation of the milk selling system and milk prices, and it is only in the last year or two that the sector has begun to become more stable, although conflict between producers and processors is still highly significant (KPMG 2003; Milk Task Force Report 2001; *Dairy Industry Newsletter*, various editions, *Milk Industry*, various editions).

The ending of end-use pricing and CATFI, combined with uncertainty and conflict in the area of milk supply and the growing influence of retailers in the distribution of dairy products, created an ultra-competitive and harsh climate for processors from 1994 onwards (Oliver 2000; *Dairy Industry Newsletter*, various editions). The central onslaught from retailers came in the move from doorstep delivery to the sale of milk in supermarkets, which was both rapid and dramatic during the 1990s. Doorstep milk had long been the 'jewel in the crown' of the industry due to the high margins realised there. The rapid decline in doorstep sales and the policy of retailers of selling milk as a 'key value indicator' had a strongly negative effect on processor margins.

The fall-out from deregulation and subsequent developments precipitated dramatic changes in the overall structure of the sector and in the identity of the main companies in it. The extent of the pressure on processors in the post deregulation environment was reflected in calls by leading companies such as Unigate and Northern Foods/Express Dairies for consolidation in the sector in the mid-to-late 90s and early 2000s.

The sector did in fact see a high level of consolidation from the mid-90s on, with most of the rationalisation occurring in the liquid milk sector and with many small and medium sized, privately owned companies being either acquired or going out of business. The trend towards consolidation has continued in recent years with the number of companies receiving milk supplies in England and Wales experiencing a steady decline from 120 in 1998 to 99 in August 2003 and, notably, the top ten processors (in the UK) accounting for 70% of all milk processed by August 2003 (www.dairyindustrynewsletter.com , accessed October 2003).

In terms of the changes in the identity of the main players in the sector, most notably Dairy Crest (which had historically been the processing arm of the Milk Marketing Board) acquired the liquid milk, cheese and butter/powder businesses of Unigate in 2000 and the subsequent sale by Unigate of its spreads and yoghurt businesses in 2002 (the former also to Dairy Crest), effectively marked the exit from the sector of a company which for many years had been the 'giant' of the dairy industry. The periods both before and after deregulation also saw the entry of a large number of foreign processors into the British market, principally in the form of Scandinavian and Irish-owned cooperatives, who quickly took up key positions in the sector (see further below) and whose central objective was to tap into the large domestic consumer market.

With regard to retailing, the British retail sector has closely mirrored developments in the world sector in recent years. Highly influential was the entry into the sector of Wal-mart, which acquired Asda in 1999. The entry of Wal-mart has sparked a ferocious and ongoing price war between the major retailers and has led to significant consolidation in the sector. The UK food retail sector is the most concentrated in Europe, with the top five retailers accounting for over 61% of food sales in the early 2000s (Mintel 2003). The more recent takeover of Safeway by Morrisons will have further reinforced this particular characteristic of the UK sector. A consequence of the retail structure is the high proportion of dairy sales accounted for own label sales, at approximately 30% in 2002 (Euromonitor 2003a: 158).

In addition to liquid milk, the competitive pressures and in particular the increasing power of retailers, have also been sharply felt in others parts of the industry, with processors in the cheese, yoghurt and spreads sectors also coming under strong pressure. This situation has become particularly acute in the last few years, with the increasingly competitive climate in the retail sector causing retailers to increasingly squeeze supplier margins (e.g. KPMG 2003).

Ownership Structures

The traditionally low level of vertically integrated/cooperative ownership makes the British dairy processing sector somewhat unique in international terms, given that cooperative ownership is an almost ubiquitous phenomenon across the world dairy sector (Grant 1991; KPMG 2003). In Britain there has traditionally been a clear divide between farmers/producers and processors and while a consequence of deregulation has been the entry of producer groups into processing activities, at the time of the research undertaken for this project the level of cooperative ownership was still low, at around 5% (KPMG 2003: 30). This proportion has however since increased quite dramatically.

With regard to processors, while private ownership has been significant, particularly among small and medium companies, the larger and historically dominant companies in the sector such as Unigate, Express Dairies and Northern Foods, have been plcs. As outlined above, the entry into the sector of international companies - such as the Scandinavian cooperative Arla, the Irish processor Glanbia, privately owned German company Muller Dairies and global multinationals Nestle and Danone, has significantly altered the ownership structure of the sector in recent years.

Main companies

Table 4.1 below provides an overview of the top five dairy processors in the UK by volume of milk processed.

Table 4.1 Top Five UK Processors by Volume of Milk Processed 2003

Company	% of Milk processed	Nationality/Ownership status
Dairy Crest	18	British/plc
Express Dairies	8.5	British/plc
Glanbia	8.5	Irish/plc
Robert Wiseman Dairies	8	British/plc
Arla Foods	7	Scandinavian/coop
Total	50	

Source: figures taken from Dairy Industry Newsletter website (www.dairyindustrynewsletter.com), October 2003

4.4.2 Ireland

Key Features

The dairy sector in Ireland is highly significant in economic terms, with the sector accounting for 2.5% of Irish GDP in 2000 (Promar and Prospectus 2003: 37). In contrast to Britain, only about 10% of raw milk in Ireland goes to the liquid market, with the vast bulk going to the production of butter, cheese and powders such as SMP, WMP and casein. Also in contrast to Britain, Ireland is a net exporter of dairy products, exporting over 80% of dairy output. A notable characteristic of the Irish sector is the seasonal nature of production, with a 'peak to trough' ratio of 6:1 in 2001 (Promar and Prospectus 2003).

In comparison to countries such as New Zealand, Denmark and the Netherlands that are of similar size and which also have significant dairy sectors, the Irish dairy sector is comparatively fragmented. While in Ireland the six largest companies account for 80% of the milk pool, this amount is accounted for by one company in New Zealand and Denmark and two companies in the Netherlands (Promar and Prospectus 2003: 25).

Recent Trends

Although the Irish sector remains comparatively fragmented, the sector did see significant consolidation in the 1980s and 90s and this trend has continued during the last few years. A key driver of consolidation was the introduction of quotas in 1984. The most significant consolidation occurred in 1997 with the merger between Avonmore and Waterford to form Glanbia, Ireland's largest dairy firm, which currently accounts for 27% of all milk processed in the Irish sector. 2000 saw the merger of a number of medium sized coops, while in 2001 the Kerry Group acquired Golden Vale, which at the time was Ireland's third largest processor. The purpose of these mergers was to achieve increased scale and reduce costs, and a consequence has been the closure of many factories and significant reductions in numbers employed in the sector.

The recent government/industry sponsored report on the Irish sector recommended that the number of processing plants for each of butter, powder and casein production be reduced from current levels of eleven for butter and powder and seven for casein, to four for each product, and that it was necessary for a consolidated player to emerge in the medium term that would process 70% of the milk pool (Promar and Prospectus 2003: 11-12); suggesting that it is likely that the sector will see more factory closures and job losses in the future.

The Irish retail sector has also traditionally been comparatively highly fragmented and characterized by a low level of own-label sales. While remaining relatively fragmented, with supermarkets accounting for 34% of food sales in 2001 (Euromonitor 2003b: 20), recent years have seen the entry into the sector of Tesco and the international discounters Aldi and Lidl, a development which marks the acceleration of a trend towards consolidation in the sector. The entry of these firms is leading to a dramatic shake-up in the sector, with Tesco attempting to increase the level of own-label sales, including sales of dairy products and milk in particular, and adopting a low prices strategy in an attempt to win business from established local players. Domestic retailers such as Dunnes Stores have reacted by attempting to copy the Tesco strategy. As a consequence, processors in Ireland are currently experiencing many of the patterns identified in the British sector, albeit still to a lesser extent than their English counterparts. Own-label sales in dairy accounted for 9.4% of total sales in 2001, up from 7.9% in 2000 (Euromonitor 2002: 4).

Ownership Structures

In contrast to Britain, the Irish dairy sector has traditionally been dominated by vertically integrated cooperatives. This changed significantly in the 1980s when several of the main processors moved towards either plc or 'hybrid' cooperative/plc structures (in the case of the latter, while they are quoted on the stock exchange cooperatives in most cases have retained a controlling share of ownership).

Main companies

Table 4.2 below provides an overview of the top five dairy processors in Ireland. All are Irish-owned.

Table 4.2 Top Five Irish Processors by Volume of Milk Processed 2003

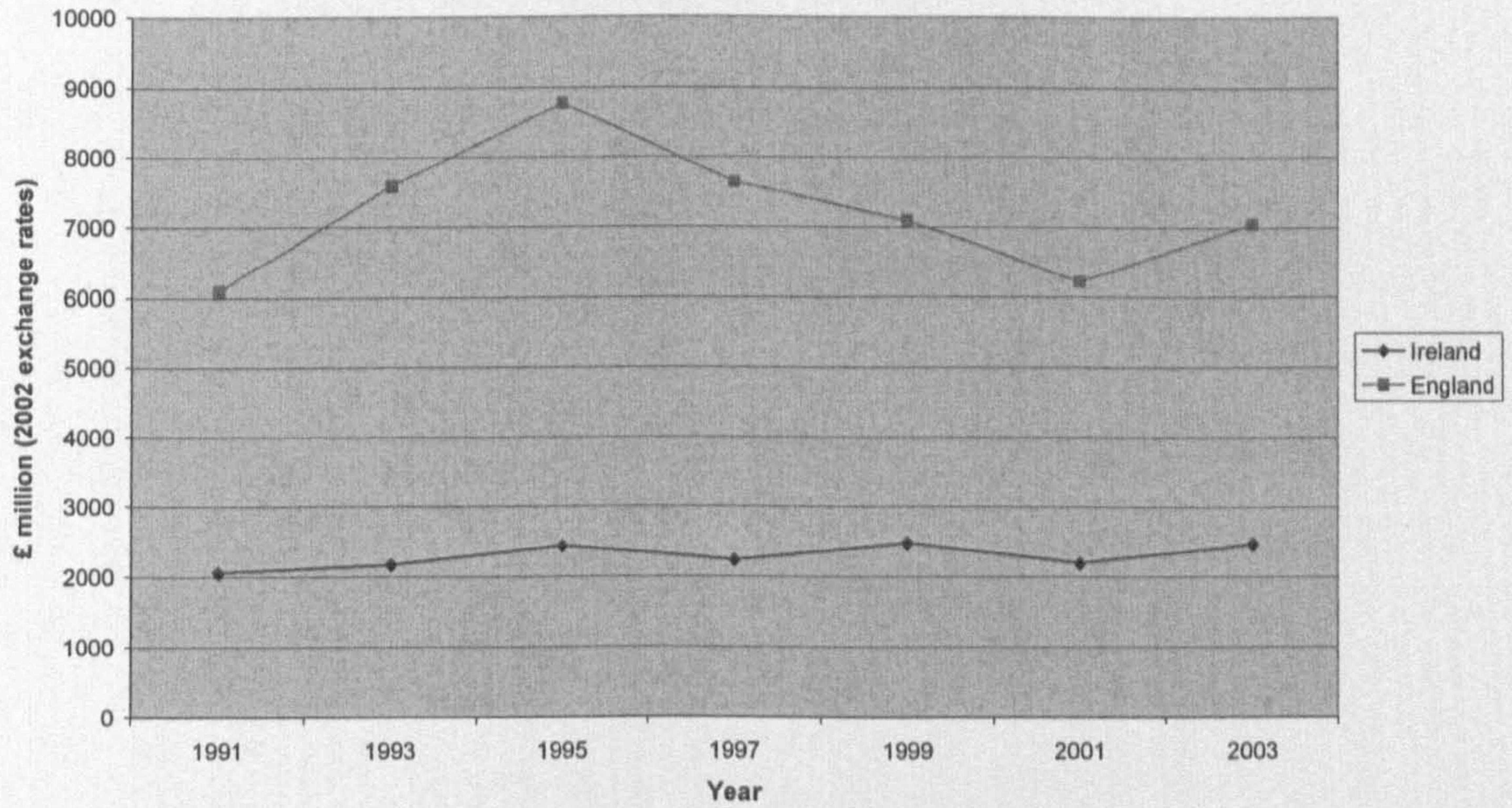
Company	% of Milk processed	Ownership
Glanbia	27	Hybrid plc/coop
Lakeland	17	Coop
Kerry Foods	17	Plc (coop has a minor share)
Dairygold	16	Coop
Carbery/West Cork	13	Coop
Total	90	

Source: figures taken from Dairy Industry Newsletter website (www.dairyindustrynewsletter.com), October 2003

4.5 Trends in Turnover & Employment

Figures 4.1 and 4.2 below outline recent trends in turnover and employment in both the English and Irish industries. While turnover in the Irish sector has witnessed relatively steady, gradual growth, the instability in the English sector has evidently contributed to a large fluctuation in turnover levels, with a very sizable decline between 1996 and 2001 before a partial recovery between 2001 and 2003; ultimately leading to a lower level of growth there than in the Irish sector. Similarly in relation to employment, although the Irish sector has witnessed a sizable reduction in numbers employed, the English sector has seen a significantly greater proportional reduction.

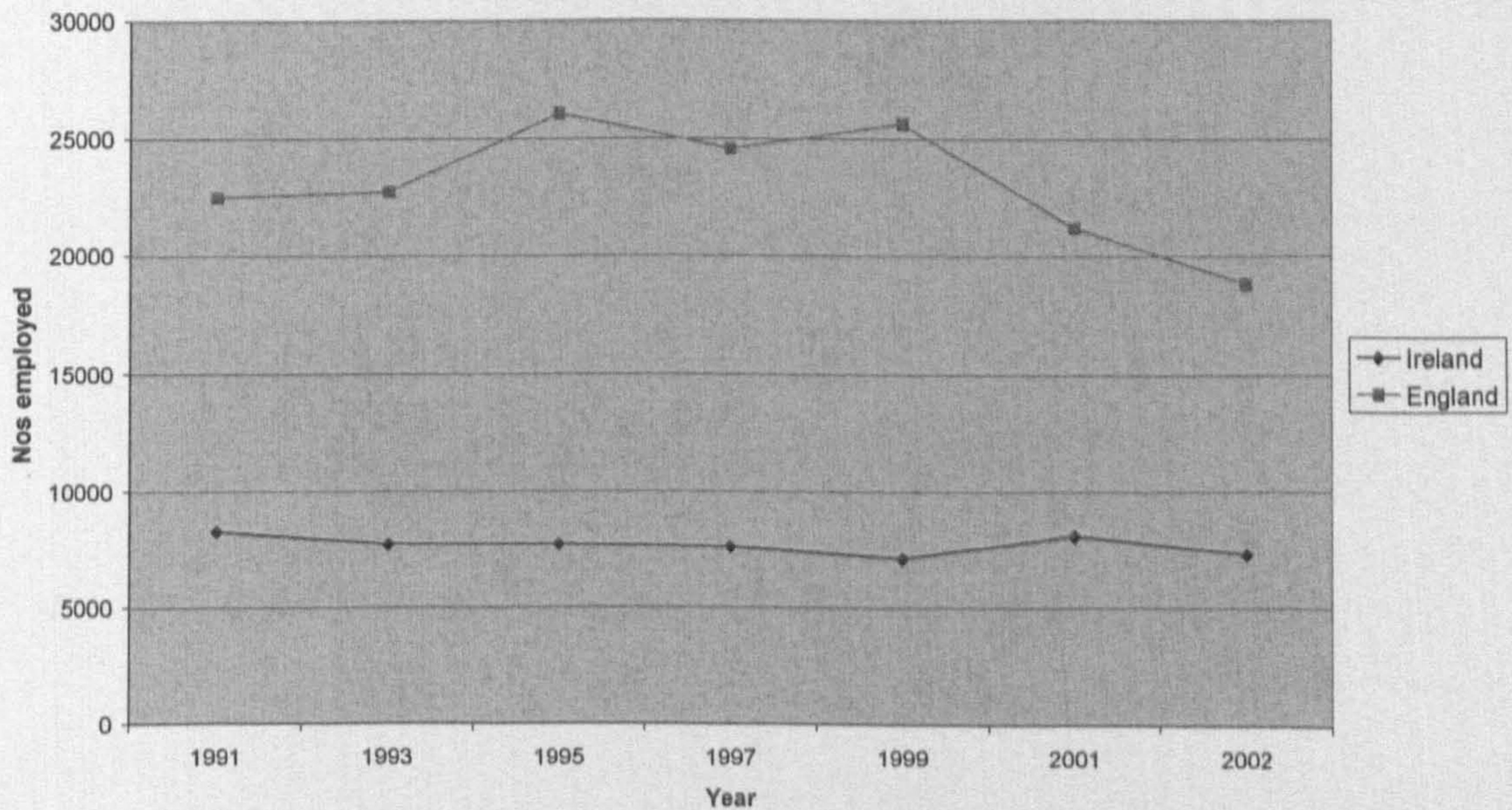
Figure 4.1 Dairy Industry Turnover 1991-2003



Source: Central Statistics Office, Office for National Statistics

Note: figures for Great Britain and not England used; no turnover figures are available for England alone

Figure 4.2: Dairy Industry Employment 1991 - 2002



Source: Central Statistics Office, Office for National Statistics

4.6 Particular Features of the Dairy industry

A Low Margin Sector

A significant issue for dairy companies is the low level of operating margins and profitability in the sector (Euromonitor 2003a). The Promar and Prospectus (2003: 43) report on the Irish sector found that the operating margins achieved in the dairy processing businesses of Irish processors averaged just 2.7% in 2001, despite the fact that 2001 'was a particularly strong year in terms of profitability in the Irish dairy industry.' Operating margins and profits have also come under strong pressure in the British sector in recent years, with the Milk Task Force Report concluding that 'profits among processing companies are not high by food industry standards' (Milk Task Force Report 2001: 28).

While profitability is in general low across the sector, economies of scale and the possession of diversified product portfolios and premium-oriented brands give global food/dairy conglomerates such as Danone, Nestle and Philip Morris higher operating margins than local producers and also the ability to fund product innovation, that will in turn sustain higher prices (Euromonitor 2003a; KPMG 2003: 105). All three firms reported margins of above 10% in 2001 (Euromonitor 2003a).

While it is the low margins obtained for typical dairy products such as butter, milk, cheese and bulk powders that account for the generally low operating margins of processors, it is important to note that some product niches offer the potential to earn high margins. As noted, the marketing by companies such as Danone of premium branded products contributes to their high profitability levels. The dairy brands of these firms are concentrated in the yoghurt/SDLP sector and it is this sector that would appear to offer the greatest earning potential at present. Illustrative of this in the British sector is Muller Dairies, which produces a wide range of branded yoghurt and dessert products and is a highly profitable business (KPMG 2003; Williams de Broe 2002). The production of tailored ingredient products also enables processors to increase margins (Jansen and Krijer 2003).

Change in Qualitative Demands on Processors: Product Safety, Quality and Environmental Regulation & Retailer Service Requirements

A highly significant trend in the international food and dairy sectors in recent years has been the increasing concern on the part of consumers, retailers and regulatory agencies with the issues of

food safety and quality (Forfas 2003). Ensuring food safety and quality has become of paramount importance for retailers and food manufacturers in particular, and there has been a continual increase and tightening of the demands placed on suppliers in both quantitative and qualitative terms. More specifically, there has been a significant increase in the adoption of accredited quality assurance schemes such as ISO or the British Retail Consortium (BRC) standard, and firms have been obliged to incorporate HACCP (hazard analysis and critical control point) principles into their operating systems. More recent developments have included the adoption by many firms of the latest ISO standard, ISO 9000: 2000 and CLAS accreditation for their laboratories.

In addition to requiring the adoption of general accreditation/assurance systems, technical specifications required by retailers and food manufacturers have tightened significantly and there has also been a significant shift in the locus of responsibility for food safety and quality issues from retailers/manufacturers to their suppliers, a change which is related to the intensification of competition in the retail and broader food manufacturing sectors.

Significant changes have also occurred in the area of environmental regulation in recent years (Forfas 2003). The adoption of the internationally recognised environmental standard, ISO 14001, has become common among suppliers in the food sector. In the dairy sector, the European Integrated Pollution Prevention and Control (IPPC) directive means that all large dairies were required to have an IPPC permit by 2005 and are required to undertake significant steps to reduce pollution and waste levels.

Alongside quality and environmental demands, processors supplying the retail sector and private label producers in particular, have been faced with many new and more demanding product and service demands in recent years, which have included the movement to centralised distribution and seven day delivery (Forfas 2003; *The Grocer*, various editions).

4.7 Conclusion

This chapter began by providing an overview of the key structural features and general competitive trends in the world dairy sector, and followed this with an examination of important trends in a number of generic product market niches. Although predominantly organised on a national basis, a significant process of regionalisation/internationalisation was found to have

taken place in the world sector over recent years, alongside an increasing penetration of dairy sales by large, brand-centred multinationals such as Nestle and Danone. In relation to product market trends, while basic, commodity-type products remained dominant in both the broad consumer and bulk product sectors, there was strong evidence of growing product market differentiation and potential to generate high returns.

The chapter next outlined the central defining characteristics, primary recent competitive trends and identity of the five largest companies in both the English and Irish sectors. A key similarity identified between the two countries was the fact that both sectors had recently experienced significant consolidation and were subject to an increasingly difficult food retail environment, while important differences lay in the fact that firstly, the English sector had historically been dominated by plcs and the Irish sector by vertically integrated cooperatives, and secondly, that the English sector had recently witnessed very substantial foreign direct investment while the Irish industry had not and remained dominated by indigenous processors. A comparison of trends in turnover and employment between the two industries highlighted substantially greater fluctuation in the same in the UK industry compared to the Irish industry for the period 1991-2002/3.

Finally, some important, additional structural characteristics and competitive trends in the dairy industry were highlighted, namely dairy's status as a 'low margin' sector and the substantial recent ramp-up in the product safety, quality and environmental regulations and retailer service requirements imposed on and expected of processors.

Chapter Five: Methodology

5.1 Introduction

Chapter two outlined that the overarching, general research question guiding this study is whether the presence of an industrial policy in Ireland contributes to 'better' skills and employment outcomes (for example greater opportunities to work with advanced products or processes and/or higher wage levels) in the Irish dairy processing industry than in the English industry, where there is no similar industrial policy but instead a reliance on the operation of market forces alone to determine competitive and strategic outcomes. Having conducted in chapters three and four a review of the institutional and business contexts of both the English and Irish sectors, the purpose of this chapter is to outline the philosophical stance or position relating to the nature and conduct of social research underpinning this research and to set out and justify the overarching research approach and specific data collection and analysis methods and techniques adopted.

The first main section of this chapter will therefore outline the metatheoretical assumptions underpinning the research. In this regard issues of *ontology*, or views/positions regarding the nature of reality in the social world, and related to this, *epistemology*, or views on how we develop knowledge and what is appropriate knowledge about the social world, will be addressed (Bryman 2004: 3).

Secondly, the strengths and weaknesses of the case study approach, which is the encompassing data collection method adopted, will be outlined, before in the third section a discussion of the merits of different case study design options and data collection techniques which can be adopted within a case study approach will be discussed, and a description of the particular methods and substantive research actually conducted provided. The third part of the chapter will consist of a presentation of the methods used in recording and analyzing the data collected, before in the final, fourth section, a conclusion will be provided.

5.2 Ontological & Epistemological Standpoints

'Critical realism' (Ackroyd and Fleetwood 2000; Danermark *et al* 2002; Sayer 2000) is seen to be the most appropriate philosophical framework or 'paradigm' (Burrell and Morgan 1979) to adopt in this research.

The value and usefulness of critical realism is seen to lie in its central ontological assumption that while objective, reality in the social world is highly complex, with an often hidden or obscured material substrate of 'generative mechanisms' or causal powers operating to determine substantive outcomes and processes. The adoption by social scientists of critical realism as a guiding philosophical framework is therefore seen to help avoid the positivist bias of only recognising as valid those phenomena in the social world that are empirically observable and measurable and also the tendency in the more extreme versions of interpretivism to argue that the social world can be reduced to language and discourse alone without any ongoing objective or material basis (Ackroyd and Fleetwood 2000; Danermark *et al* 2002; Sayer 2000; Bryman 2004).

From an epistemological perspective, critical realists argue that social scientists may validly adopt a combination of 'deductive' (e.g. the questionnaire survey) and 'inductive' (e.g. the qualitative, semi-structured interview) data collection techniques and methodological approaches in order to examine the particular issue at hand, an approach that Danermark *et al* (2002) describe as 'critical methodological pluralism.' What is in epistemological terms seen to be particularly distinctive about critical realism is the way in which theory is used and developed. In contrast to the exclusive focus of positivists on deductive and interpretivists on inductive approaches to theory generation, for realists the deep and complex nature of reality in the social world is best accessed via the development of abstract, general theories and the application of such theories in an iterative, backwards and forwards manner that marries *both* inductive and deductive approaches, to particular social phenomena or processes (Danermark *et al* 2002; Ackroyd and Fleetwood 2000). Theory development is therefore seen to be an ongoing process involving continual refinement and improvement in the search for the best or most accurate theory possible, which means that theories, which while weak in certain respects are the best available, will continue to be adopted until replaced by more convincing theories or explanations.

The assumptions in critical realism regarding the complex but objective nature of reality in the social world and the importance of developing strong theories, resonate closely with the discussion in chapter two regarding the need for researchers to be able to unpick the distinctive effects of institutional, sectoral and company-specific influences as well as the value of the adoption of a robust analytical framework in guiding skills research. In addition, both the skills and employment relations literatures (the 'home disciplines' of this research) have been seen to adopt, albeit typically implicitly, many of the guiding assumptions of a critical realist approach. Thus in the skills field, Rubery's (1994) description of the 'British production system' is presented by Ackroyd and Fleetwood (2000) as an example of management research adopting a realist ontology. Similarly, Edwards (2005) contends that much industrial relations research adopts a critical realist approach, and to this end provides a number of examples of industrial relations research that in his view has adopted a critical realist stance. As a consequence and in summary, it is suggested that critical realism is the most appropriate philosophical approach to adopt in framing and guiding this research.

5.3 The Case Study Approach & its Suitability for the Current Research

Case studies are frequently used as a research strategy in the employment relations and organizational behaviour fields (Hartley 1994; Roche 1997; Kitay and Callus 1998) and the case study approach underpins the empirical research conducted for this study. This section will firstly outline the key features of case studies and discuss their strengths and weaknesses (including the problematic issue of the possibility of 'generalising' from case studies), before coming to a conclusion regarding the suitability of the case study approach to the current study. The following sections will discuss the types of case study designs the research could adopt and outline the design actually adopted.

5.3.1 *The Central Features of Case Studies*

For Yin (2003: 12-14) a case study is an 'empirical enquiry that investigates a contemporary phenomenon within its real-life context.' As opposed to a particular data collection technique alone, Yin (2003: 14) argues that case studies are in contrast best seen as constituting a 'comprehensive research strategy' encompassing 'the logic of design, data collection techniques and specific approaches to data analysis.' The desire to unpick/explore 'complex social phenomena' and in particular the significance of environmental contexts for organizational

processes and outcomes, is seen to both give rise to and centrally define the case study approach, and in this regard the in-depth and holistic nature of data collection and analysis within a case study approach is emphasized.

An important feature of case studies is that they are characterized by the use of multiple sources of evidence or data that should converge in a 'triangulating fashion' (ibid: 14) In terms of the particular data collection methods or techniques adopted, while predominantly *quantitative* sources/methods such as questionnaire-based surveys are taken to be valid methods of data collection within the case study approach, qualitative approaches often tend to dominate due to the nature of the research being conducted, i.e. qualitative methods such as interviews and observation are seen to be better suited to unravelling the complexities of, for example, intra-organizational decision-making processes, than the quantitative survey method (Hartley 1994).

5.3.2 *Advantages & Disadvantages of Case Studies*

As indicated above, the primary advantage of the case study approach is that it is seen to recognize, account for and above all facilitate, hands-on engagement with the complex and multi-faceted nature of many social phenomena, and in particular the impact of environmental contexts on organizational processes and outcomes. In terms of possible disadvantages, in addition to the fact that case studies, because of their in-depth nature, are often time-consuming and highly resource intensive to undertake, the challenges and difficulties posed for researchers in attempting to draw out the broader significance, or 'generalise' from case studies conducted are frequently highlighted (Roche 1997; Hartley 1994).

In this regard, it is commonplace (e.g. Bryman 2004: 51) to distinguish between case study and survey-based research in terms of the relative potential and limits of each in relation to the conclusions, or 'generalisations', that can be made from the data collected. Specifically, it is frequently noted that whereas survey findings are amenable to *statistical* generalisation to the broader 'population' from which a survey sample is drawn, case studies are only suitable for generalising *to theory* (Silverman 2005: 126-36; Denscombe 2003: 35-37). For Yin (2003: 10) 'case studies, like experiments, are generalisable to theoretical propositions and not to populations or universes', with the goal of cases therefore to expand and generalise theories (described as 'analytic generalisation') rather than measure or quantify the prevalence of a

particular phenomenon in a given population of organizations or firms ('statistical generalisation').

Roche (1997: 122-34) takes issue with the view of Yin (and also Gummesson 1991) regarding the limits on generalisation from case studies. Firstly, he correctly notes that like case studies, the purpose of most social scientific surveys is, in fact, to generalise to theory as opposed to populations. Secondly and from the opposite perspective, Roche (1997) disagrees with Yin that case study researchers limit themselves to generalising to theory as opposed to populations. On the contrary, he argues that case study researchers do indeed attempt to generalise their findings to the broader population of firms. What is distinctive in Roche's (1997) view is the *type* or *nature* of generalisation that it is possible from case study research. In summary, unlike survey-based researchers, case study researchers are making *non-statistical generalisations*, i.e. they are attempting to make generalisations but without the benefit of the statistical tools and techniques of sample sizes, confidence intervals etc. The issue of generalising from case studies is discussed further below.

5.3.3 *Relevance of The Case Study Approach to the Current Study*

It would arguably be impossible to collect comprehensive, valid data on the question of the relative significance for strategy and skills outcomes of the presence of a strong and supportive industrial policy in the Irish dairy sector and the absence of the same in the English sector, via a questionnaire survey alone. While surveys are a commonly used data collection tool in the employment relations field, they are often identified as being limited in that they are seen to be suitable primarily for the collection of quantitative data and less appropriate for the collection of qualitative data, for example on social processes or processual changes within industrial relations structures (Millward *et al* 1998: 137; Morris and Wood 1991, cited in Millward *et al* 1998). Aside from a consideration of the problematic issues of response rate and the willingness of respondents to divulge commercially sensitive information, a survey therefore would not allow the complex questions of environmental influences on skills outcomes at workplace level and change processes over time in particular companies, which are central to this research, to be examined. Similar considerations would also apply to the possible reliance on other sources of evidence, for example secondary data sources such as company annual reports, industry reports and trade press. Again these alone would be insufficient.

On the contrary, the widely recognised sensitivity of a case study approach involving the utilization of multiple sources of data to issues of context and process, means that the latter is the most obvious and suitable research methodology to adopt in this research.

5.3.4 The Type of Case Study to be Conducted & Deciding on a Case Study Design

The inherently complex and under researched nature of the central issue examined, i.e. the relative skills, employment and wage outcomes resulting from the differences in industrial policy regimes at national and sectoral level between England and Ireland, arguably means that this study constitutes a *descriptive* or *exploratory* case study (Yin 2003: 3-4, 39-42) aimed at collecting information and telling a detailed story relating to skills and employment outcomes in both countries and also testing a *tentative proposition* - specifically whether the presence of a strategic industrial policy in Ireland contributes to 'better' skills outcomes there than in England where such a policy is absent - as opposed to a formal explanatory theory.

In terms of research design, following Hartley (1994) and Roche (1997) in particular, the design of case studies should be directly determined by the nature of the issues being addressed and in particular the theoretical framework utilized. In this regard, while the overarching research question examined is whether the presence of a strong industrial policy in the Irish dairy sector and in contrast the absence of the same in the English sector, results in more desirable skills and employment outcomes in the former compared to the latter, it is arguably helpful to break this down into specific sub-questions or issues of interest, as follows:

- What proportion of firms in both sectors has succeeded in 'moving up-market' and what proportion of firms continue to engage in low quality, low value-added production? And to what extent can the industrial policy context explain these trends?
- Linked to this, what proportion of employment in particular companies and across both sectors in general is associated with the production of value-added/differentiated and commodity/basic products?
- What are the skills consequences of the product strategies adopted in each country and how do these relate to the industrial policy context? In particular, what opportunities exist in each country for workers to engage with sophisticated or advanced products and processes?

- In Ireland, what are the relative consequences for employee skills of the industrial policy facilitated production of high quality/up-market products compared with the production of traditional/commodity products, if such a distinction is relevant?
- What are the wage levels in particular companies and across the sector in general in both countries and how do these relate to the industrial policy context?
- What are the views of managers, production operatives and other staff regarding the significance of the industrial policy context for skills and employment outcomes?

It is evident that in addition to qualitative issues such as the impact of the industrial policy context on strategy and skills outcomes, the list of sub-topics raises a number of *quantitative* issues relating to the extent or scope of impact of the industrial policy in both countries and also the employment and wage consequences of the same. In short, it would not be possible to effectively address the objective of the research, namely to examine the potential for upskilling and 'employment upgrading' to be achieved for general workers in England, unless a comprehensive range of data were to be collected. If the design of the research were to be such that some attempt at quantification of outcomes could not be attempted, then its contribution would be likely to be sharply curtailed.

These observations combined point to the conclusion that a 'typical' employment relations research design of, for example, examining an 'innovative' and 'traditional' firm in each country (therefore four companies in total), would not be suitable for this particular project. In summary, while it is generally recognized that the strengths of the case study approach lie in its suitability for the collection of *qualitative* as opposed to quantitative data, for the reasons outlined above the case study design for this project should ideally also facilitate an attempt to quantify outcomes. However following the discussion in section 5.3.3, neither a questionnaire survey (whether of the postal or telephone variety) nor the use of secondary data would be likely to suffice as a supplementary or auxiliary data collection method for the information required.

This arguably highlights the conduct of *multiple* case studies as the strategy offering the greatest potential. This conclusion finds support in the fact that recent skills research has been based on the conduct of qualitative research at relatively large numbers of companies. For example, Lloyd (1999) undertook interviews at twelve of the larger British and eight of the larger French

aerospace companies/divisions, while Wilson *et al* (2003) conducted case study research at ten companies in both the food processing and business hotel sectors in the East and West Midlands.

5.3.5 Combining In-Depth & 'Mini' Case Studies

Due to the large demands on time and resources involved in conducting case studies, discussed in section 5.3.2 above, it would arguably not be feasible to conduct in-depth case studies at more than six or eight companies in total. However even if this number of cases were undertaken, the potential for generalization would be likely to remain limited. This observation therefore points towards a combination of in-depth case studies consisting of interviews with a cross-section of company employees (including production operatives) and observation of the production process, and what might be called 'mini' case studies based on 1-2 face-to-face interviews supported by available secondary data; which would mean that a larger number of companies could be included in the study. It is of course questionable whether 1-2 interviews and the drawing together of secondary data can be said to constitute a 'case study', given the emphasis of most expositions of case studies on thick description, process and context. However as Yin (1994: 10) notes, case studies need not necessarily be lengthy or very detailed (see also Roche 1997: 121; 131-2).

By involving interviews with production operatives and observation of the production process, the former would allow robust data to be collected on the skills consequences of the industrial policy context. While collection of such data would not be possible by means of a 'mini' case study, the latter could arguably facilitate data collection on other issues relating to the firms at which they would be conducted, namely product strategies adopted, engagement with outside agencies and views on the same, numbers employed, wage levels and a breakdown of employment by product area. The combination of mini and in-depth cases might therefore be seen to provide an acceptable solution to the strong case identified for the collection of a minimum of data on as many companies as possible arising from the desire to quantify a number of the issues examined.

5.3.6 Decision on Case Design

This discussion therefore leads to the conclusion that a combination of in-depth and 'mini' case studies should be adopted for this research. The exact numbers of each to be conducted is outlined and discussed in the following section.

5.4 Overview of Case Study Design Adopted

Companies Targeted & Access Issues

Initial interviews were conducted, in 2002 and 2003 respectively, with either a general or human resources manager at seven companies in both England and Ireland (shown in tables 5.1 & 5.2).

Table 5.1: Overview of English Firms

Company	Number of Employees*	Ownership Status	Product Range
<i>E1</i>	895	Plc	Own-label dairy desserts
<i>E2</i>	1800	Plc	Own-label milk & cream
<i>E3</i>	520	Limited company (subsidiary of a plc)	Own-label dairy desserts
<i>E4</i>	1720	Plc	Own-label milk & cream
<i>E5</i>	1000	Limited company/subsidiary of foreign plc	Own-label cheese
<i>E6</i>	1254	Private/foreign	Branded yoghurt & desserts
<i>E7</i>	1300	Cooperative/foreign	Own-label milk & cream; some branded milk

**Including production & administration, excluding distribution & doorstep delivery (where possible)*

Table 5.2: Overview of Irish Firms

Company	Number of Employees*	Ownership Status**	Product Range
I1	1020	Plc (cooperative with majority share)	Range of consumer & bulk products
I2	500	Cooperative	Range of consumer & bulk products
I3	460	Subsidiary of a plc	Range of consumer & bulk products
I4	100	Cooperative	Continental cheese, butter, milk powders
I5	128	Limited company (subsidiary of a cooperative)	Liquid milk, yoghurts & desserts
I6	150	Cooperative	Liquid milk, yoghurt, desserts, butter & powder
I7	140	Cooperative	Milk, butter, spreads, powders

**Dairy processing related employees only*

*****All of the Irish firms were indigenous owned***

Access to most companies was facilitated by the Irish Dairy Industry Association and its English counterpart the Dairy Industry Federation (now Dairy UK), who respectively sent a letter and email outlining the research to a number of their members. Following this general mailing and after discussions with industry experts (for example in Enterprise Ireland and the Dairy Industry Federation), contact was made with a number of these companies that were seen to be of particular interest from a theoretical perspective. Four companies (I3, I5, E3 and E7) were not on these mailing lists, but were contacted separately due to their inherent interest for the project. Case site selection was therefore 'purposive' in nature (Silverman 2005: 129-30).

Initial interviews were followed, also in 2002 and 2003, by additional semi-structured interviews with a cross-section of production managers, operators and shop stewards as well as observation of the production process at four companies in Ireland (I1, I2, I3 and I5) and four in England (E2, E4, E5, E6). All companies were subsequently contacted (the Irish firms in the summer of 2004 and English in early 2005) to provide updated information on wage levels and employment trends, to 2004. The collection of this information in most cases provided an opportunity to obtain a short overview of recent developments, thereby incorporating a longitudinal dimension to the study.

The in-depth research conducted at eight firms can clearly be classed as 'case studies' of these companies, while the use of secondary data alongside interviews (outlined below) and also the longitudinal dimension, means that the research in the remaining companies visited can be categorized as 'mini-cases', albeit of high quality.

Representativeness & the Potential for Generalisation

The English companies represented seven of the top thirteen British dairy processors by employment and the Irish firms seven of the top twelve Irish processors by employment, on the basis of information collected from the FAME company database, ICOS annual reports and the author's own calculations. Comparing this information with figures on employment from the British Annual Business Inquiry and the Irish Census of Industrial Production demonstrated that

the seven English firms accounted for 38% of total 2003 local unit employment in the English sector and the Irish firms 36% of total 2002 local unit employment in the Irish sector⁶.

As a result, the research conducted arguably provides a strong basis for empirical generalization to the population of medium/large or 'mainstream' firms in both countries, and also covered a sizable proportion of total employment in each sector. The research design adopted therefore effectively satisfies the twin objectives of obtaining an in-depth insight into strategy and skills outcomes and change processes and, alongside this, a meaningful measure or estimate of the significance/scope in quantitative terms of the industrial policy context for skills and employment outcomes in each country.

In relation to the theoretical or 'purposive' nature of the decision to conduct fieldwork in individual companies, the latter were selected on the basis of their ownership status, size or other distinctive characteristics, with the intention being to attempt to account for the extent of intra-sectoral variation identified in both countries in the form of differences in organizational characteristics and ownership status between the top 12-13 mainstream firms. While not all companies contacted agreed to participate, those that did in the main covered the primary groups identified. Therefore in Ireland, I1 and I3 represented the category of 'large plcs', I2 that of the 'large cooperative' and I4, I5, I6 and I7 the 'small and medium' sized firms (three of which were cooperatives). Meanwhile in England, E1, E2 and E3 represented the 'established indigenous' firms, E5, E6 and E7 the 'foreign-owned multinationals' and E4 the 'recent entrant.' However due to time/resource constraints, a company from the fourth group of firms identified in the English sector, namely 'indigenous cooperatives', was not contacted.

The case study evidence, as supplemented by secondary data sources (which are discussed below), can be seen to provide the potential for a strong insight into the significance of the industrial policy context for skills and employment outcomes in both countries to be obtained.

⁶ A more 'qualitative' analysis of the extent of employment accounted for by these firms in both sectors would suggest that these figures appear rather low, and may therefore underestimate the proportion of employment accounted for by the case study firms. For example, there was only two other firms in Ireland with comparable employment to I1 and I2 and as outlined in chapter four, the six largest companies in the Irish sector accounted for 80% of raw milk processing there.

5.5 Data Collection Techniques

As noted earlier, a common characteristic of case study research is that it draws on multiple sources of evidence. Data collection in this research was centred on semi-structured interviews, observation, company documentation and secondary data in the form of industry reports, trade press and official statistical publications. An overview of the rationale for and a brief description of each is now provided.

Interviews

Interviews, of the 'semi-structured' as opposed to the 'structured' kind, are widely recognised as a useful data collection method when qualitative, case-study based research is undertaken. For Denscombe (2003: 164-5) interviews are ideally suited to the collection of detailed information and the achievement of an in-depth insight into particular topics, as well as for data collection on 'sensitive issues.' Mason (2002: 63-7) similarly highlights the value of qualitative interviewing where research 'lays emphasis on depth, nuance, complexity and roundedness in data'; where the generation of knowledge and research evidence is seen to be contextual, situated and interactional; and where social change and social processes are examined. In addition, both authors note that interviews are effective when the experience, views and emotions of people are addressed (Denscombe 2003: 165; Mason 2002: 63).

These characteristics combined made the use of interviews an obvious choice as a primary data collection tool in this research. In particular, the focus on collecting information on complex, sensitive and context-determined issues such as the nature and consequences of individual company engagement with the industrial policy context and the skills consequences of product strategies, strongly favoured the use of semi-structured interviews. Tables 5.3 & 5.4 outline the categories of interviewee and number of interviews conducted in each company in both countries.

Table 5.3: Interviews conducted at the Irish firms

	HR/GM	PM	OFM	PO	LT/ENG	SS/UO	Total
I1	11	10	12	25	5	4	67
I2	4	12	6	22	2	0	46
I3	4	5	6	0	0	3	18
I4	2	0	2	0	0	0	4
I5	1	2	3	8	0	2	16
I6	1	0	0	0	0	0	1
I7	1	1	1	0	0	0	3
Total	24	30	30	55	7	9	155

Key: HR/GM = human resource/general manager; PM = production manager;

OFM = other functional manager (e.g. R & D, Quality etc.); PO = production operative;

LT/ENG = laboratory technician/engineer; SS/UO = shop steward/trade union official

Table 5.4: Interviews conducted at the English firms

	HR/GM	PM	OFM	PO	LT/ENG	SS/UO	Total
E1	0	0	1	0	0	1	2
E2	10	5	8	17	4	5	49
E3	1	0	0	0	0	1	2
E4	2	6	5	5	2	0	20
E5	4	1	0	0	0	2	7
E6	6	3	5	6	2	2	24
E7	3	4	1	6	0	0	14
Total	26	19	20	34	8	11	118

Key: as for table 5.3

A number of the operator interviews in both countries consisted of *group* interviews (Denscombe 2003: 168), typically where a number of operators were working together in a small control room and it was not feasible to conduct individual interviews. Table 5.5 below outlines the topics discussed with each category of interviewee.

Table 5.5: Category of Interviewee & Issues discussed

Interviewee	Issues Discussed
General/Human Resource Manager	<ul style="list-style-type: none"> • Basic organisational characteristics (e.g. numbers employed, wage levels) • Product strategy adopted & change over time; main influences on strategy adopted • Engagement with outside agencies/institutional context & significance for strategy adopted • Key employment & skills issues
Production & Other Functional Management (<i>R&D, Quality, Engineering etc.</i>)	<ul style="list-style-type: none"> • Products produced & change over time • Consequences for operator skills of strategy adopted • Views on skills levels in operator positions (e.g. training & learning times)
Production Operatives (<i>& laboratory technicians, engineers</i>)	<ul style="list-style-type: none"> • Change in job over time • Significance of changes in product strategy for skills outcomes & experience of work • Views on skills levels involved in the job & employment experience more generally
Shop stewards/Union Officials	<ul style="list-style-type: none"> • Significance for operator jobs of changes in product strategy • Views on skills levels involved & nature of employment in particular companies & the sector in general

Observation

Ethnographic approaches in the form of detailed studies comprising a combination of observation and interviews at workplace level conducted over an extended period of time, have traditionally been widely used by industrial relations researchers and industrial sociologists in the UK (Edwards 1992; Friedman and McDaniel 1998: 122), and have also been central to research in the labour process tradition (e.g. Burawoy 1979; Pollert 1996; Bain *et al* 2002) as well as recent research in the skills field (Lloyd 1996; 2002). In addition to interviews with production operatives, outlined above, observation of the production process was therefore undertaken at six of the eight in-depth case studies conducted. The total amount of time spent observing at each site varied from two days to one week. As with interviews, observation was conducted on a factory-by-factory basis at multi factory production sites.

Expert Interviews in Industry bodies

In addition to data collection at company level, interviews were also conducted with representatives of industry associations, officials from central government and state agencies, industry-related personnel in the university, research institute and further education sectors, and trade union officials who represented members in the sector. These are outlined in table 5.6 below. The central purpose of these interviews was to gather some basic information and in addition access the expert opinions of those working in the sector in relation to the industrial policy context and change in this over time; product strategies adopted and levels of innovation; and the primary skills and employment outcomes.

Table 5.6: List of Interviews Conducted in Industry bodies

Ireland		England	
Organisation	No. of Interviews	Organisation	No. of Interviews
Irish Dairy Industry Association	1	Dairy Industry Federation (including Dairy Training & Development Council)	4
Department of Agriculture & Food	1	Department of Environment, Food & Rural Affairs	2
Enterprise Ireland	4	Hannah Research Institute	1
Teagasc Moorepark	5	Society of Dairy Technology	3
Irish Dairy Board	1	University of Reading	1
Bord Bia	2	Scottish Agricultural College	1
Irish Cooperative Organisation Society	1	Reaseheath College	1
FAS (training agency)	1	University of Plymouth, Seale-Hayne	2
University College Cork	3	Provision Trade Federation	1
		USDAW (trade union)	1
		AEEU/Amicus (trade union)	1
Country total	19		18
Grand total			37

Company Documentation & Secondary data

Company websites and documentation, for example annual reports, marketing literature and training/personnel policies, were used as an important source of information on product

strategies adopted and the business and operational contexts of the firms visited. In addition, secondary data in the form of sectoral reviews and trade press was used in order to collect information on product strategies as well as, in a number of cases, employment trends. Notably, the latter were also used as a source of information on trends and developments at the 3-4 larger companies in both countries that were not visited, as well as the English and Irish sectors more generally. In addition, official statistical publications were used to identify sectoral employment trends and wage levels.

The value and potential of such sources is frequently highlighted in the research methods literature (e.g. Bryman 2004: chapters 10 & 18; Mason 2002: chapter six).

5.6 Data Transcription & Analysis

The vast majority of interviews conducted were tape recorded, although a significant number of operator interviews were recorded by hand-written notes alone. After initial interviews in each company a detailed note summarizing the main findings was written, while similarly after each day of in-depth fieldwork a note of the main findings and events was drawn up. In addition, diagrams and descriptions of the production process in each factory visited were recorded in notebooks. While a substantial number of interview tapes were fully transcribed on a *verbatim* basis, others were used mainly as a back-up resource from which particularly insightful quotes were drawn where necessary.

In terms of data analysis, as Eisenhardt (1989: 538) and Miles and Huberman (1994: 12) note, a feature of much qualitative, case study based research is the existence of an overlap between the processes of data collection and analysis, with analysis seen to proceed in a continuous, iterative manner alongside data collection. Such an iterative relationship between these two processes was a central characteristic of this research.

In terms of the substantive task of analysis, a widely used technique, namely the development of codes or labels to organize data, was used to aid the process (Miles and Huberman 1994: 55-69; Bryman 2004: 408-11). The specific codes or labels adopted related to the distinct issues of interest in the research, namely: basic case/company details; product strategy adopted and change over time; key influences on product strategy; engagement and views on the industrial policy context; skills outcomes; and employment and wage information. In writing individual case reports, data relating to the above headings was drawn manually from interview transcripts, summary notes and company documentation. This approach was viewed to be the most appropriate to adopt for the writing of individual company case studies.

Data Triangulation

As outlined in section 5.3.1, an important consideration in undertaking and in particular analyzing and reporting qualitative research is the need to maximize the validity of the research findings, and a common method employed to achieve this goal is that of data triangulation, whereby data from a number of different sources is used in order to test the validity of specific findings and contribute to the development of the most robust analysis possible (Yin 2003: 97-101; Denscombe 2003: 131-4; Mason 2002: 33). Two well-known types of data triangulation were used in this research.

Firstly, multiple sources of evidence were used within the broad, case study approach. Therefore for all companies visited in addition to interviews, company documentation and secondary data (e.g. trade press and news cuttings) were used as an additional source of information on product strategies adopted and, in a number of cases, employment and skills outcomes; while industry studies and reports were also used as a benchmark for the findings from the case studies in general. Secondly, at those companies where in-depth case studies were undertaken, interviews were conducted both across different functional departments and at different levels in the organizational hierarchy, therefore also facilitating data triangulation.

5.7 Conclusion

This chapter began by outlining the underpinning philosophical stance relating to the nature and conduct of social research guiding this research. In this regard it was decided that critical realism, because of its support for the existence of an 'objective reality' in the social world, albeit often complex and unseen, was the most appropriate framework to adopt. In particular, a strong resonance was identified between critical realists' pursuit of understanding of the 'generative mechanisms' that account for social processes and outcomes and the objective in this research to interrogate the significance of the interaction between institutional contexts, sectoral trends and company-specific influences for substantive skills and employment outcomes.

Having decided on a philosophical position, the chapter went on to discuss the question of which approach to data collection would facilitate the collection of high quality, insightful data on the central issues of interest. Due to its emphasis on in-depth, holistic data collection and widely accepted suitability for examining the significance of environmental contexts for particular outcomes, the case study approach was seen to be the most suitable research strategy to adopt; and in particular to offer the most potential in terms of the possibility for examining the complex issue of the impact of the industrial policy contexts in Ireland and England on strategy and skills outcomes in the dairy sector of both countries, and also the views and perspectives of managers and operators regarding the same.

Thirdly, the chapter next discussed the question of what case study design would be the most suitable to adopt, with this discussion leading to the decision to combine in-depth and 'mini' case studies. Fourthly, the case study companies and specific data collection techniques adopted were outlined before, finally, the methods used in recording and analyzing the data collected were described.

Chapter Six: English Companies and Influences

6.1 Introduction

The purpose of this chapter is to outline the product strategies pursued by the English firms visited, consider briefly the primary identified influences thereon and discuss in some detail the significance for the strategies adopted of the industrial policy context.

The product ranges, nature of competitive strategies adopted and recent change in the same will firstly be outlined for all firms in table form. Secondly, the primary identified influences on the strategies adopted will be highlighted, and thirdly, the significance of the industrial policy context examined.

6.2 Products & Product Strategies

Table 6.1 below outlines the products and product strategies of the English companies visited. As is evident from the table, all of the English firms manufactured consumer products. On the whole the extent of new product development undertaken was very limited. The only companies undertaking major product development work were the foreign firms E6 and E7. The remaining five firms almost exclusively manufactured own-label products and therefore at best undertook minor product development activities.

The product ranges of four of the seven companies (E2, E4, E5 and E7) were predominantly of a low value-added nature, in that they consisted of the production of own-label milk and cheese. Only one company, the branded yoghurt and dessert producer E6, possessed a predominantly high value range, with the product range of the remaining two firms (the own-

Table 6.1: Overview of Products Produced & Strategies Adopted by the English Case Study Firms

Company	Number of Employees	Product Range	Strategy Adopted	Stability or Change?
E1	895	Range of own-label dessert products	Strategy focused on the manufacture of own-label desserts; some minor ongoing product development undertaken	Historically a leading player in the UK industry, however recent sale of dairy businesses apart from own-label dessert manufacture
E2	1800	Standard range of own-label milk & cream	Strategy aimed at securing/retaining a high proportion of retailer milk sales	Historically a leading player in the UK industry but experiencing severe recent financial difficulties, therefore unable to invest in product development
E3	520	Own-label cheese dips & desserts; branded desserts made under licence	Strategy focused on the manufacture of own-label desserts; some minor ongoing product development undertaken	Company historically possessing one of the top two yoghurt brands in the UK, however recent sale of branded business to a foreign-owned multinational
E4	1720	Full range of standard liquid milk & cream products; large majority of products own-label	Concentration on supplying the expanding supermarket milk sector; little/no product development but significant process & packaging development in order to satisfy the preferences & requirements of retailers	Previously a small/medium concern but rapid expansion in recent years via acquisitions & targeting of the market share of incumbents; recent opening of new state-of-the-art 'super-dairy'
E5	1000	Wide range of hard & 'territorial' cheeses; vast majority of products own-label	Emphasis on the efficient supply of own-label cheese to the retail sector; some minor product development & significant packaging/labelling development in response to retailer demands	Little/no recent new product development work undertaken but significant ongoing product & packaging changes
E6	1254	Enormous range of short-life products, (yoghurts, desserts etc.); all branded & mass-produced	Expansion-oriented strategy based on high investment in NPD; a highly successful company	12-18 new product additions/extensions per year; recent introduction of a range of 'probiotic' yoghurts & yoghurt drinks
E7	1300	Own-label milk & cream; flavoured milk; branded filtered milk range	Product strategy aimed at securing a high proportion of own-label retail milk sales alongside new product development activities in branded area	Very large investment in NPD & marketing support for filtered milk range, with the latter characterised by significant sales growth

label dessert producers E1 and E3) situated roughly at a mid-point on the product value scale⁷.

Primary Influences on Strategies Adopted

While conducting an in-depth examination of the key influences on the strategies adopted by the English companies is not a goal of the thesis, it is helpful to make a number of observations in this regard due to the overriding importance of this issue in relation to the possibility for upskilling to be achieved. In addition, before moving on to consider the principal question addressed in the research, namely the significance of the industrial policy context for strategies adopted and consequently skills outcomes, it is necessary to locate this research within the context of recent employment relations research that, as discussed in chapter two, emphasizes the simultaneous influence of institutional, sectoral and company-level factors on employment relations outcomes and processes.

In this regard, *ownership status* was found to be a particularly significant influence on product strategies adopted in a number of cases. Interviews and secondary data provided strong evidence that the well-documented negative effects of British ownership and financial structures and institutions, in the form of an overriding focus on short-term profitability and growth by acquisition and an unwillingness to undertake resource-intensive, long-term investments in *organic* development, were manifested at three of the four indigenous plcs, E1, E2 and E3. Specifically, the short-term financial horizons and strict financial performance requirements of central management and at one step removed City institutions and institutional investors, were found to result, firstly, in a comparative unwillingness to dedicate substantial amounts of money to medium/long term product development or capital investment projects, and secondly, in the dramatic curtailment or retrenchment of investment as a reaction to short and medium term disimprovements in the competitive climate in the sector. This had negative consequences for product development and other investment activities, as well as for the size and resource

⁷ Secondary data demonstrated that of the six other 'top thirteen' English dairy companies by employment, one was a large indigenous plc that *did* undertake some quite significant product development activity in the cheese and yoghurt areas. In particular, it had developed two successful cheese brands. However this activity was seen by observers in the sector to be limited in that the products manufactured remained quite traditional, with little investment in the development of groundbreaking or advanced products. Two of the other companies were large multinationals like E6 and E7. One of these manufactured a range of high-value, branded dairy spreads that had changed little in recent years, while the other possessed a more mixed product range, producing some relatively traditional or basic products alongside a range of branded yoghurts (which it had acquired from an indigenous producer) that were subject to major product development. The fourth firm was an indigenous organic yoghurt producer that had expanded rapidly in recent years and product a high value-added product range. The final two firms were indigenous cooperatives that in the main possessed a traditional range of products.

endowments of research and development departments at these companies. In addition, the lack of strategic vision and business acumen on the part of senior management at group level was seen to have contributed to the decline in fortunes at E1 and E2, while frequent turnover in management at subsidiary/production unit level was also highlighted in the case of E1 and E3 as also having very seriously damaged competitive prospects; again reflecting traditionally problematic features or characteristics of the British business environment.

For example, while E1 had traditionally been one of the preeminent English dairy firms, with a very large R & D department and a track record for ground-breaking new product and process development, its senior management team had increasingly pursued a portfolio investment strategy from the 1970s on, acquiring subsidiaries in restaurants, car rentals and event management (among other sectors) with a view to increasing profitability. However the large majority of these investments had not been successful and as a consequence, the availability of funds for the core dairy business was substantially reduced. In addition, E1's group technical director explained that while the company *had* continued to invest some significant amounts of money in organic/product development in the dairy area, as the competitive environment in the sector became increasingly difficult in the 1990s and 2000s financial support for this was cut back, with management deciding and eventually succeeding in moving the company out of what they described as the 'low margin' dairy sector into the higher margin and faster-growing prepared consumer food (PCF) sector. Arguably the most notable consequence of this strategy was the sale by E1 of its branded yoghurt business, which included one of the top UK yoghurt brands, to a foreign multinational. At the time the research was conducted the only remaining dairy activity undertaken by E1 was the manufacture of own-label desserts for the retail sector.

Importantly, also in relation to ownership status, E4 was an example of an indigenous plc which *had* in fact recently benefited from high levels of investment. While having started out as a private company, E4 had been listed on the stock exchange for nearly ten years. Significantly, it had recently obtained very substantial financial backing from its institutional shareholders for further expansion and investment, specifically the construction of a new 'super dairy' to supply the retail sector. In marked contrast to E1, E4's recent enormous competitive success and the strong track record of its management team were evidently seen by City institutions to make that company a sound investment.

Finally in relation to ownership status, the fact that E6 and E7 were large, foreign-owned dairy multinationals was found to directly underpin the very sizable investments in product development undertaken at those firms. E6 was a German company that was effectively privately/family owned, while E7 was a Scandinavian cooperative. Management at both these companies noted how the long-term strategic focus and commitment to organic growth on the part of their owners or shareholders was directly responsible for the large investments in product development undertaken.

Broad, *sectoral* and also sub-sectoral or *product market* trends were also found to constitute primary determining influences on the strategies adopted by the English firms. The competitive strategies and policies pursued by retailers across all, but particularly own-label dominated product sectors, were seen to be particularly influential. While interviewees noted that the relative power and influence of retailers increased noticeably during the 1980s and early 90s, they explained how over the last few years the pressure exerted by retailers on processors had intensified most sharply, as a direct result of the competitive spiral in the retail sector prompted by the entry of Wal-mart into the UK market in 1999. This pressure, manifested in the form of a 'price/margin squeeze' on processors, was particularly keenly felt in sectors such as milk and cheese, with the pressure on processors in the former sector exacerbated by the fact that increasing volumes of milk were being sold (in own-label form) through the retail sector, as outlined in chapter four.

Incumbents in these sectors such as E2 and E5 had been particularly badly affected by these developments, in the form of a decline in profits and operating margins and hence a reduction in money available for investment in product development. In contrast, E4 was a notable exception in that as a new entrant it had been able to *benefit* from the increasing growth of retail milk sales and also the willingness of retailers to move business in order to obtain lower prices. However while these trends had led to the rapid expansion of that company and very significant investment by it in production capacity, E4 did not undertake any significant product development.

The other main product market trend of note was the rapid growth in the consumption of branded, 'mainstream' yoghurt and desserts, which was found to directly underpin the recent competitive success and expansion at E6.

It is therefore evident that some of the headline product market trends that the review of the dairy industry highlighted in chapter four were being replicated in a highly tangible manner in the English sector.

6.3 Significance of the Industrial Policy Context for Strategies Adopted

6.3.1 Views on the General Context

In general terms, the majority of interviewees at the English firms and also many at the other organisations visited, did not hold strong views on the nature and significance of the industrial policy context for strategy and skills outcomes in the English sector. In many cases this reflected the absence of a strong, high profile industrial policy in the sector which was highlighted in chapter three, in that when asked for their opinions many interviews responded with a question of their own, namely 'what industrial policy?' This being the case, further prompting and discussion did provide a substantial amount of data in relation to interviewees' views on the general governmental/policy context within which the sector operated, and the key findings in this regard are outlined here.

A number of interviewees were critical of the prioritization by government of the objectives of increasing competition and efficiencies in product markets within the context of a broad, firmly established 'cheap food' policy. In particular, the reluctance on the part of government to effectively regulate the commercial practices of the larger retailers was highlighted as being particularly problematic: while it was common knowledge that retailers exerted undue pressure on their suppliers in the sector, the government evidently did not wish to intervene to defend processor interests. Government policy was therefore in no small part seen to be accountable for the intense competitive pressures experienced by processors in recent years, which as has been outlined above were found to stunt or limit investment in new product development.

In addition, although processors, farmers and their representative organizations were held to be primarily responsible, the government's management of the deregulation process was also highlighted as being problematic, in that the decision to deregulate the sector had prompted 6-7 years of turmoil and strife during which time little progress was made by specific companies in attempting to move up-market or in terms of the performance of the sector as a whole.

Apart from these general concerns/observations, a number of interviewees *did* express the more specific view that the English government was not sufficiently supportive, in a proactive sense, of the dairy industry's development. In this regard, E2's group technical director highlighted how in his opinion the English government was less supportive than its counterparts in other European countries, and specifically highlighted the relative lack of substantial, high-impact programmes/initiatives and development agencies. For example, he explained how as part of a previous job he had observed the heavy financial support provided by development agencies in Ireland in relation to the development and marketing of new products, and he lamented the fact that no such support was provided in England. The commercial director of E7, who despite working for a foreign company was British, also lamented the lack of financial support (although this criticism was highlighted in relation to the failure by E7 to access financial assistance for the construction of a new dairy, as opposed to a new product range), while for his part E1's group technical director highlighted the failure on the part of actors across the sector as a whole to make sufficient use of available European Union funding schemes.

In addition, while the government *was* seen to be willing to support initiatives and activities aimed at, for example, improving efficiency in the dairy supply chain, with the recent exception of the 'Red Tractor' quality assurance scheme, this support was generally seen to stop at the point where financial resources might have to be committed.

More broadly, two other problematic aspects of government policy towards the industry were highlighted. Firstly, it was noted how deregulation and the dismantling of the Milk Marketing Board system had led to the closure of the MMB's Product Development Centre, which had functioned as a shared-use pilot plant and research facility. Following the closure of the National Institute for Research in Dairy and cutbacks in funding to institutions such as the Hannah Research Institute in Scotland during the 1980s and 90s, this meant that the English sector was effectively left without the pilot plant and research facilities needed to support new product development, in particular development of an advanced or groundbreaking nature.

Secondly, the intense competition prompted by deregulation (which as has been noted was in part attributable to government policy decisions) had led to a very dramatic recent reduction in the number of qualified dairy/food technologists working in the sector. While exact figures were not collected, a large number of interviewees highlighted how an enormous haemorrhage of technical personnel from the sector had taken place from the early 1990s on. While this had

occurred primarily because of company-level strategies and decisions, against this context the very significant recent decline in the number of school leavers enrolling on food technology courses at both further and higher education institutions and the failure by government to arrest this trend was identified as being highly problematic, in that it was seen to substantially limit the capacity of the sector to engage in product development/innovation on an ongoing basis.

6.3.2 *Engagement with Government-funded Programmes, Development Agencies & the Research Institute/University sector*

Table 6.2 below outlines the recent involvement of the case study firms with industrial policy support programmes, development agencies and the research institute/university sector.

Table 6.2: Involvement by English firms with External Programmes/Agencies⁸

Company	Overview of Recent Industrial Policy Support received
E1	<ul style="list-style-type: none"> • Participation in a number of LINK projects in recent years, however in general little contact with outside agencies or programmes • Extensive contact/involvement with university sector – Reading, Huddersfield & Ulster – during 1990s on projects examining the development of pre- & probiotic yoghurts; involvement typically consisting of funding by E1 of PhD theses & master’s dissertations
E2	<ul style="list-style-type: none"> • No significant recent involvement/support • Recent decision to withdraw from involvement in a LINK project examining self-cooling/heating beverage & food containers
E3	<ul style="list-style-type: none"> • Involvement in two LINK projects in late 90s/early 2000s, however in general little contact with outside agencies or programmes • Some substantial involvement with university/research institute sector on development projects during 1990s: Leatherhead (pre/probiotics); Institute for Food Research (cholesterol reducing yoghurt); also previous discussions with Ulster & Huddersfield universities regarding possible development work
E4	<ul style="list-style-type: none"> • In general little/no engagement with outside agencies/programmes • However recent initial discussions with CHARIS research institute regarding possible development activity/projects
E5	<ul style="list-style-type: none"> • Little/no involvement with external agencies or programmes
E6	<ul style="list-style-type: none"> • No recent involvement with UK agencies or programmes
E7	<ul style="list-style-type: none"> • Little/no involvement with UK agencies or programmes

⁸ Although interviews were not undertaken at the six remaining mainstream firms, no evidence was uncovered from secondary data sources of significant contact on the part of these companies with outside agencies or programmes in relation to their product strategies.

As outlined in the table, none of the English firms had either substantial recent or ongoing contact with outside agencies or programmes in relation to their product strategies. While E1 and E3 did have significant involvement with the research institute/university sector on product development projects during the 1990s, this was not the case at the time of the research due to the fact that these companies were by then producing a limited range of products and undertaking only minor product development. These firms, along with E2, *had* been involved in a number of LINK projects in recent years. However the majority of these projects related to non-competitive, general interest issues such as improving hygiene standards via the adoption of novel technologies/processes, and as a consequence were seen to be of little direct relevance to the product strategies adopted. The one partial exception in this regard was E2's involvement in a LINK project examining the potential development of self-cooling/heating beverage and food containers. This project is discussed below.

6.3.3 Reasons for Non-Use of Industrial Policy Support

The combination of the general lack of product development undertaken (which as outlined above was substantially due to the difficult competitive conditions in the sector and restrictions imposed by ownership structures), as well as the absence of resource intensive support programmes and dedicated development agencies (highlighted in chapter three), substantially accounted for the lack of recent involvement by the 'incumbent' indigenous processors E1, E2 and E3 with outside agencies or programmes. Similarly, the harsh competitive conditions in the own-label cheese sector meant that the foreign-owned company E5 was also not in a position to undertake significant product development, and as a consequence it too was not looking to draw on external support in this regard. In addition, while E4 had greater financial resources than these companies, it had made a strategic decision to focus solely on the production of basic, own-label milk, and it therefore was also not looking for support (although it had very recently spoken with CHARIS, the Scottish based food/dairy research consultancy about possibly collaborating on product development projects in the future). Finally, in relation to the two resource-intensive foreign multinationals E6 and E9, the R & D manager at E6 outlined how that company was not eligible for any support (such as R & D tax credits) due to its size and very high profitability (although by the time of the research E6 may indeed *have* been eligible for R & D tax credits), and therefore relied mainly on internal company resources; while E7 also primarily drew on internal company resources, notably having access to an enormous research and development facility in its home country.

6.3.4 *Significance of the Policy Context for Individual Firm's Product Strategies*

Given the general lack of engagement by the English firms with outside agencies or programmes and, mirroring this, the relative absence of such agencies or programmes in the first place, it was difficult to make a specific or detailed assessment regarding the significance of the industrial policy context for the strategies adopted; rather it was more a case of ascertaining views on the significance of the absence of such support structures. However before findings in this regard are outlined, the broadly negative consequences resulting from the British government's primary focus on the promotion of competition and efficiency and also the manner in which the deregulation process was handled, arguably bear repetition. As noted above, these features of the policy context operated to substantially impede investment in new products and organic development on the part of companies such as E1, E2 and E3.

More specifically in relation to the absence of substantive support measures, as highlighted earlier the E2 group technical director was highly critical of the lack of government support for new product development and investment projects in the sector. In his view there was a strong need for government to engage more proactively with the sector and provide companies with financial support and/or incentives to engage in product development. For his part, the group technical director at E1, while noting that the provision of government funding for research and development would have been both welcome and helpful, was of the opinion that the availability of such funding would have been *wholly unlikely* to have changed the focus of E1's competitive strategy away from portfolio investment accompanied by an emphasis on minor product development alone in its traditional dairy business, towards a more ambitious and resource-intensive strategy centred on major product development. The ex R & D/general manager at E3's branded yoghurt business was also of the view that the provision of financial support would have been beneficial, although again he questioned whether this would have reversed the ailing fortunes or prevented the sale of that business to a foreign multinational.

While some financial support for research and development *had* been received by each of these companies in the form of the LINK programme, the majority of projects undertaken under this scheme did not relate to product development. Moreover, the design of the LINK programme, by stipulating that supported projects should have general as opposed to company-specific benefits, was seen to be mean that even those projects which were (broadly) related to product development issues did not result in tangible benefits for the companies involved. In this regard,

the E2 technical director explained how his company had recently decided to withdraw from a LINK project examining the potential for developing self-cooling and heating beverage and food containers, because this was seen to be too 'blue sky' in nature and not sufficiently related to the company's current product strategy. For the E2 director, the problems with the LINK programme resulted from the government's reluctance to become involved 'with anything that is close to market or that might make a direct contribution to your business.' While resource-intensive foreign multinationals could potentially benefit from involvement in such blue-sky, general projects, these were seen to be of little use to indigenous companies.

Finally in relation to the significance of the policy context for strategies adopted, both the E1 group technical director and ex E3 general/R & D manager explained how in their opinion the English university sector possessed the expertise and capability necessary to support advanced product development in the product areas in which they had worked. Specifically, both companies had worked with scientists at the universities of Reading, Huddersfield and Ulster in relation to the development of functional fresh dairy products, for example pre- or probiotic yoghurts. However in both cases while initial development work with these institutions had typically been promising or successful, the projects were cut short due to the reluctance of senior management to allocate the resources necessary for human trials or further development work to be undertaken. Views on the contribution to be made by the university sector in relation to other product areas were not ascertained.

6.4 Conclusion

This chapter began by outlining the product ranges and strategies adopted by the English case study companies, summarising change in these over time and providing a brief discussion of the primary influences on the same. On the whole, the extent of new product development was found to be very limited, with only two companies, the foreign processors E6 and E7, having recently undertaken any major product development. The remaining five firms almost exclusively manufactured own-label products and at best engaged in minor product development. Notably, three of the indigenous firms, E1, E2 and E3, had historically undertaken very substantial new product development.

In terms of the key influences on the strategies adopted, the stereotypical weakness of the British industrial system, namely the combination of portfolio investment policies, financial short-

termism, high levels of labour turnover and 'bad' management, was found to have substantially contributed to the relative competitive failure and in particular the low levels of investment in product development on the part of three of the four indigenous plcs. An important contrast to this, however, was the virtuous cycle of competitive success and high investment experienced by the fourth plc, E4. In contrast, the foreign and multinational status of E6 and E7 was found to underpin the long-term strategic horizons and high investment in organic development taking place at those firms.

Also in terms of influences, the recent growth in power and the increasingly aggressive nature of retailer strategies towards dairy processors was found to be of enormous significance for the sector in general, and in particular for those companies producing high volumes of own-label products; and was seen to have substantially contributed to the decline in product development identified. In addition to trends in the own-label sector, the other significant product market trend identified was the rapid recent growth of the mainstream yoghurt sector, which had contributed greatly to the success/expansion at E6.

The chapter then moved on to examine in some detail the significance for strategies adopted of the industrial policy context. In this regard, at a general level the government's effectively single-pointed focus on increasing competition and levels of efficiency, alongside its role in the mishandled deregulation process, was seen to have created a generally unfavourable operating/business environment for dairy processors. In addition, a number of problematic features of the industrial policy context were highlighted, namely the recent closure/decline of common-use pilot plant and research facilities and reduction in the number of technically qualified personnel.

More specifically, the case study companies were found to have had little significant recent involvement with external agencies or support programmes. For the indigenous firms, this lack of involvement was found to primarily reflect the nature of the product strategies adopted, in particular the decline in investment resulting from the 'retail price squeeze', as well as the lack of support programmes available. The latter and in particular the absence of financial support or incentives to engage in product development was highlighted as being problematic and held to compare unfavourably with the quite extensive support provided to processors in other European countries. While a number of firms *had* recently been involved in LINK projects, the inherently general nature of the latter meant that they had not made any direct or tangible contribution to

the product strategies adopted. Finally, although the British university sector was identified as possessing strong capabilities and expertise that could be harnessed in the development of advanced products – in the short life dairy product area at least - the lack of financial resources and unwillingness on the part of senior management at the indigenous firms to sanction heavy investments in NPD meant that it had not been possible for these strengths to be translated into new products in the marketplace.

Chapter Seven: English Skills & Employment Outcomes

7.1 Introduction

This chapter will outline the principal findings relating to skills and employment outcomes in the English sector. It will proceed as follows.

Firstly, the primary identified skills and employment outcomes at three 'representative' firms or groups of firms will be presented, namely the established indigenous plc E1, the own-label producers E2, E4 and E5 and E6, the high-investing foreign processor.

Secondly and related to this, the chapter will examine in some detail the consequences for the jobs/skills of production operatives of two central patterns or themes in the English sector highlighted in chapters five six - the general predominance of 'own-label' production for the retail sector and the existence in the UK sector of high-investing foreign companies seeking to tap into the large UK consumer market. In this regard, the primary skills outcomes at the own-label firms E2, E4, E5 and E7 and foreign processor E6 will be elaborated.

Thirdly, the chapter will attempt to quantify the general skills outcomes and patterns and, in particular, the significance of the industrial policy context for the same in the English sector. To this end employment at the seven English firms will be categorised according, firstly, to the extent to which it was characterised by stability or change in products produced and secondly, according to the *value* of the associated products manufactured.

This is followed in the fourth section by a presentation of average weekly earnings at the English firms. Finally a conclusion will be provided.

7.2 The Principal Skills & Employment Outcomes in the English Sector

7.2.1 The Established Indigenous Plc E1 (with supporting evidence from E2 & E3)

Product Strategy & Key Influences Thereon

E1 had for many years been one of the leading companies in the British dairy industry, possessing well established brands and accounting for a very high proportion of both volumes of milk processed and employment. With a well resourced research and development function conducting groundbreaking basic and applied research that attracted the interest and praise of dairy scientists across the world, E1 had historically been at the forefront of product and process innovation in the British sector. However from the 1970s on and in particular during the 1980s, senior management at the company pursued a 'portfolio' investment strategy, which saw E1 acquire interests in a restaurant chain, vehicle rentals and conference organising, among other activities. The large majority of these acquisitions and investments were not sufficiently successful, which prompted a negative spiral of missed financial performance targets followed by reduced funding from City institutions, resulting in the sharp curtailment of investment in product development in the 'core' dairy business and, notably, a very large reduction in research and development resources/capabilities.

Therefore while E1 had, for example, historically possessed the number two UK yoghurt brand, the company was unable (and also possibly unwilling) to respond to the aggressive entry to the UK market by the branded foreign producer E6 during the late 80s/early 90s. As E1's group technical director outlined, in addition to the restrictions created by the performance of the wider business, the entry by E1 in the 1980s and 90s to the manufacture of large volumes of own-label yoghurt for the retail sector also created a serious obstacle in the way of substantial investments in organic development being made in the branded yoghurt business, as a consequence of the increasingly tight margins in the former sector. Further, the frequent turnover of general and in particular sales/marketing managers also meant that there had been a damaging lack of strategic vision and consistency of approach on behalf of management at the yoghurt subsidiary.

The technical director also explained that while his R & D team had continued to undertake substantial research and development activity in the yoghurt area up until the early 2000s, this was never fully exploited due to E1's failure to commit the necessary financial resources. Specifically, as outlined in chapter six, E1 had over a ten year period sponsored a number of PhD theses in the area of health-enhancing dairy products and had recently worked with

scientists at the University of Reading on a project aimed at the development of pre- and probiotic yoghurt cultures. However although this research and the latter in particular, demonstrated promising early results, E1 had not been prepared to dedicate the financial resources required for full commercialisation to be achieved (for example senior management were not prepared to fund necessary but expensive human trials), and as a consequence this research never came to fruition in the form of new products being introduced or manufactured. Ultimately as also outlined in chapter six, the ongoing necessity for E1 to generate high, short-term financial returns to meet the performance targets set by its institutional investors led senior management to take the decision to effectively exit the 'low margin' dairy sector altogether, with the company instead deciding to concentrate on the higher margin, own-label prepared consumer food sector. As a consequence, E1 sold its milk, cheese, spreads and branded yoghurt businesses, with the only remaining dairy products manufactured consisting of own-label cheese dips and desserts as well as relatively small volumes of a range of branded desserts produced under licence for a large chocolate manufacturer.

Arguably of greatest note was the sale of the branded yoghurt business at a time (mid-2002) when this sector was demonstrating very rapid sales growth and providing opportunities to earn high profits to those companies prepared to make the necessary initial heavy investments in product development and marketing. However instead of investing in this fast-growing business, senior management at E1 decided to sell the company's yoghurt brands to a foreign multinational, which subsequently decided to close E1's English factory and supply the British market from abroad. Notably, this company has since invested very heavily in successfully reinvigorating E1's former brands⁹.

⁹ The experience of E2 and E3 had been very similar to that at E1. An over-costly acquisition made in the late 90s against the context of the increasingly competitive liquid milk sector and the company's ongoing, City-driven need to meet short-term performance targets, had led E2 to sharply curtail investment in product development, which resulted in the dissolution of its 'added value' division and also the implementation of a wholesale rationalisation programme. At E3, almost in a mirror image of the situation at E1, the central difficulty lay in the fact that its parent company, an indigenous plc focused on supplying the own-label prepared consumer food sector, was unprepared to make the investment necessary for success in the branded yoghurt sector. Therefore while E3 had historically possessed the *number one* UK yoghurt brand it too had failed to respond to the competition from new entrants to the British market in the early 90s, with management turnover and inconsistency of approach also a serious problem in this case. Ultimately E3's branded yoghurt business was also sold to a foreign food multinational, which subsequently also invested very substantial resources in rejuvenating E3's former brands.

Opportunities for Upskilling

As a consequence of the product strategy adopted, employees at E1 had evidently been provided with few substantial or meaningful opportunities for upskilling or new learning associated with the introduction of new products in recent times.

While blue-collar grades were not interviewed, the group technical director explained how the reduction in financial support for new product development and the increasing focus on own-label production had led to a significant reduction in his personal level of job satisfaction, in that as a dairy scientist/technologist, he was particularly interested in undertaking new product development and becoming involved in innovative/advanced projects, neither of which he had been able to do in recent years¹⁰.

Employment, Conditions & Prospects for Career Development

An enormous reduction of dairy employment had taken place at E1, with nearly 6,000 people leaving the company over the previous five years. Employees in the bulk/staple product areas of liquid milk and cheese were initially transferred to another company, which had acquired these businesses, but large numbers of these were subsequently made redundant as the new owner consolidated the acquired factories into its existing operations. The three hundred or so employees who had worked at the company's branded yoghurt business were also made redundant. In contrast, while also sold, employees at the spreads factory had kept their jobs.

Therefore while having historically employed many thousands of people and been one of the foremost UK dairy employers, E1 had in recent times been characterized by a strong sense of job

¹⁰The former general/R & D manager at E3 made similar observations regarding the negative impact of the product strategy adopted by that company for *his* levels of job satisfaction and experience of work. Meanwhile at E2 the decision to discontinue product development activities, dissolve the 'added value' division and concentrate on the efficient production and supply of own-label milk meant that employees at that company had in recent years also witnessed a significant decline in opportunities for upskilling associated with new product development. This had particularly affected one of the company's six liquid milk dairies that had specialised in the production of flavoured milks, with this activity being sold off to another company. While interviewees at group level did not express strong views in relation to the decline/lack of product development activity undertaken, at the dairy visited a number of workers expressed dissatisfaction with the lack of opportunities for upskilling provided there. For example, one of the laboratory technicians explained how her job was 'very monotonous and boring' and noted that she would welcome the introduction of new products, as in her view this would lead to an increase in her levels of job satisfaction (she also noted how this would be positive in terms of the competitive position of the company in general). While some changes had been introduced in her time at the factory, these had been only very minor – for example a new 'heat-sealing' system for bottle tops – and had therefore only involved very limited new learning.

insecurity and, more importantly, very large reductions in numbers employed. Unsurprisingly, these developments had been met with dismay by employees at the company.

Perhaps most notably, E1's branded yoghurt factory had historically been one of the flagship UK dairy factories, employing around 600 people in the early 1980s. However the failure to make the investments necessary to facilitate new product development and therefore sales growth had meant, in the words of one of the former production operatives, that employment in the factory had 'whittled away' to 300 at the time of sale, and 140 immediately prior to the closure of the factory altogether in early 2003. The strong perception among the former employees at this site was that they had been failed by management at group level: again in the words of the operative, 'we have been let down and sold out, not by our managers... but by the parent company.' Whereas the year before employees had been told that the company was going to 'turn the factory around', what had actually happened was that they had been 'put on the scrap heap'¹¹.

Aside from general employment trends and those at production level in particular, an additional notable employment outcome at E1 was the reduction over time in the numbers employed in research and development and technical roles. In this regard, the group technical director outlined how in 1970 fifty to sixty people had been employed in the company's central research and development function working 'solely on R & D' and examining new technologies and processes. However this number had been reduced to twelve in the late 70s. These twelve positions remained in place in what was known as the 'process development unit' until the mid 1980s when this central resource was disbanded. Subsequent to this, *development* but not research ('mixing and fixing' according to the technical director) was undertaken at factory level, although a small central R & D function of around 8-9 people remained at the subsidiary company that manufactured E1's yoghurt and spreads brands. However this also had been disbanded after the sale of these businesses in 2002, with the result that at the time of the research no central R & D resource was in place in the group as a whole. Importantly also, while E1 had traditionally operated a graduate recruitment programme as a means of providing a

¹¹ The competitive decline of E2 had also led to an enormous reduction in numbers employed there over recent years. This is further elaborated in section 7.2.2 below. At E3, the sale of *that* company's branded yoghurt factory also clearly led to a reduction in dairy employment, however more benignly in this instance the new owners kept this factory open, with the jobs of the workers affected therefore secured.

steady supply of science/engineering graduates into the company, according to the technical director this had been stopped in the early 90s, 'because it was costing money basically.'¹²

The Production Environment

In addition to the lack of investment in new product development and negative employment outcomes, it was apparent that E1 had failed to adequately invest in plant and equipment, at least at a number of its factories. This was perhaps best illustrated by the fact that the new owners of E1's yoghurt brands declined the opportunity to purchase E1's yoghurt factory and instead decided to supply the British market from abroad¹³.

7.2.2 The Own-Label Milk and Cheese Companies

The Liquid Milk Companies

The Suffering Incumbent E2

Product Strategy & Key Influences Thereon

As was outlined in chapter six, E2 had also historically been one of the driving forces in the British dairy industry. Like E1 and E3 it had historically possessed a number of strong brands and undertaken very significant product and process innovation. However by 2003, due to a

¹²E2 had witnessed an even more dramatic decline in R & D/technical personnel. In 1980 E2 possessed a 150 person strong research and development centre which, according to the current R & D manager at E6 (who used to work there), did 'everything from product development to blue sky research.' However by the time the E1 R & D manager left the company in 1992, while 'there were a few fragmented groups at the factories' there were just seven people left in the R & D centre and 'every year or so there were more people being axed.' There had 'not [been] the money to support' the centre, with the reduction in numbers being 'cash and profit driven.' More broadly, as noted in chapter six, across the indigenous companies in the British sector in general it was apparent that the intense rationalisation process which had taken place from the early 90s on as a consequence of deregulation and sectoral/competitive trends, had resulted in an enormous haemorrhage of formally qualified food scientists and technologists from the sector. This trend was highlighted in the strongest possible terms by a number of members of the Society of Dairy Technology, who pointed to the 'excessive rationalisation' which had taken place. The reduction in technical qualifications in the sector was also highlighted by a dairy industry trainer from Reaseheath College who noted how he typically came across a 'complete lack' of qualified dairy scientists/technologists when delivering training.

¹³Similarly the former general/R & D manager of E3's branded yoghurt factory explained how insufficient initial investment had meant that that factory was subsequently not big enough to cope with increased volume requirements, with the result that a number of unsatisfactory 'add-ons' had to be made. The factory in general and the yoghurt base unit in particular was 'badly in need of investment' such that he predicted that if the new owners 'do not invest in the factory this year, then I think it will be closed.' He expected that the first question the new owners would ask management at the factory was 'why have you been operating like this for the last ten years and not done anything about it?'

combination of internal (the combination of the over-costly acquisition made in the late 90s and the need to meet short-term financial performance targets) and environmental factors (the intense and uncertain competitive environment in the milk sector, which meant that financial resources to invest in new product development were unavailable), E2 had decided to focus exclusively on the production of own-label milk and cream, and as a consequence the company's 'added value' division had been recently dissolved, as outlined above. Therefore, in addition to representing outcomes at the 'established indigenous plcs', E2 also provided a window into the skills and employment outcomes associated with the own-label milk sector.

In this regard, E2 supplied milk and cream to a number of the larger British retailers. However as a consequence of the intense nature of competition in the milk sector resulting from the combination of the commodity nature of the products manufactured, production overcapacity on the part of processors and the willingness of retailers to move supply contracts in order to gain price reductions and service improvements, E2 had in recent times experienced very significant commercial/competitive pressures. Most notably, it had recently lost a large contract from one particular, high profile retailer. In addition, as the general manager of the dairy visited outlined, E2 was also subject to intense competition in the 'middle ground' sector (for example the supply of milk to convenience stores and petrol stations).

Interviewees in general explained that the overwhelming competitive driver at E2 and the liquid milk sector more broadly was cost, and specifically the urgent, ongoing need to reduce costs and, alongside this, increase efficiencies. Although efforts to achieve these twin objectives were ongoing, the perilous financial position of E2 and the high degree of uncertainty surrounding the future of the company against the context of an increasingly competitive liquid milk sector in need of consolidation, were highlighted.

Opportunities for Upskilling

The lack of opportunities for upskilling resulting from the product strategy adopted by E2 and the negative consequences resulting for the job satisfaction of employees at the company have been discussed above and will not be repeated here. Suffice it to say that production operatives and other general workers had been exposed to only very minor job change in recent years and were therefore provided with few opportunities for upskilling associated with product development.

Employment, Conditions & Prospects for Career Development

E2 had recently undertaken an enormous rationalisation of numbers employed, with total group employment decreasing by two thousand over a three-year period. Of significance here was the dissolution of the 'added value' division and the consolidation of remaining business units from four into two. At group/centre level, the entire Group Training Department had been made redundant (although one new person was subsequently appointed), while at local dairy level site accountants and a large number of HR officers were let go. Although the number of production workers had remained relatively stable, it was very evident from interviews at E2's London dairy that there was a lack of job security and a strong sense of uncertainty among production staff, which stemmed from the precarious position of the business as a whole.

In addition, a number of employees highlighted and lamented the fact that a consequence of the lack of finances available was that little or no training and development activity was being undertaken, with employees therefore effectively provided with no opportunities for personal development.

The Production Environment

A notable finding of the research at E2 was that a highly tangible consequence of the weak financial position of the company was that insufficient capital investment was undertaken, with a failure to replace or update aging and unsuitable plant and equipment.

In this regard E2's group operations director described the processing plant at the dairy visited, very crudely, as 'a bag of shit', explaining that this had not been updated in to the extent that it did not contain basic features of modern plants such as 'mix-proof' valves. Operators working in the process department explained in detail the operational problems caused by the plant and how frustrating it was to work there. Similarly, a large number of managers and operators in the filling hall of the same dairy highlighted the chronic problems of plant downtime in the factory, which were seen to result from the old and poorly maintained nature of the equipment used. One of the shift managers, who had recently joined the company, explained how in order to save money E2 tended to buy second-hand equipment which frequently did not either work properly or was not compatible with existing plant and equipment. In his words, this meant that E2 effectively operated like a 'backward family firm' rather than an advanced/leading-edge concern.

In general terms, therefore, the decline of E2 from its recent status as one of the leading, larger British dairy processors to its current position as a dramatically weakened, hollowed-out organisation characterised by a lack of investment in product development, capital equipment and people, was seen to make the company a difficult and depressing place to work, with low levels of morale in evidence among the workforce¹⁴.

The High-Investing New Entrant E4

Product Strategy & Key Influences Thereon

In strong contrast to E1, E2 and E3, the own-label milk producer E4, which was also an 'indigenous plc' (albeit with a high percentage of family ownership), was a highly successful, rapidly expanding company pursuing a high-investment strategy.

Having started out as a small, locally based family-owned concern, E4 had grown steadily in size since the late 80s/early 90s. Its family owners, who filled a number of the senior management positions in the company, set an objective for E4 of continually expanding its share of the British liquid milk market, and this objective had since been pursued in an aggressive, strategic and consistent manner.

Having been listed on the stock exchange in the early 90s, the success of the company meant that City institutions were prepared to support very significant investments aimed at underpinning further expansion. Therefore E4 had built a state-of-the-art brownfield dairy in the late 90s and this was followed in 2002 by the opening of another, greenfield 'super dairy.' The size of the

¹⁴ On the basis of other research conducted, the trade press and anecdotal evidence, the experience at E2 was mirrored, either fully or in part, at other 'incumbents' in the milk sector. For example, interviews were conducted at a small, regionally based milk producer where the general manager also highlighted the intense nature of competition in the milk industry and the negative consequences of this in terms of the possibility to (re)invest in the business, wage levels and employment prospects; while trade press and anecdotal evidence suggested that similar pressures and dynamics to those identified at E2 were also present at a number of other larger companies in the sector that were not researched. Of the other companies visited, E7 had also been in the milk business for many years. For the vast majority of E7's employees, the experience of work, in the form of a lack of opportunities for upskilling relating to new product development, closely mirrored that uncovered at E2. In contrast, the fact that E7 was a Scandinavian-owned cooperative meant that it *had* been recently able to invest very heavily in developing an innovative range of branded filtered milks, thereby providing a significant minority of its employees with opportunities for upskilling. In addition, it invested heavily in plant and equipment, a policy that, notably, was found to also contribute to some significant upskilling for its production workforce. Further, also in contrast to E2, numbers employed at E7 had remained largely stable in recent years and the company had also been able to dedicate substantial resources to training and development activities. The experience of E7 will be discussed further below.

company and the volumes of product manufactured had therefore increased very substantially in recent years.

Of critical importance to the expansion and success of the company, was the willingness of the larger retailers to transfer product supply contracts away from existing processors to E4. Therefore while total volumes of milk consumed in Britain were declining slightly, E4 had increased its share of the milk market by aggressively targeting the shares of incumbents such as E2.

In addition to competing on the basis of low costs, a central pillar of E4's marketing strategy was to emphasise the state-of-the-art/advanced nature of the dairies used to process and bottle the milk and cream. While the 'super dairies' built were highly efficient and cost effective due to the enormous volumes of milk processed and the fact that the most up-to-date processing equipment was used, E4 was also quite strategic in introducing processes and systems that would impress and satisfy the quality standards and corporate social responsibility preferences of larger retailers such as Tesco and Asda. E4 had therefore, for example, recently introduced environmentally-friendly water treatment plants aimed at reducing waste product and also highly advanced 'sleeving machines', which instead of using labels placed sleeves over the necks of the milk bottles. These innovations and others such as the implementation of the latest environmental protection systems were heavily marketed to retail customers, with obvious great success.

Therefore while E4 had consistently only produced standard/basic own-label milk and cream (as a consequence of a strategic decision to focus on these products), it was characterised by significant ongoing new investment and innovation in the *process* as opposed to product development area. These production-related innovations were also mirrored by service-related improvements, for example the development of a facility whereby customers could track milk deliveries on-line.

Opportunities for Upskilling

E4's exclusive focus on the efficient production of the standard/basic range of own-label milk and cream meant that employees were not provided with opportunities for upskilling relating to new product development. Most obviously, the only milk products produced were whole-, semi- and skimmed milk, which were evidently very straightforward to make and characterized by a lack of change on a day-to-day basis.

Significantly however, E4's deliberate policy of constantly striving to introduce *process* innovations/improvements, was in fact found to lead to some significant job change and upskilling at production level. This finding will be explored in some detail in section 7.3.1 below.

Employment, Conditions & Prospects for Career Development

Mirroring its competitive success and expansion, E4 had in recent years been characterised by very significant employment growth, with over one thousand additional jobs created in the previous five years. Therefore again unlike the other indigenous plcs, E4 was found to provide its employees with both strong job security and also significant opportunities for career progression. The latter was emphasized in interview by the group HR director and manager who provided a number of examples of employees who having started their careers at E4 in low-level production positions, had since progressed to take up senior roles, in some cases reporting directly to the company's management board.

Training and development was also found to be a well resourced, organised and high profile activity at E4. A strongly formalised and systematic system for basic operator training was in place, with the group training manager and a number of operators/technicians also highlighting the large number of 'soft skills' courses (e.g. on 'communication skills' or 'body language'), which operators could attend. In addition, the further development of staff was a firmly embedded organisational goal, with E4 running a well resourced training programme for technicians/supervisors, which covered job specific/technical topics and more general, management-skills related subjects pitched at a number of different levels.

While there were therefore, evidently, a number of positive features, employment at E4 was not without its downsides. Most notably, while the company was heavily invested, the tight operating margins in the own-label milk sector evidently placed a sharp downward pressure on wage levels. Basic hourly rates for production operatives in 2004 ranged from £5.45 to £6.28, which compared quite unfavourably with the rates at a number of the other English firms (outlined in section 7.4 below), as well of course as the economy more generally.

A number of interviewees at the recently opened 'super' dairy lamented the low level of pay at the company. For example, one of the supervisors/technicians interviewed who had recently joined the company having previously worked at British Sugar, expressed his shock at the low

wage levels at E4. Whereas he had earned around £40,000 a year at British Sugar (albeit in a more senior role), he explained that he was currently earning around £14,000. He also bitterly highlighted the fact that the company had recently changed its policy on internal progression such that it would now take significantly longer for new supervisors to reach the top of the pay scale, a change which in his view was designed to save the company money.

While this dairy was located in a high employment area and was a relatively new factory, the low wage levels paid were seen to substantially inhibit the recruitment and retention of production operatives. As the temporary HR administrator explained, the company experienced great difficulty in attracting local English people and young school leavers in particular, and the factory therefore employed a very large number of immigrant workers, many of whom Iraqis who were bussed in on a daily basis by a local employment agency. The production manager interviewed explained that the wage rates paid were low in comparison to the local area and also that having worked in a number of food factories in the area, he was 'yet to see anywhere that matches this place for such a high immigrant workforce.' In this regard, he estimated that around eighty percent of employees in the 'chill' department and fifty percent in the bottle preparation department were immigrants.

The Production Environment

As outlined above, E4 was characterised by the expenditure of very large amounts of money on capital investment, with its competitive strategy expressly based on the construction of brown and greenfield dairies utilizing the most efficient and advanced processes and technologies available. The newly constructed super dairy was regarded as an exemplar production facility in the sector and was described in interview by the production manager quoted above as 'probably the best working environment I have had.' The highly-invested, state-of-the-art nature of this dairy was clearly evident from observation conducted and operators also explained that as the equipment was so new, with one or two exceptions it generally ran extremely well, with few breakdowns¹⁵.

¹⁵ Although the rapid employment growth experienced made E4 distinctive in the sector, two of the other larger players in the milk industry had also (or were in the process of) investing in the construction of technically advanced 'super dairies.' As suggested in the previous footnote, one of these was the foreign-owned processor E7. E7's technical director explained how the combined need to produce as efficiently as possible and at the same time satisfy the highly demanding product safety/quality requirements of retailers meant that his company also strategically sought to introduce and utilise the most advanced processes and technologies available. Although this policy affected the majority of E7's existing dairies, it was seen to be best exemplified in the fact that E7 was currently in the process of building an even larger than average

The Own-label Cheese Company E5

Product Strategy & Key Influences Thereon

E5 operated four dairies and a packing plant, manufacturing a range of cheddars, territorial cheeses and Stiltons for a number of the major British retailers. While possessing a number of its own, branded products, the volumes of these produced were tiny, with the vast majority of cheese therefore being sold in own-label form. Like E6 and E7, E5 was also foreign-owned (being in fact owned by one of the Irish firms studied, I1). It is discussed here as primarily constituting an 'own label' company due to the fact that its ownership status was found to have no tangible significance or impact in relation to the day-to-day commercial/competitive policies it adopted. In summary, its parent company adopted a hands-off, financial-management control strategy which effectively meant that E5 operated much like a private or independently owned business.

In addition to difficult conditions in the cheese market (resulting from the overproduction of cheese as a consequence of the foot and mouth crisis in 2001) and ongoing pressures arising from interconnected trends in exchange rate and common agricultural policy price support levels, the recent policies pursued by British retailers constituted a primary influence on competitive outcomes and performance at E5. Interviewees at group level, the dairy visited and packing plant, highlighted the acute recent pressure that had been placed on the company in this regard in the form of the insistence by a substantial number of retail customers on reductions in prices paid (often alongside *increased* demands in relation to the nature/quality of service provision), with these trends seen to stem directly from the ferocious competition unleashed in the retail sector following the recent entry of Wal-Mart.

Similar to the liquid milk industry, the relatively fragmented nature of production and the homogenous nature of products produced in the cheese sector were seen to have both facilitated and exacerbated this situation. The following quote from E5's group operations director provides a good flavour of the competitive environment facing the company and the views of interviewees regarding the strategies adopted by retailers:

'super dairy' that would adopt 'absolutely forefront' processes and technologies, for example filling machines that could do product changeovers automatically.

The other major factor [influencing the business in recent times] without a doubt, has been the atrocious approach of the retailers over here in the UK, and they really have, either through short-term, three-month internet auctions, whether they've gone on full quotations or renewal of contracts, they've taken millions out of the profitability of the UK dairy industry, totally for themselves. And that's basically playing [the processors] off against each other – 'we're going to re-quote all of our business in its entirety, we'd like you guys to adopt an open-book approach so we know exactly what the costs are of your business right the way through. We intend to see where your costs can best align with our volume requirements, and if you fail to enter into that sort of exercise, then you clearly won't be considered for our business.' So you've gone into this exercise, you've found that you've got into [what was a] a cross tendering exercise and ultimately probably ended up with little or no better in volume terms than you've got at present, but at what cost? So I think [that is one of the factors] that broadly speaking, has neigh-on decimated the own-label cheese sector.

Notably, pressure on processors had 'got worse year-on-year' over the previous few years.

This competitive context meant that E5 was not in a position to make any significant investments in new product and, in particular, *brand* development that might have provided some protection from the fierce competitive pressures in the own-label sector. The cut-throat nature of competition experienced by the company meant that very short 'payback' timeframes were adopted for any investment projects (typically of one to two years), with the rationale being that as the company urgently needed to secure its short-term future, longer term timeframes were not appropriate.

Opportunities for Upskilling

As noted, as E5 did not possess the necessary financial resources, it was not in a position to undertake any major product development and it therefore did not provide production operatives with possible opportunities for upskilling related to such activity. However, mirroring the experience in the milk industry, the frequent and ongoing demands by retail customers for modifications in both the nature of products produced and packaging used meant that employees at each of E5's factories *were* subject to minor ongoing product and process development activity, which *was* found to lead to some significant upskilling. This will be discussed in some detail in section 7.3.1 below.

Employment, Conditions & Prospects for Career Development

Although exact figures were not provided, numbers employed at E5 had fallen by approximately two hundred over the previous five years, a reduction which was primarily attributable to a cost-reduction motivated rationalisation programme at the company's packing plant. Apart from the reduction in numbers employed, it was also very evident that job security in the company was low. In this regard, a shop steward at the dairy highlighted the very significant uncertainty over the future of the company, which was seen to result from the increasingly difficult nature of the product market, while the operations manager at the packing plant also commented that management themselves did not know whether E5 would still be in existence in a year or two's time.

In addition to a reduction in employment and an increased sense of job insecurity, it was also evident that management attempts to reduce costs as a reaction to competitive pressures were leading to significant reductions in earnings for E5's employees. The recent financial difficulties experienced by the company had meant that employees were being required to forego any pay increase for the current year, while over-time levels had also been systematically reduced over the previous few years. Moreover at the dairy, as a result of a very recent, group level imposed requirement for management to come up with over one hundred thousand pounds of cost savings before the end of the calendar year, it had also been necessary for the general manager to introduce a scheme whereby production operatives were given extra time off but had to pay the company for this, effectively leading to a further reduction in earnings.

The financial difficulties of E5 were also found to have sharply curtailed expenditure on training and development. The group HR manager explained how management had recently suspended any further training spend for the current year due to the need to make cost savings to improve the company's financial performance figures. Interviewees at the dairy therefore highlighted how planned basic/statutory training had been stopped and postponed, for example forklift training for production operatives and attendance by four laboratory technicians on a basic food hygiene course costing only £40 per person.

The Production Environment

While some significant recent investments had been made at the packing plant in new, faster cutting machines and machines to deliver new packaging or presentation formats required by retailers (e.g. grated cheese), it was very evident from interviews and observation that the low

profit margins obtained meant that E5 was unable to undertake a number of badly needed capital investment projects at its factories. Most notably, the general manager of the dairy visited described how the lack of investment meant that running that factory was 'like driving a 30 year old car', and explained how a planned investment in a new 'cheddarmaster' tower had to be recently postponed due to the perilous state of the company's finances.

The End Result

The cumulative effect of the combination of job insecurity, pay freezes/cuts and the lack of investment in plant and people was, according to interviewees, low morale among staff across the company as a whole.

A particularly bleak picture was uncovered at the dairy. According to the shop steward, the recent postponement of the introduction of the new cheddarmaster tower meant that 'the light's even gone at the end of the tunnel.' This was seen to have been 'the last straw' for the already demoralised workforce and in his view meant that the factory was likely to be closed down. This, combined with the recent pay freeze and announcement of the temporary loss of earnings for operatives resulting from the cost-saving initiative, meant that the factory was 'tottering on the brink' of going back to the 'them and us' industrial relations climate that had been characteristic of the factory in the past¹⁶.

7.2.3 The High-Investing Foreign Processor E6

Product Strategy & Key Influences Thereon

A German, privately (family) owned branded yoghurt/dessert manufacturer, E6 had been set up as a subsidiary company and had built a greenfield factory in England in the early 90s with the express purpose of supplying the large domestic consumer market. This venture proved to be enormously successful, with E6 experiencing extremely rapid and sustained growth in both the

¹⁶ Although E7 was the only cheese company visited in England, as with the milk sector, trade press and anecdotal evidence again illustrated that the experience at this company was likely to be mirrored at a significant number of other cheese producers. In this regard, a number of industry reports (e.g. KPMG 2003) outlined how processor margins in the own-label cheese sector had in fact been *substantially lower* than those in the milk sector in recent years, a finding which obviously points towards negative skills and employment outcomes resulting across this sector as a whole. Notably, however, two of the larger cheese producers had been able to successfully invest in developing high profile cheese brands, which were very profitable. While production volumes at least one (if not both) of these firms continued to be dominated by own-label cheese, the development of these brands provided these companies with some significant protection from the harsh competitive conditions in the own-label cheese sector.

number and volume of products produced, driven by the strategic and aggressive adoption of an innovation focused, high volume product strategy. Therefore while initially only manufacturing a handful of products, by 2003 E6's factory was producing over 80 products with 12-18 new products or product extensions introduced each year. Product throughput volumes had also grown enormously, to over a billion pots of yoghurt/dessert a year. Importantly, all of the products manufactured were branded and could be categorised as being of a 'value added' nature.

The aggressive, expansion oriented strategy pursued meant that E6 was comfortably the market leader in the UK short life dairy product sector. It therefore possessed very strong bargaining power in its relationships with retailers and was a highly profitable company.

The private and foreign-owned status of E4 was evidently a key influence on the product strategy it pursued. The company was effectively owned by one particular family who adopted a hands-on role in its management and importantly invested enormous amounts of money in product development, marketing and capital equipment according to the guiding principle of 'whatever will give more for longer.' The German provenance of the company was found to be influential in terms of providing the necessary dairy processing and engineering expertise and also underpinning the long-term strategic focus adopted. These ownership characteristics interacted with the very rapid growth in consumer demand for innovation-focused, branded mainstream yoghurts and desserts from the late 90s on to underpin what the HR director described as a 'success spiral' of investment followed by competitive success leading to additional investment.

Opportunities for Upskilling

The detailed skills outcomes resulting from the product strategy adopted by E6 will be outlined in detail in section 7.3.2 below. Therefore only the headline findings in this regard are highlighted here. In summary, at a general level it was clear that the E6 factory was a highly stimulating working environment, which provided numerous, frequent opportunities for upskilling on the part of production operatives. This was due to two principal factors, namely the relentless introduction of new products/product variants, including a number of particularly advanced products (such as a children's snack product consisting of yoghurt in a paper tube or multi-pack yoghurts wrapped in a user-friendly plastic covering), and the mass-volume nature of

E6's product strategy, which necessitated the introduction and utilization of highly sophisticated equipment and technologies.

Employment, Conditions & Prospects For Career Development

Mirroring the introduction of new products and competitive success of the company, employment levels at E6 had increased very rapidly since the early 1990s, with well over one thousand people employed in 2003. Numbers employed had risen by 460 over the previous five years, with a new warehouse and second filling hall having been recently opened. Furthermore, management explained that concrete plans were in place to begin the construction of a new factory on site for the production of yoghurt drinks, that would lead to additional employment creation.

In addition to very rapid employment growth, the job security that resulted from the enormous success of the business was seen to make E6 highly distinctive against the context of the very significant recent retrenchment in the local dairy industry, as the following quote from a technical operator illustrates:

Prior to working here I was made redundant three times in two years [by indigenous dairy companies] and I was a bit fed up with it by then. But working here I feel confident....it's grown so fast which is such a boost to confidence. Having been in factories where things are winding down and there's not enough work, you know there's work for eight people and there are ten of you there or whatever it is. It's really depressing to be in that environment where machinery's idle and this kind of thing. It isn't like that here, it's the exact opposite. It's very busy and we're very happy to be busy....I'm very happy. Yep.

The HR manager explained that the high level of job security was 'the overwhelming reason' why people came to work at E6, while the HR director similarly noted that there was a perception among E6 employees that once they got a job there, they could 'actually plan their life out', a perception which went 'from top to bottom' in the company. Together with the comparatively high wage levels paid (outlined in section 7.4 below), the strong sense of job security was seen to make E6 a highly sought-after employment in its surrounding area.

Aside from positive employment and wage outcomes, it was also evident that E6 invested very heavily in training and developing its employees. According to the HR director, E6 was 'not typical of the dairy industry in terms of the amount of money we spend on training'; rather it was

'probably more typical' of successful branded food business such as P & G and Kraft. The foreign-ownership and high profitability (as well as the long-term focus) of the business were highlighted as important factors in accounting for the high level of investment in training, which as the following quote from the HR director illustrates, was seen to contrast strongly with the predominant approach to training within British industry in general:

One of the things you don't have to do with a German business is persuade them of the value of training, they're already there, they're sold on it, you take it for grantedwe just, we get the resources to do it, we're profitable enough to do it, but set that against the normal UK context it's very different....

A detailed overview of the training provided and opportunities for development for operators at E6 will be outlined in section 7.3.2 below. In summary here, most operatives had undertaken general or underpinning knowledge training on dairy science/dairy product manufacture and yoghurt-making. In addition, E6 had also recently invested heavily in developing a specially tailored NVQ programme, which was being rolled out at the time of the research, and ran a resource intensive 'production apprenticeship' programme. Further, a number of accredited general management courses were offered to supervisors as well as some senior operators.

The Production Environment

The E6 factory was found to be a heavily invested, state-of-the-art production facility. As noted above, the highly automated and capital-intensive nature of production resulting from the enormous product volumes produced necessitated the utilisation of some of the most advanced equipment and technologies available. As a consequence, operators at E6 were unquestionably working in one of the most sophisticated yoghurt/dessert factories in the world, an observation validated by the former R & D/general manager of E3's branded yoghurt factory (an expert on yoghurt manufacture) who had visited the factory¹⁷.

¹⁷ The experience at E7, a Scandinavian, farmer-owned cooperative, was less striking than that of E6 for the reason that the major product development undertaken at the former was limited to only one of the company's six factories. However this development, in the form of the highly innovative range of specially filtered, branded liquid milks mentioned above, was arguably no less significant due to the fact that it was carried out against the context of E7's location in the notoriously difficult own-label milk sector. E7's commercial director, who was British, was quite explicit in attributing E7's development of this new product (which notably constituted the first substantial investment in a branded product in the liquid milk sector in recent years), to its status as a Scandinavian-owned cooperative. Specifically, while indigenous plcs in the milk sector (as well as the dairy industry more broadly) such as E2 were seen to be heavily constrained 'by what the guy in the pinstripe suit and the red braces is going to say in November and in June', the commercial director emphasised how E7 was owned by *'farming families* that think

7.3 Skills Outcomes

7.3.1 The Own Label Milk & Cheese Sectors

Companies and Product Strategies

This section will present data on skills outcomes at the liquid milk producers E2, E4 and E7 and cheese producer E5, which manufactured a standard range of own label milk and cheese products to the major UK retailers.

As has also been previously outlined, competitive trends in the own-label sector were found to have quite profound consequences for both employment trends and investment strategies at these firms. At the 'suffering incumbents', the milk producer E2 and cheese producer E5, the fierce competition between processors and downward pressure on margins resulting from this and the aggressive nature of retailer policies had resulted in very significant rationalisation of numbers employed (albeit at E2 more so than E5), high levels of job insecurity and serious underinvestment in both production facilities and people. In contrast, at the other incumbent, the liquid milk processor E7, for company specific reasons (i.e. the company's foreign ownership status and fact that it had previously undertaken a wholesale rationalisation programme in the mid 1990s), numbers employed had remained largely stable and investment levels high, with a new state-of-the-art 'super' dairy shortly to be opened. Finally, the recent entrant E4 had managed to expand rapidly (at the expense of E2, among others) and had therefore witnessed a dramatic *increase* in numbers employed. In addition, as outlined in section 7.2.2, its success in winning retailer business was substantially based on a strategic policy of constructing highly efficient 'super dairies', with a new, sophisticated dairy therefore having been recently opened.

Work Organisation & the Production Process

Table 7.1 provides an overview of the production process in the liquid milk and cheese sectors.

generations ahead' and who were therefore prepared to take '*longer term* strategic decisions.' While the factory producing this new range of milk products was not visited, E5's group technical director explained how it was 'a highly technical product' which had necessitated the construction of a completely new plant with a dedicated workforce due to the substantively different nature of the product/production process and also the 'high care' nature of the product. As well as involving substantial job change for the workers affected, although not leading to the creation of new jobs this development was seen to have provided enhanced job security. In this regard, a TGWU official noted how 'you could see the confidence' the development had given shop stewards at the site, in terms of a perceived increase in job security.

Table 7.1 Production Process & Work Organisation in the English Milk & Cheese Sectors

Liquid Milk	
<i>E7 (new 'super dairy'), E4 (new 'super dairy'), E2 (dairies A & B)</i>	
Production Process	<ul style="list-style-type: none"> • Milk intake, cream separation, pasteurisation, homogenisation, filling/bottling, packing, storage & distribution • Filling hall tasks including preparing bottles for filling, operating & 'servicing' the filling machines (e.g. ensuring a steady supply of bottle tops & labels); also operating automatic 'trolley packers' & manual packing • Storage & distribution involving taking 'roll containers' into chill/cold store, labelling & loading onto delivery lorries
Work Organisation	<ul style="list-style-type: none"> • Functional departments: process, filling hall, cold store/despatch • Operation of <i>processing plants</i> highly automated at all companies with typically only 2 operators remotely operating separation, pasteurisation and homogenisation plants from computer screens in control rooms • <i>Filling halls</i> containing a large number of production lines filling bottles/containers of different sizes (e.g. 1/2/4/6 pint 'poly' bottles, cream cartons etc.) • While more labour-intensive than process department (e.g. 20 people per shift at E4 dairy), in general characterised by high levels of automation, particularly at E7 & E4; set-up & maintaining operation of filling machines requiring some manual intervention, although machines generally running with little intervention • Packing almost entirely automated at E7 & E4 (e.g. with exception of cream packing); entirely automated also at E2 dairy A; while largely automated at E2 dairy B, some significant manual packing undertaken • <i>Cold store/despatch</i>: a more labour intensive department at all companies (e.g. 40 people per shift at E4 dairy), but to a lesser extent at E2 • E2 dairy A: trolleys automatically shunted from packing machines onto tracks & into despatch area; E2 dairy B: while automated conveyor-type system in place to transport roll containers automatically into cold-store, this not working at time of research with trolleys therefore being pushed manually • E4: roll containers pushed manually by operators from packing machines to despatch area; E7: roll containers generally pushed manually by operators from packing machines to despatch area
Cheese Sector	
<i>E5</i>	
Production Process	<ul style="list-style-type: none"> • <i>Dairy</i>: milk intake, separation, addition of culture & rennet, cheddaring, blockforming into 10kg blocks, packaging/sealing, boxing & storage • <i>Packing plant</i>: manual placing of cheese blocks onto a conveyor belt & passing through a cutting machine; manual picking of resulting cheese portions from conveyor belt & placing into 'pockets' from which portions passed through a wrapping/packaging machine; manual packing & palletisation of resulting wrapped portions into boxes followed by removal to store room by forklift drivers
Work Organisation	<ul style="list-style-type: none"> • <i>Dairy</i>: highly automated/capital intensive • <i>Cheesemaking</i>: directed by 1-2 operators; process generally highly automated but some manual interventions by operators, e.g. the addition of culture • <i>Bulk packing</i>: 2 operators & 1 relief manually placing plastic bags over openings on blockformer into which blocks of cheese pushed automatically; blocks automatically packed into cardboard boxes & transported via a conveyor belt to an automatic storage area; 1 operator & 1 forklift driver covering both these areas • <i>Packing plant</i>: highly labour intensive process with 17 different production lines & approx. 500 employees; generally 8 operators on one line at a time: 1 operator per line manual placing cheese blocks onto a conveyor belt; 1 operator running cutting machine; 2 operators manual picking cheese portions from conveyor belt & placing them into 'pockets'; 1 operator running wrapping/packaging machine, 2 operators manually packing & 1 operator palletising; finally transfer to store by forklift driver

Headline Findings In Relation To Skills Levels & The Potential For Upskilling

A general assessment of the core features of own-label production would indicate that the skill levels involved were not high and opportunities for upskilling limited.

The liquid milk process operator and cheese process operator positions were the only positions that could perhaps be described as 'skilled.' These evidently required capable individuals who were able to handle the high level of pressure and responsibility associated with these positions. In addition, the relatively frequent occurrence of operating problems or unexpected events in these jobs meant that it was important for operatives to be able to react quickly, think logically and 'problem-solve.' A twelve week training period was typical for process operatives in both sectors, although the operators interviewed were of the opinion that it took around a year to become fully comfortable in these positions.

Of the other positions in both sectors, while probably best described as 'semi-skilled nature', the filler operator position in the liquid milk sector and cutter and wrapping machine operator positions in the cheese sector, were found to also involve significant pressure/responsibility and to require individuals who were dextrous, had a degree of mechanical aptitude and stamina/durability. A 4-6 week training period was typical for filling/packing machine operatives in both sectors (although it was likely to be significantly longer in the case of E7 – see further below).

Remaining positions were dominated by unskilled, manual jobs - for example liquid milk cold store positions or the packing/palletising of cheese portions - that required only minimal training. Importantly it was also evident that these unskilled positions substantially outnumbered the more skill intensive positions in the liquid milk sector and existed in roughly equal numbers with the process operator and machine operation positions at the cheese producer E5.

Therefore in the milk sector, while a total of 75 operators worked in the process, sleeving and filling departments at E4's recently opened dairy - the vast majority of whom operated either process plant or filling/sleeving machines - 128 operators worked in the cream, chill/coldstore and despatch departments, which were in contrast dominated by manual activities, for example manually packing cartons of cream, pushing trolleys into the coldstore and loading trolleys onto delivery lorries. A clear majority of jobs at this state-of-the-art new dairy were therefore of a manual, unskilled nature. While exact figures were not provided, the technical director of E7

also noted how the coldstore/despatch area would similarly be the most labour-intensive department at E7's soon to be built super dairy.

It could therefore be argued that the basic/fundamental nature of the products produced and production processes utilised, placed a strong downward pressure on the levels of skill involved in particularly the milk but also the cheese sector.

In terms of the *potential for upskilling*, in both the milk and cheese sectors (and the former in particular) the products produced and production processes utilised, in addition to being relatively straightforward to manufacture, had remained very stable over time. Specifically, the essential production process for the production of both milk and cheese had changed little over the years and the operation of process plants in both sectors was in general not characterised by high levels of complexity, with a standard set of (unchanging) production steps/stages in place. Similarly, the core tasks involved in operating filling and packing machines had remained stable over time and were also, apparently, relatively straightforward. Stability in the products produced and processes utilised therefore meant that operators had few opportunities to learn new things or increase their skill levels.

However although the products and essential production processes utilised at the own-label firms had therefore, in the main, been characterised by stability and a lack of change, the fieldwork identified that operating systems, work organisation policies and equipment used *had* in fact witnessed very substantial change in recent years, with significant consequences for operator skills and experience of work. These trends identified were found to result, on the one hand, in some substantial upskilling and opportunities for new learning and on the other hand, in very tangible work intensification. These two general findings are now discussed.

Unravelling the Impact of Recent Product Market Trends

Table 7.2 below provides a summary of significant recent product market trends identified in the own-label milk and cheese sectors and the implications of these for the jobs/skill levels of production operatives.

Table 7.2: Main Product Market Trends In The English Milk & Cheese Sectors & Consequences For The Jobs/Skills Of Production Operatives

Trend/Development	Significance for Jobs/Skills of Production Workers
<ul style="list-style-type: none"> • Increase in statutory regulation and customer expectations with regard to food safety & quality & environmental protection; also regular demands by retailers for introduction of additional safety measures 	<ul style="list-style-type: none"> • Very significant recent increase in formal recording by operators of data on various production performance measures, e.g. pasteurisation temperatures; of particular importance for process and machine operators but also for some relatively basic packing-related positions (e.g. forklift operators at E5) • Recording requirements leading to an increase in demand for literacy & numeracy skills, particularly among new recruits • Introduction of new or additional tasks for operatives, e.g. new bottle top 'heat-seal' test for filling hall operatives at E2
<ul style="list-style-type: none"> • Frequent requirement by retailers for new & more demanding service requirements & standards (e.g. tighter delivery windows) & unwillingness to accept mistakes or substandard performance; parallel drive by processors to protect existing & win new supply contracts by impressing retailers • Cheese sector: frequent retailer demands for changes in flavour profiles, packaging formats & product presentation 	<ul style="list-style-type: none"> • Retailer insistence on exacting standards & eagerness of processors to impress leading to introduction of 'forefront' equipment/technologies at E7 & E4; most obviously apparent in the construction of state-of-the-art 'super dairies' utilising the most advanced equipment available, e.g. filling machines that do product changeovers automatically were to be introduced at E7's new dairy to avoid risk of operators putting incorrect labels on product & therefore of supply contracts being lost; similarly, new environmentally-friendly membrane plants introduced at E4 dairies to recycle waste milk • Introduction of such equipment leading to both upskilling and deskilling, but in general terms providing substantial opportunities for new learning as well as ongoing engagement with cutting edge technologies • Changes to flavour profiles/recipes in cheese sector of little significance for operators, with process adjustments generally implemented by managers or technical staff; however operators having some involvement in product trials • In contrast changes to packaging formats (e.g. grated as opposed to block cheese) involving the relatively frequent introduction of new equipment at E5 packing plant & therefore requiring some significant new learning/training for operators
<ul style="list-style-type: none"> • <i>Pursuit of cost reduction & increased efficiencies, manifested by:</i> <ul style="list-style-type: none"> • Expansion of volumes processed (again in part via the construction of super-dairies at E7 & E4) & introduction of additional & faster automation • Enlargement of operative jobs (e.g. in-line moisture testing for process operatives at E5 dairy) • Delaying of organisational structures & introduction of teamworking systems utilising employee involvement & continuous improvement techniques (E7, E4 & E5); roll-out of formal group-wide continuous improvement programme at E2 	<ul style="list-style-type: none"> • Reduction in number of manual positions in liquid milk plants & cheese dairy (e.g. manual packing), but not cheese packing plant • Increased demand for operators with strong literacy and numeracy skills in order to be able to read and analyse performance ratios (e.g. the E5 packing plant, E7) • Increasing involvement in high level diagnostic & project improvement work, particularly for technicians/supervisors but also some operators - e.g. automation at new E7 dairy facilitating a myriad of performance measurement techniques & moving operator role away from mere operation towards a focus on ongoing adjustment of plant operation; or E4 - training of senior process operator with Tetra Pak engineers in running production simulations in order to reduce product changeover times • While some production activities/positions remaining of an unskilled nature, the introduction of teamworking systems found in general to require a high calibre of operator, e.g. operators at E5 packing plant undertaking tasks of placing cheese portions into pockets also expected to operate packaging machine; all team members also with responsibility for product changeovers

Evidence of Upskilling

As is evident from the table, competitive trends in both the milk and cheese sectors, while clearly not leading to the introduction of new products, had some quite profound consequences in terms of the nature of the processes, technologies and equipment used, as well as the work organisation systems and management approaches adopted, the (cumulative) effect of which was to both provide some substantial opportunities for operator upskilling and in general terms create a demand for higher calibre operators¹⁸. In addition, the detailed examination of recent trends also rather surprisingly identified a higher level of product development activity at the own-label cheese producer E5 than expected on the basis of the initial analysis, with some significant upskilling/new learning as a consequence resulting for operators at the company's packing plant.

Evidence of Work Intensification

While strong evidence of some substantial upskilling was therefore identified, significant intensification of work effort was found to be an important accompanying 'downside' of the work organisation changes introduced in response to recent trends. Specifically, the requests by retailers for new and more demanding safety and general service level requirements was found to result in increased pressure/stress at production level, particularly for process and filling machine operatives at the liquid milk companies. In this regard, managers and operators at E2 dairy B explained that the recent introduction of additional, hourly safety tests meant that filling hall operatives now had substantially more to do than before, placing them under greater pressure.

In addition, the drive to reduce costs and increase efficiencies was found to lead to significant work intensification in both sectors. For example, subsequent to the recent introduction of faster cutting machines, operators at E5's packing plant were expected to manually pack 50 pieces of cheese a minute, while E5's group operations director explained how he was driving a policy of maximising levels of 'people utilisation' across the company that was resulting in higher individual workloads. Similarly, a TGWU official highlighted shop steward reports of increasing intensification, pressure and stress at the liquid milk producer E7 related to a similar drive towards efficiency improvement and cost reduction at that company.

¹⁸ An additional tangible finding from the research at the own-label firms was that the competitive pressures in both sectors were prompting *management* at each of these companies to interrogate, strategically reassess and realign the operational policies and management systems they adopted. A notable consequence of this was the introduction of greater formality, deliberation and control into the operational policies and systems utilised and, more broadly, 'better' management, strengthened organisational capabilities and greater 'strategic fit' between policies and performance goals.

A Note on the Contingent Nature of Skills Outcomes in the Own-label sector

While the findings from the fieldwork conducted clearly pointed to the existence of highly tangible patterns of both upskilling and work intensification, it is necessary to conclude this section by drawing attention to evidence suggestive that skills outcomes at workplace level were not likely to be characterised by strong uniformity but rather be heavily contingent on a number of important factors or influences.

It is important to Finally, it was also evident that the practical realisation of operator upskilling was likely to be substantially contingent on a number of important factors. For example, while the other main player in the milk sector (which was an indigenous plc) had also constructed a number of 'super' dairies, according to the technical director of E7 due to a weakness in management/technical skills, this company apparently experienced significant difficulties in effectively utilising the equipment and processes introduced, with the result that operator upskilling might be seen to be less likely to result here than at E7, which was characterised by very strong technical capabilities. Similarly, the operations manager at the E5 packing plant noted how at that factory's main competitor factory (also owned by this indigenous plc) a traditional work organisation system based on high employee numbers and strict supervision remained in place. The operations manager referred to this factory to illustrate the fact that while in his view a high-involvement, team-based system was the most efficient form of work organisation in the cheese packing sector, it was not the only possible system to adopt. While clearly constituting hearsay evidence, these examples demonstrate that despite the existence of common pressures, the possible upskilling or empowerment of operators via the introduction of teamworking systems was only one of a number of possible work organisation strategies that could be adopted, and also that even where 'high tech' equipment or technologies were introduced, the potential for upskilling was likely to remain contingent on organisational characteristics.

7.3.2 The High Volume Branded Yoghurt & Dessert Producer

Product Strategy

As outlined in section 7.2.3 above, E6 was a highly successful, foreign-owned branded yoghurt/dessert producer pursuing an innovation focused, high volume product strategy. Having constructed a greenfield factory in England in the early 90s, E6 had continually aggressively expanded its business such that by 2003 it manufactured over eighty different products (with 12-

18 new products or product extensions introduced each year) and employed well over one thousand people.

In terms of products produced, initially E6 manufactured only a handful of products centred on three basic yoghurt/dessert formats - a 'fruit/crunch corner', split-pot yoghurt/dessert; 'light' yoghurt; and a rice-based dessert. By 2003 these three products still formed central pillars of the company's product strategy, with many different variants or 'extensions' of the basic formats being manufactured. While the extensions to the light yoghurt and rice ranges typically merely involved the addition or use of a different fruit or flavour, many of the variants to the split-pot fruit/crunch corner products were a good deal more complex, for example consisting of yoghurt and two sets of fruit in one corner and cereal in the other corner, i.e. with three different ingredients being added to the yoghurt/dessert base.

Apart from the further development of these 'traditional' products, the E6 factory had also witnessed the frequent introduction of entirely new and significantly different products/ or product ranges, including 'thick and creamy' yoghurt, fromage frais and a range of mousse products. Most recently, 'probiotic' yoghurts, a combined fromage frais/fruit dessert and a children's product consisting of yoghurt in a paper tube had been developed.

As noted earlier, all of the products produced were branded and could be categorised as being of a 'value added' nature.

The Production Process & Work Organisation

Table 7.3 provides an overview of the production process, work organisation and operator training at the E6 factory.

The Extent of Job Change & Skill Consequences

General Findings

The overarching finding from the fieldwork conducted was that the E6 factory constituted a high-skill, high-learning working environment. As noted in section 7.2.3, this was attributable to two principal factors, namely the relentless introduction of new products/variants (including a number of particularly advanced, innovative products), which meant that operators were in general terms confronted with frequent job change; and the mass-volume nature of E6's product

Table 7.3: Production Process, Work Organisation & Operator Training at E6

695 Employees (445 direct production, 250 warehouse/distribution); also 80 engineers	
Production Process	<ul style="list-style-type: none"> • A highly automated, capital intensive production process with enormous throughput volumes (four million pots of yoghurt/dessert a day) & utilizing sophisticated, high tech technologies & processes • Intake of liquid milk; separation of milk into skim milk & cream; concentration of skim via evaporation; pasteurization; mixing & addition (generally automatic but some manual) of powders/ingredients to milk to make up yoghurt/dessert bases; homogenization; manual makeup & addition of yoghurt cultures to storage tanks (i.e. 'incubation') to stimulate yoghurt-making process • Dedicated fruit processing department involving significant manual sorting/preparation of raw fruit, with automated cooking process • Yoghurt, dessert bases & fruit/flavours pumped into mixing/filling machines; pumping & mixing processes automatic but set up of machines involving significant manual intervention • With exception of one small product line, packing & palletizing activities totally automated; however substantial, labour-intensive repackaging of products undertaken • Warehouse & despatch highly automated
Work Organisation	<ul style="list-style-type: none"> • Factory divided into following main departments: process, rice, fruit, filling hall, repackaging, warehouse/despatch • Process: 4 operators per shift running milk intake, separation, evaporation & pasteurization processes from PC screens in two control rooms; fifth operator overseeing the mixing & addition of ingredients to make up yoghurt & dessert bases and also making up & manually adding cultures to storage tanks • Fruit: 4 operators running processing plants from PC screens; manual loading, sorting & preparation of fruit undertaken by general operators (4 at a time) • Filling hall: 20 filling machines, each run by one operator; <i>filling hall one</i>: 22 machine & 7 general operators per shift; general operators servicing & operating automated cardboard & pot supply machines feeding the filling machines; <i>filling hall two</i>: 15 machine operators per shift (no general operators) • Total of 284 process/machine & 161 general operators in factory as a whole (excluding warehouse) • 250 operators in warehouse operating automatic storage machines, also picking orders, driving forklift trucks, loading lorries etc.
Training & Learning Times	<ul style="list-style-type: none"> • 12 month training period for process operators, 6 months for machine operators in filling hall; general operator roles involving approx 4-6 weeks training • Process operators seen to be sufficiently familiar/comfortable with plant after training period (albeit with further experience also highly beneficial); approx two years for new machine operators in filling hall to gain a high/comprehensive level of familiarity with that department

strategy, which necessitated the introduction and utilization of highly sophisticated, leading-edge equipment and technologies.

The extent and pace of change at the factory was extraordinary. As noted earlier, the development-focused nature of the product strategy meant that 12-18 new products were introduced each year. While some of these consisted of simple extensions to the 'traditional'

light yoghurt and rice ranges, others were substantially different, advanced developments such as the combined fromage frais/fruit dessert and children's snack product mentioned previously, and also a mousse and 'cheesecake' dessert. Although, as will be outlined below, the introduction of new products impacted on certain departments in the factory more than others, at a general level all were substantially affected by the product strategy adopted; the recent rapid growth in the number of products produced and the ongoing turnover and replacement of existing products by the most recent developments, meant that operators at E6 were faced with frequent job change.

Alongside the positive skills outcomes arising from the introduction of new products, the enormous throughput volumes manufactured by the factory and within the same the very large number of individual products produced (i.e. around four million pots of yoghurt/dessert a day in total made up of any particular combination of a possible eighty different products), required the adoption of the most advanced, high tech processes, technologies and equipment available; which, perhaps unsurprisingly, was also found to make the E6 factory a highly skill intensive working environment. The highly automated and sophisticated nature of the factory was evident in the fact that of the 445 operators in the process, fruit, filling and packing departments, 284 were processor or machine operators (the generic term used for these was 'technical operator') and 161 general operators; and in addition in the fact that there were eighty engineers working in the factory on a full-time basis. Overall, such enormous volumes of a large number of different products were produced meant that the factory was characterized by a very high degree of logistical complexity.

As noted in section 7.2.3, the E6 factory was regarded by observers in the sector (for example members of the Society of Dairy Technology such as the former general/R & D manager at E3) as a state-of-the-art production facility and one of the most sophisticated yoghurt/dessert factories in the world.

In summary, therefore, it was evident that E6 was a high skill working environment. This being the general finding, a more detailed examination of skills outcomes is now undertaken. This focuses on the process department and filling hall with some additional data presented in relation to the fruit preparation, repackaging & warehouse/distribution departments.

The Process Department

In order to maximize efficiencies and economies of scale, E6 adopted a deliberate policy of limiting the number of yoghurt/dessert bases used and also processing extremely large volumes of individual bases at one time (100,000 litre batches). Therefore while the number of bases had increased from the two used in the early days of the factory, in 2003 only 8-9 were used in total despite the fact that eighty different end products were manufactured.

In terms of skill levels, a number of aspects of the process operator's job were relatively basic or straightforward (and rather 'tedious' according to one of the operators interviewed), for example manually measuring out and mixing ingredients used to make the base for different products or making up and adding starter culture to storage tanks in order to prompt the yoghurt-making process. The remote operation of the separation, blending, pasteurization and homogenization processes was also seen by operators to be relatively straightforward, with the high level of automation and user-friendly operating interfaces used highlighted. However the process department *did* require capable operators who were able to think logically and problem-solve due to the fact that the software programmes used were not 'foolproof', with some significant operating problems arising on a not infrequent basis. In addition, the enormous volumes processed in individual production runs meant that it was important for operators to be able to cope with high levels of pressure and responsibility. As the process operator mentioned above explained, the high volumes processed made it necessary for the job to be approached with 'great responsibility.'

In relation to the consequences of new product development, the introduction of simple extensions to existing product lines (for example the addition of a different fruit or flavour to the light yoghurt or twin-pot dessert ranges) were of no significance to process operators, as these products used the same bases as those used for existing products. Similarly, of the other products introduced recently, the new combined fromage frais/fruit dessert range also involved no change for process operators as it, too, used an existing base. In contrast, the mousse range *had* necessitated the introduction of a new base, which notably involved the use of emulsifiers for the first time (which were used in order to enhance product consistency). The process operator explained how the introduction of this new range had 'caused big problems' for process operatives because the mousse base was very viscous and therefore difficult to remove from the storage tank. However these difficulties/problems only lasted for the duration of the product

trials, with the introduction of additional pumps solving the problem; and the mousse was therefore seen to be quite straightforward to manufacture on an ongoing basis.

Despite being high value-added/advanced and significantly different in terms of its internal composition from previous products, the 'probiotic' yoghurt range which had been recently introduced had not led to any major job change or upskilling for process operatives. The R & D manager explained how the manufacture of these products was straightforward: 'we make ordinary yoghurt and essentially we add extra cultures [i.e. the 'probiotic' cultures] to it.' When asked whether this involved any significant upskilling for operators and shift managers he explained that 'no, essentially to them it's just more cultures that they need to add. And you know, it's as simple as that, they just throw them in'¹⁹.'

For his part, the process operator explained how having to use/add the probiotic culture *had* initially been viewed by operators as a significant change. Specifically, while no training had been provided for this new task, operators had been 'a bit wary of it' due to the fact that culture addition was a sensitive/vulnerable part of the production process in terms of the need to maintain a sterile plant and avoid contamination. However by the time of the fieldwork, adding this culture had become 'almost a routine thing to do'²⁰.'

Finally, the introduction of the new children's yoghurt snack range had involved the introduction of a new piece of processing plant as well as, unlike other products, the use of stabilisers, which were needed to keep the product together during the cooling process. The skills consequences of this were not fully ascertained.

In summary, while the job of process operators was in the main characterized by stability, the product strategy pursued by E6 had resulted in a number of notable changes in the products produced and plants used, which required the active engagement and attention of operatives and involved them learning some new things. In addition, the fact that new products had been

¹⁹ Also in this vein, the R & D manager noted how the production process for a newly developed probiotic milk drink range which was due to be shortly introduced at the factory, was also quite simple and uncomplicated. As he explained, 'it's just a different yoghurt base and fruit growth [made] in the fruit plant. [You] mix the two together....the probiotic culture is just nuts and bolts.'

²⁰ Notably, while the jobs of process operatives were therefore largely unaffected, the development of these probiotic products *had* involved very significant learning/upskilling on the part of the R & D manager and his colleagues in the R & D department. The R & D manager outlined how the product development phase had required an enormous amount of research and 'deskwork' in the area of probiotics and 'functional foods', which had led to very significant knowledge upgrading on his own part.

introduced meant that, in general terms, process operators needed to be more attentive and aware about what was happening on the plant than before, in particular in relation to the staging and coordination of different production runs. As the process operator explained, 'different products have to be handled in different ways', which was seen to 'all add to the jigsaw' and make it necessary for production to be 'planned through very carefully.' The planning skills of operators were therefore emphasized to a greater extent than before.

More broadly, it was also evident that process operators were frequently required to participate in trial runs of new products. The process operator noted how trial runs were in general regarded 'as a bit of a nuisance' due to the fact that they interrupted the normal/standard production routine, although they also could be interesting 'depending on your point of view.' From his perspective they were a positive thing.

The Filling Hall

The filling hall at the E6 factory was found to be a very highly skilled production area. The high level of automation and extremely fast throughput speeds of the packing machines (which produced between thirty and forty thousand pots an hour and were each manned by one operator) meant that highly capable machine operators were required. In a similar fashion to the process department, the throughput volumes in the factory placed enormous pressure on filling machine operatives in terms of the need to avoid mistakes at all costs, as here again huge product loss could result. The state-of-the-art, advanced nature of the filling machines also placed a premium on having competent operators.

The demanding nature of the filling machine operative job was reflected in the HR manager's explanation that new recruits needed to have previous industrial experience, because otherwise 'they can't cope' with the job. In addition to the technical aspects, the extent of automation, pace at which the machines operated and fact that operators worked alone made the filling hall a 'noisy and intimidating environment' where operators were 'isolated' and did not have time to talk to one another.

With regard to the skills consequences of the introduction of new products, E6's innovation-focused product strategy was found to have quite profound consequences for the jobs of filling machine operatives. While there was specialization in terms of products produced between the two filling halls, the very large number of products produced, combined with E6's policy of

promoting multiskilling, meant that individual operators were exposed to many different products on a weekly basis.

In terms of the new products introduced, as with the process department, simple line extensions involving the use of a different fruit or flavour had only minimal consequences for the filling machine operator's job. However it was very evident that the product strategy adopted, in particular the development of single products consisting of multiple combinations of ingredients, had greatly increased the complexity and skill-intensity of this position. The following quote from a shift manager was illustrative in this regard:

Yeah [it has become] very, very complex. They originally went from a machine that put a plain yoghurt in one side of the pot and a fruit in the other, which is what they still do sometimes, to putting a yoghurt mixed with fruit in the pot as well as fruit in the corner. Then they went to yoghurt in the pot and cereal in the corner and then to yoghurt mixed with fruit and cereal, and onto fruit underneath the yoghurt mixture, fruit on top, with cereal in the corner; and it's virtually running out of options now, but constantly, constantly striving to get a better product and causing, making it more and more complex in production.

The key requirement of filling operators resulting from the introduction of the new, combined products was to clean the various product routes and make sure the new ingredients were set up correctly. The complexity of these products was evident in the fact that the shift manager explained that whereas with more basic products (e.g. involving addition of a single fruit or flavour) it was possible to do a product changeover in around 20 minutes, product changeovers for some of the new, combined products took 'well over an hour' even though the production team was 'better and more experienced at them.' These products meant that 'a huge amount of knowledge' was needed by operators.' As the shift manager emphasised, 'it is complicated, I mean you pick a pot of yoghurt up, I don't you think you realise what goes into it.'

While these combined products typically involved the use of existing equipment, a number of other new developments had involved the introduction of new plant and machinery. For example both the range of mousse products and new combined fromage frais/fruit dessert were produced with the aid of a 'Mondomixer', which was used to aerate the yoghurt/dessert base. The introduction of this was seen to have been significant in that it was substantially different to existing machinery and therefore involved new learning for operators and managers alike. A one

day training course had been involved for managers (it was not ascertained whether operators received similar training).

It was also very apparent that E6's product strategy necessitated the frequent introduction of innovations in packaging equipment and technologies utilized. As the strategy of the company was to produce on a mass volume basis, of necessity the packing, boxing and palletizing processes for effectively the entire product range were completely automated. A number of interviewees highlighted how, in general terms, in order to facilitate achievement of the enormous production volumes required, E6 sought to utilize the most sophisticated and advanced packing technology available. However the fact that the company went out of its way to create novel products involving innovations in shapes/formats and packaging used in addition to ingredients, gave rise to enormous complexity in the filling hall where management (and operators) had to find new ways of packing and palletizing the new formats introduced.

For example, both the factory manager and a production manager explained how the production team had faced very significant difficulties in firstly finding/developing and secondly successfully introducing packing equipment to enable it to pack the new children's snack product, due to the fact that unlike the vast majority of the company's products, this product was not in a pot but rather in a paper tube, which had in turn to be put into a cardboard covering. Both managers explained how this project involved a high degree of complexity and led the company into 'forefront', cutting edge areas of packaging technology.

Fruit, Repackaging & Distribution

Apart from repackaging, the fruit department involved the most manual activity in the factory. Here there was a roughly equal breakdown in numbers between technical operators running process plant and general operatives undertaking fruit sorting or loading. Notably however, the latter also undertook significant machine operation, for example running loading or mixing machines.

Managers commented how the existence of a dedicated fruit processing plant at E6 was highly notable, in that most yoghurt producers were seen to buy in ready-made fruit or flavours. The manager of the fruit department outlined how an enormous number of fruits and flavours were processed, with new products being constantly introduced. It was therefore evident that like the filling hall, the fruit department was a highly dynamic environment in which to work.

The repackaging department was not observed. However it was clear that work in this department involved a high degree of basic, unskilled manual activities because there were 120 temporary agency workers employed in this department compared with 20 full-time staff.

Like repackaging, the distribution warehouse was also not observed. However interviews and documentation illustrated how this facility had been opened as a state-of-the-art, totally automated distribution warehouse two years previously. As with the filling hall, the enormous throughput volumes evidently required the adoption of highly advanced and sophisticated technologies and equipment there also.

Employee Views on Working at E6

The functional managers and operators interviewed were in general very positive and enthusiastic about working at E6. While the intense and pressurized nature of the working environment was highlighted by a number, the constant introduction of new and often groundbreaking products, was found to make the E6 factory a potentially highly stimulating working environment. The following quotes were illustrative of the views expressed:

My experience has been, has been the majority of the time very positive...I think that there's always opportunities at the speed the company's growing.... people have had to adapt and change and people are constantly doing that and I like that sort of environment, you know, I don't want to be doing the same thing every day for the rest of my life. I like the fact that you do have to adapt and you do have to change.

[Filling Hall Production Manager A]

I enjoy [the introduction of new products], it gives you a lot of satisfaction when you put a lot of hard work in, I mean I don't think there are many products they've come up with and said 'can we fill this?' that we've failed on, we've found some way of filling it and meeting the targets as well, ready for the launch dates which, again, it's satisfying, especially when you go into supermarkets and you see it, and you think 'I've had a hand in that', you know. It's good.... you're learning every day, it's a learning curve all the time.

[Filling Hall Production Manager B]

It's interesting because you always see the E6 products in the fridges and everything in supermarkets and you know, you actually know what's gone into that and what we actually do. So it is good, I enjoy it I must admit....

[Lab technician]

I think it's interesting, I do. There's always a reason for doing a trial run, and I'm keen to know what's different about it: what is this trial run, you know, is it a new product, is it a new way of doing something with an existing product, what's the benefit, what's the improvement, why are we doing it etc. etc.?

[Process Operator]

Training Provision

As a consequence of its foreign-ownership, high profitability and long-term focus, E6 invested very heavily in training and developing its employees, with training evidently a high profile and formalised activity at the company. The majority of operators had undertaken general, underpinning knowledge training on dairy science/dairy product manufacture and yoghurt-making, either by attending training sessions at Reaseheath College (some of which had been of five days duration) or on site. The company had also recently invested heavily in creating, in partnership with Reaseheath, a specially tailored NVQ programme for production operatives, which was being rolled out at the time of the research. In contrast to most NVQs (e.g. Matlay 1999), the programme delivered at E6 involved operators being provided with very substantial general/underpinning knowledge. Classroom based sessions, one-to-one tuition and written assignments were used in addition to on-the-job assessment to provide candidates with knowledge and understanding of key production processes and principles as well as the detailed operation of their specific departments. Operators who had taken the programme were of the opinion that it had been highly valuable in that it provided them with a better understanding of the production processes and equipment used in their day-to-day jobs, and also the operation of the factory more generally.

E6 also, notably, ran a resource intensive 'production apprenticeship' programme, for which it recruited four new apprentices a year. This involved apprentices spending 8-18 weeks at each of the company's functional departments and also completing a Certificate in Professional Development (CPD) in Food Science & Technology at Reaseheath College, encompassing four two-week dairy modules over the course of two years.

Operators and laboratory technicians expressed strong satisfaction with the opportunities provided by the company to undertake training courses, as the following quotes illustrate:

I'd say it's excellent on training. They certainly don't skimp on training. If there's a course that they think you need, you'll go on it.... I've certainly never been on so many training courses.

[Senior operator]

They spend a lot of money putting people on training on courses and that's ideal really. It's good. Not only in the lab, they do all over. It is a good company to work for.

[Lab technician]

7.4 Attempting To Quantify Skills & Employment Outcomes In The English Sector

As discussed in chapter five, an important albeit typically implicit objective in skills research is to quantify skills outcomes, and in particular the potential for upskilling to be achieved. It was suggested in that chapter that the conduct of multiple case studies across the population of mainstream/large firms in any given sector was a particularly advantageous data collection strategy to adopt in terms of the potential for realising this objective.

With a view to attempting to quantify the significance of the industrial policy context in England for skills outcomes at the seven firms visited, employment at each firm was broken down on the basis of the extent of product development undertaken. In this manner, a distinction was made between employment relating to 'traditional/stable' product areas characterised by little or no product development, those witnessing 'minor' product development and product areas where 'major' development was undertaken. For some firms it was possible to allocate company employment to one of these categories in a straightforward manner, while for others it was necessary to carefully distinguish between outcomes and experience on a factory-by-factory basis and allocate employment to the three categories in that way. Qualitative data on product strategies obtained from interviews, company reports and documentation was used to facilitate this exercise. In a number of cases this process was not an exact science, but the figures derived, presented in table 7.4, should be seen as broadly reflective of the position at each firm and summatively, the seven firms in total.

Table 7.4: Breakdown of Employment at English firms by Extent of Product Development Undertaken 2004

Company	Stable/traditional Product areas	Numbers Employed (%)	Areas experiencing minor product development	Numbers Employed (%)	Areas experiencing Major product development	Numbers Employed (%)	Total
E1	None	0 (0)	All - own-label desserts	895 (100)	None	0 (0)	895
E2	All - standard milk & cream	1701 (100)	None	0 (0)	None	0 (0)	1701
E3	None	0 (0)	All - own-label desserts	520 (100)	None	0 (0)	520
E4	All - standard liquid milk & cream	1650 (100)	None	0 (0)	None	0 (0)	1650
E5	None	0 (0)	All - own-label cheese range	918 (100)	None	0 (0)	918
E6	None	0 (0)	None	0 (0)	All (i.e. yoghurts, desserts, yoghurt drinks)	1254 (100)	1254
E7	Standard/traditional liquid milk & cream	1026 (85)	Organic milk; flavoured milks; cat milk	142 (12)	Specially filtered milk range	40 (3)	1208
Total		4377 (54)		2475 (30)		1294 (16)	8146

Note: figures for total employment in some cases are lower than figures for total company employment presented in table 6.1 due to the need to exclude non-production related activities, e.g. distribution.

As is evident from the table, the majority of employment was in major development areas at only one firm (the foreign processor E6), in minor development areas at three (E1, E3 and E5) and in traditional areas at the remaining three (E2, E4 and E7). Combining the major and minor categories, the majority of employment was in development-focused areas at four of the seven firms.

Notably, the two companies with employment in major development areas were the high-investing foreign processors E6 and E7. In contrast, none of the established indigenous plcs E1, E2 or E3 had any employment in major development areas and while all of employment at E1 and E3 was in minor development areas, this related to the production of own-label dairy desserts. Of the other firms all employment at the own-label milk producer E4 was in stable/traditional areas, while in contrast employment at the own-label cheese producer E5 was entirely located in minor development areas.

On average 54% of total employment at the case study firms remained in stable/traditional product areas, 30% was located in areas experiencing minor product development activity, with only 16% in areas experiencing major product development²¹.

In addition to a breakdown of employment by the extent of product development undertaken, a second strategy adopted was to categorise employment on the basis of *product value*. The rationale for this was that a key issue addressed in the British skills literature and wider policy debates has been the question of the potential for employment in Britain to be upgraded to higher value areas, i.e. a 'high-wage' in addition to a 'high-skill' trajectory or equilibrium. In this regard, adopting the same general methodology for the breakdown of employment by extent of product development, employment at the seven firms was divided up between that associated with the production of 'low value-added', 'mid value-added' and 'high value-added' products.

²¹ Although clearly requiring some 'educated' guesswork, if a similar breakdown of employment had been obtained for the remaining six 'top thirteen' English companies, then the aggregate figure would arguably have been broadly similar. In this regard although the largest of these firms, an indigenous plc, undertook some significant minor and major product development in the cheese, yoghurt and (possibly) spreads areas, it also possessed a very large liquid milk business which was dominated by traditional products. Of the three other indigenous firms, while one of these (a yoghurt producer) was in the main involved in major product development, the available evidence suggested that other two (both cooperatives) were likely to be characterised by the possession of predominantly traditional product portfolios. In relation to the remaining two firms (both multinationals), the first, which manufactured dairy spreads, was arguably in general characterised by minor product development, and the second (which produced a range of products) by a mixture of major development, minor development and traditional areas.

No quantitative data on operating/profit margins was collected, rather decisions were made on the basis of the case study evidence collected and the nature of the product market in which each company's products were competing. Therefore the figures outlined in table 7.5 below should again be seen as only broadly reflective of the 'true' position at each firm and across the firms as a whole.

The results in the table are broadly similar to those obtained for the breakdown of employment by the extent of product development undertaken. Again only one company, E6, had a majority of employment in the most 'desirable' category, i.e. in this case the 'high value-added' area. In contrast two (E1 and E3) as opposed to three companies had a majority of employees working in the middle category, mid value-added areas. This was because while, as outlined in some detail in section 7.3, employees at the own-label cheese producer E5 were exposed to ongoing minor product development activity, the profit margins obtained by that company were extremely low and declining in real terms. This meant that four companies (E2, E4, E5 and E7) had a majority of employment in low-value-added areas, with in addition to E5, the other three firms in this category being own-label milk producers.

Using the level of value-added to categorise employment, the aggregate figure for total employment across the seven firms was 'worse' than that for employment broken down by the extent of product development. Specifically, 65% as opposed to 54% of employment was situated in the least desirable category (i.e. low value-added employment), with 19% in mid-value-added and 16% in high value-added areas²².

In terms of a breakdown of employment according to different *product* areas, with the exception of E7, employment associated with liquid milk production was categorised as traditional for all companies, while employment in the manufacture of cream was traditional at all companies without exception²³. In contrast, all employment associated with yoghurt or dessert manufacture was found to be development-focused, with major product development taking place at the branded producer E6 and minor development activities at the own-label producers E1 and E3. In

²² As with the above discussion of the breakdown of employment by extent of product development, if employment figures for the remaining six larger processors were added, these figures would again arguably have been broadly similar.

²³ It is important to qualify this statement by acknowledging that as outlined in section 7.3.1 above, while no significant product development activity was identified at the majority of milk/cream producing firms, significant ongoing *process* and *packaging* development activity was identified at a number of firms in this sector, which was found to have significant consequences in terms of opportunities for employee skills and experience of work.

Table 7.5: Breakdown of Employment at English firms by Product Value 2004

Company	Low Value Added	Numbers Employed (%)	Mid Value Added	Numbers Employed (%)	High Value Added	Numbers Employed (%)	Total
E1	None	0 (0)	All - own-label desserts	895 (100)	None	0 (0)	895
E2	All - standard milk & cream	1701 (100)	None	0 (0)	None	0 (0)	1701
E3	None	0 (0)	All - own-label desserts	520 (100)	None	0 (0)	520
E4	All - standard liquid milk & cream	1650 (100)	None	0 (0)	None	0 (0)	1650
E5	All - own-label cheese range	918 (100)	None	0 (0)	None	0 (0)	918
E6	None	0 (0)	None	0 (0)	All (i.e. yoghurts, desserts, yoghurt drinks)	1254 (100)	1254
E7	Standard/traditional liquid milk & cream	1026 (85)	Organic milk; flavoured milks; cat milk	142 (12)	Specially filtered milk range	40 (3)	1208
Total		5295 (65)		1557 (19)		1294 (16)	8146

a similar fashion, all employment at the own-label cheese producer E5 was characterised by minor ongoing product development.

7.5 Wage Rates & Average Earnings

Figures on wage rates and average weekly earnings were obtained for each of the seven firms visited, and these are presented in table 7.6 below.

Table 7.6: Wage Rates & Average Earnings at the English Firms 2004 (all figures in pounds sterling*)

Company	General Operator		Machine Operator		Process Operator	
	Hourly rate	Average weekly earnings	Hourly rate	Average weekly earnings	Hourly rate	Average weekly earnings
E1 (dessert factory A)	5.27	205.45	5.47	213.45	6.03	348.09
E2	5.61	298.12	5.72 – 5.81	303.67 – 308.93	5.91	362.79
E3	5.68	281.07	5.79 – 5.90	286.39 – 291.70	5.90	291.70
E4	5.45	234.88	5.90	254.26	6.28	270.64
E5 dairy	5.81 – 6.36	235.36 – 376.88	6.55	387.93	6.73	398.64
E5 packing plant	6.59 – 6.79	257.12 – 264.70	6.98 – 7.18	272.36 – 279.85	N.A.	N.A.
E6	8.08	323.25	10.31	412.52	10.31	412.52
E7	6.04	306.77	N.A.	500	N.A.	500

Key: N.A. = not applicable

* As the thesis is intended primarily for a British audience, these figures are left in pounds sterling and not converted into euros for ease of comparison with the Irish sector. It is suggested that this strategy best facilitates views/assessments on the wage levels being paid at the English firms being made.

Additional note: Average weekly earnings include shift premia & additional bonuses/productivity payments where relevant. Weekly earnings are calculated on the basis of a standard/basic 39 or 40-hour week

In terms of the level of wage rates and average earnings, as is evident from the table relatively low hourly and weekly rates were paid at E1, E3, E4 and the E5 packing plant, although in a number of cases rates for process operatives at these locations were relatively high. The two

foreign processors E6 and E7 were found to pay relatively high wages and the highest among the case study firms.

At a general level the low value of the products produced and tight operating margins resulting from the intense nature of competition between processors and downward price pressures exerted by retailers, substantially accounted for the relatively low wage levels paid at E1, E3, E4 and E5. As outlined in section 7.3, this was particularly evident at the liquid milk producer E4. While wage rates were not particularly low at the own-label cheese producer E5 (at least at its dairy), as has also been previously explained downward pressure on wages emanating from product market trends was also evident there. Specifically, the intense nature of competition and increasing squeeze by retailers on margins had led to trade unions at the company to agree to forego a wage increase in 2003 in order to protect the company's short-term competitive position. Moreover, a shop steward at the dairy explained how the reduction and increasingly strict control of overtime working in recent years had led to very significant reductions in average earnings: whereas six years previously he had earned around £19,000 a year, in 2003 he was set to earn around £14,000.

The comparatively *high* rates paid at the foreign processors E6 and E7 were attributable to the combination of the owner's willingness to invest very heavily and the large margins to be made in the branded yoghurt/dessert sector at the former, and the predisposition to utilise a highly capital intensive production system alongside a policy of heavy investment in staff at the latter.

In terms of putting the figures in context, while no figures on average earnings for production workers in the dairy sector are available, the Annual Survey of Hours and Earnings (ONS 2004) shows that average weekly pay (excluding overtime) in the food and beverages sector in 2004 was £389, and £444 in the wider manufacturing sector. The figures in table 7.6 show that average earnings for most positions at the majority of companies visited were below these levels.

7.6 Conclusion

This chapter has examined the principal skills and employment outcomes at the English firms. It began by providing an overview of the headline findings at three 'representative' firms or groups of firms. This section firstly demonstrated, in the form of the discussion of E1, how the incumbent indigenous plcs were found to provide few opportunities for operator upskilling due

to the lack of investment in product development on their part. These companies were therefore in general terms associated with negative skills as well as employment outcomes. Secondly, outcomes at the own-label milk and cheese producers were examined, with this review highlighting that these firms also offered few opportunities for upskilling associated with product development and on the whole negative employment outcomes. Thirdly, the section highlighted the comparatively positive skills outcomes at the foreign companies E6 and E7.

The second main part of the chapter consisted of a detailed examination of skills outcomes at the own-label milk and cheese companies and the high-volume, foreign owned yoghurt producer E6. In relation to the former, a notable finding was that while these companies provided few opportunities for upskilling associated with product development, they *did* provide substantial opportunities for upskilling associated with *process* development activities they were undertaking, albeit typically accompanied by an increase in work intensification. With regard to the latter, skills outcomes and the experience of employment for production operatives were found to be highly positive as a consequence of the interaction of that company's willingness to invest heavily in product development and the recent dramatic growth in the high-value, branded yoghurt/dessert sector.

The third section of the chapter attempted to quantify the extent of upskilling and employment upgrading in the English sector by breaking down company employment according to two sets of categories, namely the proportion of employment associated with stable/traditional product areas, those subject to minor development and experiencing major development; and the proportion of employment in low-, mid- and high-value product areas. In general terms, the findings outlined highlighted the great degree to which employment in the English sector remained located in stable/traditional and low value product areas, reflecting the predominant focus among the English companies on the supply of own-label products to the retail sector. The only companies with employment in major development and high-value areas were the foreign processors E6 and E7.

Finally, wage rates at the English companies were outlined. These were in general low, also as a consequence of the limited product development taking place and low value of the products manufactured. Again the foreign processors, for the reasons outlined above, were found to pay relatively high wage rates.

Chapter Eight: Irish Companies and Influences

8.1 Introduction

As with the equivalent chapter on the English sector, chapter six, the purpose of this chapter is to outline the product strategies of the Irish firms researched and to examine the primary influences thereon, and in particular the significance of the industrial policy context.

The nature of the competitive strategies and product ranges and recent change in both will firstly be outlined for all firms in table form. Next, the primary influences on the strategies adopted will be highlighted, before in the main section of the chapter, the significance of the industrial policy context for the strategies adopted will be examined. Finally, a conclusion will be provided.

8.2 Products & Product Strategies

Table 8.1 outlines the products manufactured and product strategies adopted at the Irish firms researched. As is evident from the table, I1 was the company that pursued the most development-focused strategy, undertaking substantial product development across both its consumer and bulk product ranges. I3 and to a somewhat lesser extent I2, were also engaged in some major product development, while I4's strategy was centred on making minor as opposed to major changes to its existing product range. Of the remaining three firms, I5 and I6 had recently curtailed the extent of their investments in NPD, while I7 was in general characterised by stability in products manufactured, although it did undertake some minor product development.

In terms of analysing the nature of the *product ranges* at the Irish firms, I1 was the only company whose product range was predominantly 'high value-added.' While I3 produced a mix of high and low value-added products and I4's product portfolio was classified as mid value-added, the remaining four companies were in the main manufacturing low value products. It was evident that a number of the latter, most notably I2 and I7, sold significant amounts of butter and skim milk powder into intervention stores (i.e. storage facilities registered to accept product

Table 8.1: Overview of Products Produced & Strategies adopted by the Irish Case Study Firms

Company	No. of Employees	Product Range	Strategy Adopted	Stability or Change?
I1	1020	Full range of bulk & consumer products	Strongly development-focused, high investment strategy in both bulk & consumer sectors	Increasing efforts to move further up-market; recent adoption of an overarching 'cheese and nutrition' strategy for group as a whole
I2	500	Broad range of consumer & bulk products	General lack of investment in product development, however substantial investment/product development in whey & continental cheese areas	Overall stability in strategy adopted
I3	460	Milk, cream, processed cheese, cheese snacks, milk powders	Substantial investments made in cheese-snack & powder areas; less/little investment in liquid milk & processed cheese	Continuity in most areas but recent step-up of new product development in powder area following takeover of company
I4	100	Skim & fat-filled milk powders, butter, continental cheeses	Development-focused strategy adopted centred on improving/enhancing existing products	Overall stability with some significant developments/modifications, e.g. recent introduction of own cheese-packing equipment
I5	128	Liquid milk, cream, yoghurt & desserts	Strategy focused on maintenance/defence of volumes in all sectors; little significant investment but some ongoing minor development activity	Product range in main characterized by stability; recent curtailment of new product development activity undertaken
I6	150	Bulk powders, skim milk, butter, liquid milk, cream, yoghurt & desserts	Strategy focused on maintenance/defence of volumes; little significant product development activity; focus on increasing efficiencies/reducing costs	Product range in main characterized by stability; recent curtailment of new product development activity undertaken
I7	140	Milk powders, casein, butter, liquid milk, cream, spreads	Little significant product development activity; focus on increasing efficiencies/reducing costs	Stability in products produced; minor recent development work in herb/flavoured butters but product volumes here very small

benefiting from EU intervention support) and also, together with I1, benefited from production subsidies for casein manufacture²⁴.

A number of the product market trends in the world dairy sector highlighted in chapter four were clearly identifiable in the product strategies adopted at the Irish firms. For example in the bulk product sector, each of I1, I2, I3, I4 and I6 was seeking to increasingly enter into partnership-based relationship with food manufacturers and the Irish-based babyfood producers in particular. In the case of I1 and I2 this trend overlapped with another principal product market trend highlighted in chapter four, namely the recent drive by dairy processors to develop advanced/high value products from and harness the particular properties of whey, the by-product of cheese and casein manufacture. In the consumer products area meanwhile, the small/medium branded yoghurt producers I5 and I6 were coming under increasing pressure from branded products manufactured by global players such as Nestle, Muller and Danone, again reflecting the highly tangible impact of the product market trends highlighted in chapter four.

Primary Influences on Strategies Adopted

Firstly in relation to *company-specific* influences, size was found to be important. The larger firms I1, I3 and (to a lesser extent) I2 were able to undertake major investments in product development because they had the scale and resources to do so. In contrast, the smaller companies I5, I6, I7 (and to a lesser extent) I4 lacked the finance, economies of scale and other resources - such as dedicated R & D personnel - necessary to support major product development projects.

While the general significance of company size was an important common theme, more idiosyncratic or company specific factors were also identified as influential. For example, I1's highly successful, development-focused strategy was found to be substantially attributable to the strong calibre of management at both group and business unit levels there, while in contrast I2's comparative failure in this regard was found in no small part to be due to the *weakness* of management skills/profiles at that company.

In terms of *sectoral* factors, the cooperative status of I2, I6 and I7 meant that the first priority of management at these companies was to guarantee their farmer owners/suppliers a high

²⁴ On the basis of secondary evidence, while two of the remaining five larger firms by employment, one medium-sized cooperative and one plc, were likely to possess a traditional product range and undertake only limited product development, the other three firms undertook some very notable major product development in advanced areas.

milk price, with the result that they were reluctant to make potentially risky investments in new product development and, in contrast, quite prepared to manufacture product for supply to intervention if necessary. In contrast, the *plc* status of I1 and I3 meant that the latter were constantly seeking for ways of increasing profits by adding value to existing or developing entirely new products, which substantially explained the greater level of development activity at those companies.

Also in terms of sectoral influences, Ireland's remote location and seasonal production pattern were also important. Specifically, the need to produce long-life products and the distance from large consumer markets were seen - in addition to the financial resources involved - to constitute very substantial obstacles in the way of the widespread development of consumer products for export. Therefore to a significant extent, the emphasis at companies such as I1, I2, I3 and I7 was on the development/production of bulk products such as whey, casein, milk powders butter and cheddar cheese. As a consequence, opportunities for product development (and hence upskilling) were to a significant degree centrally determined by *product market trends* in these sectors.

As noted above, while in the bulk product area the development of close, partnership-based relationships with customers and the development of 'food ingredients' was a common trend, I1 and I2 had also made significant inroads into the growing market for 'non traditional dairy products' such as whey proteins and other derivatives, which were discussed in chapter four. Both companies were supplying specially tailored whey derivatives to the infant formula and food ingredient sectors, with the former resulting from the development of strong partnership relationships with babyfood manufacturers, and had recently also undertaken development work with these with a view to entering the milk mineral and broader 'nutraceutical' areas.

In the consumer products sector, the intensification of competition and downward pressure on margins resulting from the recent increase in own-label milk sales through supermarkets and new competition from cheap Northern Irish milk, was found to limit the product development/investment activities at I5 and I6 in particular. Specifically, both sales volumes and margins obtained by these companies had recently fallen substantially, therefore reducing the amount of money available for investment.

Further in the consumer products sector, as also noted earlier the increasing penetration and dominance of the branded products of multinationals such as Nestle and Danone in the domestic yoghurt and dessert sectors was also found to have led to significant competitive pressures and sales reductions for both I5 and I6, again reducing profit levels and the

availability of money for investment. While the level of resource commitment and innovation required to successfully compete in this sector was beyond the capabilities of I5 and I6, in contrast I1 was able to combine its technical, organizational and financial resources with its strong brand portfolio in successfully introducing new products in both the yoghurt and yoghurt drink sectors.

8.3 Significance of the Industrial Policy Context for Strategies Adopted

8.3.1 Engagement with Government-funded Programmes, Development Agencies & the Research Institute/University sector

Table 8.2 below outlines the recent involvement of the case study firms with industrial policy support programmes and the research institute/university sector. As is evident from the table, four of the seven Irish firms had significant recent involvement with funding programmes and the research institute/university sector in relation to their product strategies.

Although as outlined in the table, some very significant funding for capital investment and marketing was received by a number of firms during the 1990s, the change to Ireland's economic classification for the purposes of EU state aid rules (outlined in chapter three), meant that since 2000 financial support was primarily limited to funding for research and development projects in the form of the Enterprise Ireland administered RTI scheme. In this regard, while the example of the recent €500,000 grant received by I1 illustrates that substantial amounts of money were available under the RTI scheme (generally up to a total of 25% of project costs), the more generous and flexible funding rules that had existed under the preceding Measure Six and Measure One R & D schemes meant the funding currently available was relatively small when compared with the sums provided under previous schemes.

In addition to accessing financial support, each of the 'heavy users' of industrial policy support also had extensive involvement with the research institute/university sector in the form of the Moorepark Dairy Products Research Centre, its associated pilot plant facilities Moorepark Technology Limited (MTL) and/or University College Cork (UCC). Aside from using the facilities of these institutions on a customer/contractual basis, I1 and I2 had been involved in joint development projects in the milk protein area that were *initiated* by Moorepark scientists/technologists; while I1 was also currently engaged in a collaborative

Table 8.2: Involvement by Irish Firms with External Programmes/Agencies²⁵

Company	Support Obtained
I1	<ul style="list-style-type: none"> • Recent €500,000 R & D grant under the RTI scheme for the development of convenience-type consumer products; this a collaborative project involving University College Cork • Two €200,000 grants for whey protein projects in early & late 1990s under the Measure Six and Measure One R & D schemes • Approx €3.5m capital funding in early/late 90s for construction & expansion of 'added value' yoghurt & dessert factory • Heavy use of Moorepark & MTL, strong links with UCC • Collaborative product development work with Moorepark & babyfood sector in 'functional' whey fractions/milk minerals area
I2	<ul style="list-style-type: none"> • Whey products: €3.3m in R & D grants under Measure Six & Measure One programmes in early-mid 90s for three large development projects in the lactose, functional whey proteins & milk mineral areas; however no grant applications made in recent years • Continental cheeses: R & D grants totalling €300,000+ since 1990 • Processed and natural cheese: €650k capital & €500k R & D grants in late 90s under EAGGF/FEOGA & Measure One schemes in relation to development of a range of innovative cheeses • Cream cheese: total €300,000 capital grants in late 90s for installation of new cream cheese plant • Heavy use of Moorepark & MTL, strong links with UCC • Collaborative project work with Moorepark & babyfood sector
I3	<ul style="list-style-type: none"> • Combined grant of approx €3.5m covering capital investment, R & D & marketing for development of innovative, value added cheesecake product range in mid 90s; additional R & D grants also received in recent years • Previously received a €750,000 R & D grant for development of innovative spreads product • Regular contact with Moorepark & extensive support obtained from UCC food science faculty in relation to product and process development
I4	<ul style="list-style-type: none"> • Some grants for R & D received in recent years • Frequent use of Moorepark and MTL
I5	<ul style="list-style-type: none"> • Large number of R & D grants (typically of €60-130k) during 1990s for development of new dessert & yoghurt products • However no involvement with outside agencies or programmes in recent years
I6	<ul style="list-style-type: none"> • No significant recent involvement with outside agencies/programmes
I7	<ul style="list-style-type: none"> • Contact with Enterprise Ireland regarding possible funding support on an annual basis but with the exception of recent, very limited funding for the purchase of a pilot plant in connection with a specific product development, no support obtained in recent years • Little contact with other agencies/institutes

Note: All funding amounts have been converted to euros (exchange rate 1 euro = 0.7876 Irish pounds).

²⁵ Of the five other top twelve firms by employment, secondary data demonstrated how three of these (at least) had extensive involvement with Irish government agencies and funding programmes, benefiting in particular from support for research and development.

project with UCC. As the I1 Group Director of Strategic R & D explained, if not actually requiring it outright, Enterprise Ireland looked particularly favourably on funding applications which involved companies collaborating with the research institute/university sector.

8.3.2 Reasons for Non-Use of Industrial Policy Support

Following the earlier discussion in this chapter of the key primary influences on the strategies adopted by the Irish companies, the principal reason why I5, I6 and I7 had not recently had any significant involvement with outside agencies or programmes was that, against a backdrop of increasingly difficult competitive conditions, their small scale (and in the case of I6 and I7, cooperative status) meant that they did not possess the necessary financial or organizational resources to undertake substantial product development projects; and as a consequence were not in a position to look for or benefit from support. As the R & D manager at I5 explained, the intense competitive pressures in the liquid milk and mainstream yoghurt/dessert sectors meant that over the previous 2-3 years product development activity at that company had been 'winding down', and therefore while I5 had drawn extensively on industrial policy support in the past, no applications for support had been made during that time.

An additional reason for the lack of any significant support received by I5 and I7 was that while as outlined in table 8.1, both these companies *had* recently engaged in some *minor* product development, this was in general not eligible for support due to the policy adopted by Enterprise Ireland (summarised in chapter three) of restricting support to projects of an 'innovative' nature that would add something substantially different or new to the existing product portfolio of the sector. For example, the I5 R & D manager noted how R & D support had not been requested or obtained in relation to that company's development of twin-pot 'crumble' and 'corner' dessert products or, more recently, the re-launching of its low-fat yoghurt range, as these products 'were not innovative.' I7's technical/R & D manager, meanwhile, outlined a similar story in relation to the majority of product development undertaken at that company, which was very limited in nature and scope.

8.3.3 Limits on the Extent of Industrial Policy Assistance at the Heavy Users

In addition to highlighting and examining the reasons behind non-engagement with industrial policy support, it is also necessary to note that involvement and support obtained was also

concentrated in particular product areas in the case of three of the 'heavy' users, I1, I2 and I3.

At I1, funding/technical support from outside programmes and agencies was focused on the whey, liquid milk and yoghurt sectors, with other product groups such as butter, cheese, spreads, casein and milk powders not benefiting from assistance. Similarly at I2, while significant support was obtained in relation to whey, continental, cream and processed cheese, the butter, spreads, cheddar, powder and casein areas were largely unaffected. At I3 although the cheesesnack range had benefited from very substantial support, butter, spreads and powder products had not received any similar support in recent years.

In addition to considerations relating to the scarcity of financial resources, a primary reason for the lack of support received in a number of these product areas was that they were 'mature' in terms of both essential product characteristics and also the processes and technologies used to produce them. For example, the essential product characteristics and production processes utilised in the manufacture of butter and skim milk powder areas were strongly characterised by stability and a lack of change, and there was therefore little opportunity for significant product development projects in these areas. As a consequence, applications for support were not being made in relation to these products.

8.3.3 Views on the General Context

The industrial policy context of the dairy sector was seen by interviewees, at a general level, to constitute a positive and supportive environment in which new product development and innovation, albeit possibly of a limited nature, could take place. Of high importance in this regard was the adoption by government of consistently supportive policies towards the industry over a number of decades, most notably in the form of the establishment and funding of institutions such as Moorepark and UCC and also, importantly, in terms of strongly representing and defending farmer/processor interests in European Union negotiations on the Common Agricultural Policy (for example by negotiating on issues such as the size of Ireland's milk quota and the availability and level of intervention support for butter and skim milk powder and subsidies for casein manufacture)²⁶. More recently, the enormous efforts made by the Department of Agriculture to ensure that Ireland was not

²⁶ It is recognised here that such support, by securing the continued viability of commodity-type production, may also be seen as in fact constituting a significant *impediment* in the way of moving the Irish industry up-market. This is discussed further below.

affected by the outbreak of foot and mouth disease in the UK in 2001, were highlighted by a number of interviewees.

Combined with the existence of a large and well-resourced research institute/university sector, the very high proportion of the management cadre with dairy or food science qualifications was identified by many as giving the Irish sector a critical mass of knowledge and expertise, and in particular a strength in depth in dairy/food related products and processes. Each of the firms visited possessed individuals with dairy or food science qualifications at degree level, typically in large numbers, and many of these had graduated together from University College Cork.

This common educational background meant that individual managers typically had regular contact with colleagues in other firms and also the research institute/university sector. This facilitated the development of close personal networks and was seen to be an important source of ideas and intellectual stimulation. The shared educational background also meant that there existed a 'common language' with regard to the use of technical terms, which, it was remarked, enabled effective communication. In general terms, therefore, the Irish government's allocation of very substantial resources to the creation and ongoing funding of dairy sector focused university departments and qualifications, was of great importance to the sector.

In addition to these general benefits flowing from the Irish government's general policy orientation to the sector and its funding of the university/research institute sector, the professional contacts, market knowledge and expertise of Enterprise Ireland was also highlighted as being significant. For example, the I1 group director of strategic R & D noted how Enterprise Ireland officials were 'constantly out and about in other countries' and were therefore able to 'bring a lot of information and insight into what other companies are doing and what customers' needs are.'

While various positive dimensions or aspects of the industrial policy context were therefore highlighted, a number of general criticisms were also expressed. Most notably, the impact of the government's policies in terms of their success in shifting the sector away from its traditional focus on the production of commodity products and, closely related to this, what was perceived to be the 'political' nature of industrial policy, were identified as being problematic. Specifically, a number of interviewees commented how the Irish processors continued to make heavy use of intervention support, export refunds and production subsidies for the manufacture of butter, milk powders and casein, which to a significant

extent were commodity-type products. The general manager of I1's principal ingredients site explained how processors were paid around 1300 euros in government subsidies for each tonne of casein produced. This, quite obviously, was seen by some to be an enormous incentive to continue manufacturing a product that was often sold on commodity markets. As discussed above, the Irish government's continued lobbying for the defence and continuation of such market support schemes was therefore arguably to some extent an impediment in the way of the industry moving further up-market.

The system of casein subsidies was also highlighted by a number of interviewees as being inequitable in that not all processors were in a position to manufacture casein, for example because they either did not have the production facilities to do so or did not manufacture cheese (of which casein was a by-product). It was primarily larger firms such as I1 and I2 who produced casein, with interviewees at smaller companies lamenting the fact that while these firms were *already* in a relatively powerful position as a consequence of their scale and resources, this position was effectively being reinforced by the very generous casein subsidies which many of the smaller companies were not in a position to avail of. Against this context, the role played by the Irish government and the industry's representative associations in seeking to protect (or indeed increase) production subsidies for casein, was identified as being rather problematic.

In summary, therefore, while the policy context was in general found to be highly favourable, a number of perceived weaknesses or deficiencies were also highlighted. The following section will address the more specific question of the significance of the policy context for the product strategies pursued by individual firms.

8.3.5 Significance of the Policy Context for Individual Firm's Product Strategies

The Heavy Users I1, I2, I3 & I4

This sub-section will focus on the views of managers at I1, I2, I3 and I4, who as outlined in table 8.2 above, had made quite extensive use of industrial policy support in successfully moving up-market in a number of product areas.

Although a number of interviewees made 'technical' criticisms regarding the operation and implementation of support measures (for example noting the 'bureaucratic' application procedures and raising some confidentiality concerns in relation to the use of shared pilot plant facilities), in general terms management at these firms were of the view that the specific industrial policy support measures and the wider institutional context of the dairy

sector played a central role in enabling these companies successfully move up-market in a number of product market niches. In addition to direct financial support, the provision of industry-specific research and development facilities in the form of Moorepark and MTL, the possibilities for the development of collaborative networks and projects with the babyfood sector and research institutes as well as, more broadly, the location of firms within a context of high levels of dairy/food expertise and resources, were seen to have been of great importance in enabling/supporting the success of their product strategies. Each of these aspects will now be examined in turn.

Financial Support

As was outlined in chapter four, a key, ongoing problem for dairy firms is the low level of operating/profit margins in the sector. While strongly lamenting the fact that financial support for capital investment (and marketing) was virtually non-existent at the time of the research, interviewees emphasized how financial support provided in the past for capital investment and marketing and more recent and ongoing support for research and development, had been/was particularly significant in facilitating the movement into new product areas.

For example, the CEO of I1's Irish ingredients subsidiary explained how the financial support for R & D was particularly important against the background of low margins in the sector:

I think that Enterprise Ireland is critical in that sense in that it does give the R & D support that is required. The R & D facility, the offices here were supported because they were R & D; R & D grants in the last few years have been significant.... We probably wouldn't have an R & D focus, couldn't afford to have an R & D focus; I suppose to explain it to you, we are a 3 and 4% margin business and ok, we might have an aspiration to have a 10 to 12% margin business but we'll never get there without an R & D focus, we wouldn't have the horsepower to get there, the fact there was grant aid out there, the fact that we have moved from being a 4% to a 7% margin business....to go from 'here' to 'here' requires R & D and to go from 'there' to 'there' requires more R & D, so I would say that it has been a help.....

In particular, financial support was the 'sweetener that would make the difference between being stuck at your 4-5% margin and taking the chance on the basis that 50% of your risk is state money.'

The Ingredients R & D manager at I2 also emphasised the usefulness of financial support in a context of limited budgets and in particular noted that while breaking into new product

areas often necessitated somewhat speculative R & D work, the possibility for this to be conducted remained limited in the absence of external financial support:

It's difficult to say, where you're tight on budgets and everything, that 'look in five, six years time there's a customer going to be interested in these products here', or 'they're going to be very good in six years time.' I2's policy is that if you've a customer that's buying, saying 'I'm looking for this', fine, it's much easier to get a decision on that, where that is market driven. But in order to get where we are today with the new type of processes and so forth, that was all technology driven; I mean the first lot of functional proteins that came off our plant here, they started building up inside in the store because we'd nobody who understood them or knew how good they were, this was in the beginning but then things moved so now it's flying out, we can't make enough of them ...you need something else when there isn't a customer there.... there's no doubt about it but the money from the IDA [Enterprise Ireland's predecessor] did help and was very instrumental in getting us going and moving.

The funding provided enabled I1 and I2 to buy specific pieces of equipment they needed and in general allowed them apply 'professional and correct resources' to the projects.

R & D Facilities & Specialist Knowledge

In addition to direct financial support, the existence of pilot plant facilities and analytical/research support, primarily in Moorepark and MTL but also in the university sector and UCC in particular, was seen to be essential to the success of the substantial new product development work undertaken. As outlined in table 8.2, each of I1, I2, I3 and I4 had close links with one or more of Moorepark, MTL or UCC.

The pilot plant facilities at MTL were seen to be particularly valuable, again primarily for financial reasons, as the I1 CEO outlined:

The MTL facility is probably the best issue. Now every co-op would like to have a small drier for playing around with, making small product trials and so on. Having a national one, if you like, based in Moorepark, where we can do trials rather than each plant setting up its own pilot plant, is a saving of money.

In addition, the analytical & laboratory facilities and deep stock of knowledge and expertise at the Moorepark Dairy Products Research Centre were seen to be equally important:

Moorepark, without them, I think we'd be lost because of the technical expertise that they have, they can help us in troubleshooting, help us in technical issues; they've a critical mass of expertise,

the pilot plant, sophisticated labour, instruments that we wouldn't have... if they weren't there....we probably wouldn't have been as successful as we have been, we mightn't have been able to do a lot of the stuff we've been able to do in the whey protein area, casein area, applications, fine-tuning the processes from the point of view of yields, product quality and product performance.... it's a knowledge base, a critical mass of expertise and knowledge that you tap into.....

[Group Director of Strategic R & D, I1]

The cheese R & D manager at I3 also outlined the immense value of collaborative work undertaken with staff from the Food Science faculty at UCC, whose input had been particularly important with regard to the new product development work for the company's highly innovative and technical children's cheesesnack range, and also in relation to the recent re-engineering of part of the production process for the same product. Further, the expertise of Moorepark had also been vital in managements' efforts to adjust the production process to account for seasonal variation in the raw material used. Similarly, the managing director of I4 explained how technical support from Moorepark had been of fundamental importance in facilitating the groundbreaking introduction of emmenthal cheese by that company in the 1980s.

The Possibility for Collaborative Development work with the Babyfood sector

An additional, highly significant factor in facilitating successful moves up market in the case of the ingredient manufacturers I1 and I2 (and also I4) was the development by these of close links and collaborative working arrangements with the Irish based babyfood manufacturers. Very significantly some of this work had also involved the collaboration of Moorepark, indeed with calls by Moorepark for collaborative development projects in relation to specific products or processes having directly prompted a number of joint projects that these companies had recently undertaken with the infant formula sector, as outlined in table 8.2 above. Notably, both I1 and I2 were engaged in ongoing development projects with babyfood manufacturers at the time of the research.

These relationships were seen to have been critical in enabling processors such as I1 and I2 break into new product areas and develop value added products. At the time of the research, the Irish-based babyfood manufacturers were taking steps to move into more advanced product areas in the 'functional food' and 'nutraceutical' fields. Importantly, the Irish processors were closely involved in this development activity, with the CEO of I1's ingredients subsidiary outlining how I1 had in the previous few years worked in partnership with one particular babyfood company on the development of a new, advanced product; and

similarly, the I2 ingredients R & D manager explaining how that company was also working on specific, advanced projects with the babyfood sector in the functional/nutraceutical area.

This partnership activity with the babyfood sector was seen by these interviewees as effectively constituting a 'bridgehead' for the entry of Irish processors into these highly sophisticated and advanced product areas.

The Value of the General Context

The strategic importance of the dense institutional architecture and generally supportive context surrounding firms was well illustrated by the fact that I1 had recently drawn up plans for the creation of a group-wide business unit that would focus on the provision of nutritional solutions and the development of functional foods. The strategic plan drawn up for this subsidiary unit was expressly predicated on the possibility for the firm to draw on the various institutional features of the Irish context that have been outlined. As I1's ingredients subsidiary CEO outlined:

[the new business unit] sees itself as sucking information ... to step up the business here you'll set up a sponge, if you like, that interacts with the academics in their boxes and turns it into practical commercial opportunities.... and I think that Ireland and I1, I would argue, the dairy industry in particular, is in a unique position in having all these centres of first rated expertise with a lot of concepts and ideasso I think Enterprise Ireland and the Irish agencies in general have created the environment in which you have expertise here...and I would say a company like I1 should set itself up to interact with these and suck that information out and make it more valuable....

The CEO provided the researcher with a diagrammatic representation of this planned strategy, which placed the company in the centre of a figure surrounded by the various universities and research institutes in the country (as well as some international institutes), with two-way arrows indicating that it would draw heavily on these in the pursuit of its product strategy²⁷.

The Non/Limited User I7

As outlined in table 8.2, management at I7 (in the form of the company's technical/R & D manager) spoke to officials at Enterprise Ireland regarding the possibility of accessing financial support for new product development activities around once a year. However

²⁷ It is appropriate to note here that the industrial policy context had also evidently played a central role in enabling at least three of the five remaining larger companies in the Irish sector move into advanced product markets, again in the whey protein and functional food areas, but also in the consumer product and food service/convenience areas.

according to the technical manager, the company had not received any significant financial assistance 'for years and years.' The one exception in this regard had been a recent 'very small involvement' with Enterprise Ireland, in the form of the part-funding by the latter of the purchase of a small pilot plant in connection with the production of a butter product requested by a particular customer.

The technical manager outlined how due to its small scale and relative lack of resources, as a company I7 was effectively not set up to draw down substantial funding support or engage with state agencies such as Enterprise Ireland and Moorepark. As he explained whereas Enterprise Ireland were looking for 'innovation, whatever that is' and for companies to go through formal grant application processes, 'we approach things in a more piecemeal way, we'll probably look to buy second-hand equipment.' As a consequence, I7 had therefore been unable to obtain any substantial recent support.

Similarly, while I7 had undertaken some development work with Moorepark three or four years previously, recent contact had been limited. In this regard, engaging with and tapping into the groundbreaking research undertaken by Moorepark and UCC was for 'the top third' of companies in the industry, and I7 'wouldn't be in the top third.'

It was clear that to a significant extent the conditions stipulated by Enterprise Ireland for funding approval were seen to constitute a serious obstacle in the way of I2 moving into new product areas, as the following quote from the technical manager outlines:

We are the only milk processor in the west of Ireland, in the province, and the assistance we might require mightn't measure up to what they term as 'state of the art' or whatever, but it's not so much 'are you developing a product that is sort of novel or innovative?', as what might be novel or innovative for us might not be for someone in Japan or [company's name removed], but it may be what we need. Ok we're not going to get from 30% up the ladder to the top in one step anyway, we're going to have to take three or four steps at least and I think maybe sometimes the scale we operate and our geographic position and our stage in development might be militating against us ever getting *any* sort of assistance. [But that's] just a personal opinion.

As the quote in part illustrates, the criteria for funding provision were seen to sit uneasily with I7's status as the sole dairy processor in its region of Ireland and in particular its position as a large and important employer for its local community.

8.4 Conclusion

This chapter began by outlining the product strategies adopted and ranges possessed by the Irish case study firms, with this exposition highlighting that only one of the companies, I1, undertook major product development across the full range of its products. Three firms, I2, I3 and I4, undertook substantial product development in relation to some of their products but not others, while the remaining three companies, I5, I6 and I7, were at best characterised by minor development activities. Mirroring these findings, only I1 was found to possess a product range that was predominantly 'high value-added.' While the product range of two other companies (I3 and I4) contained a substantial/high proportion of mid to high-value added products, the remaining four companies were in the main manufacturing low value products.

The chapter next briefly considered the primary influences on the strategies adopted. In this regard, company-specific and sectoral/product market influences were found to be highly significant in terms of determining or accounting for the extent and nature of product development undertaken. The variables of size and ownership status were found to be particularly important: while the large plcs I1 and I3 had the scale and resources necessary to undertake substantial development projects, the small size and cooperative status of I6 and I7 meant, in contrast, that the latter were not able to do the same. In relation to sectoral and product market trends, the general vitality and dynamism in the whey protein area provided I1 and I2 with the opportunity to undertake substantial development projects in that area, while in contrast the increasing dominance of multinational companies in the yoghurt/dessert sector placed strong obstacles in the way of I5 and I6 successfully engaging in substantial new product development there. More broadly, the general stability and underlying lack of change in products and processes in sectors such as butter and skim milk powder meant that the latter categories were not characterised by substantial development activity, with this being the case even at the larger firms possessing strong resources and capabilities.

In the third main section of the chapter the significance of the industrial policy context for strategies adopted was examined. Four of the seven companies were found to have substantial involvement with outside agencies or funding programmes, with the latter dominated by funding for research and development in recent years. The industrial policy context was found to be generally supportive and to have played a central role in facilitating the development of a number of value-added, advanced products by the case study firms. Of particular importance in this regard was the provision of financial support for research and development, the existence of industry-specific research and development facilities, the

possibility for the development of collaborative networks and projects with the babyfood sector and research institutes, and more broadly, the location of firms within a context of high levels of dairy/food expertise and resources. This being the case, significant limits on the scope and impact of industrial policy interventions in the sector and some strong criticisms were also outlined, for example with the continued government support for commodity-focused systems of market support and perceived failure on the part of state agencies to support the development of smaller, more traditional processors highlighted as being problematic.

Chapter Nine: Irish Skills & Employment Outcomes

9.1 Introduction

This chapter will outline the principal findings relating to skills and employment outcomes in the Irish sector. It will adopt a similar structure to chapter seven, the equivalent chapter on the English sector, and will proceed as follows.

Firstly, the primary identified skills and employment outcomes at three firms, I1, I2 and I5 will be presented in some detail. The objective of this section is to provide a qualitative insight into the 'representative' strategy, skills and employment outcomes in the Irish sector. Following on from the previous chapter, I1 is therefore presented as being representative of larger companies that have strongly benefited from the industrial policy context and been able to pursue innovation-focused strategies and to a significant extent move up-market; I2 as an example of a medium/large cooperative that has remained located in lower value product markets; and I5 as representative of smaller companies that because of their size were heavily constrained in terms of the possibility of moving up-market.

The second goal of the chapter is to interrogate in some detail the consequences for production operative skills of the industrial-policy assisted production of 'value-added' products. In this regard detailed evidence regarding work organisation, the labour process and skills outcomes will be presented in relation to the cases of I1, I2 and I3, which as outlined in chapter eight had made substantial use of industrial policy support in their successful attempts to move up-market in a number of product areas.

Mirroring chapter seven on the English sector, the third main section of the chapter will attempt to quantify the nature of skills outcomes and the significance of the industrial policy context in the Irish sector. To this end employment at the seven Irish firms will also be categorised according, firstly, to the extent to which it was characterised by stability or change in products produced, and secondly, according to the *value* of the associated products manufactured. In addition, average weekly earnings at the Irish firms as well the industry as a whole will be presented. Finally a conclusion to the chapter will be provided.

9.2 The Principal Skills & Employment Outcomes in the Irish Sector

9.2.1 *II: The Highly Innovative plc*

Product Strategy & Key Influences Thereon

II represented the 'high water mark' among the companies visited in terms of the amount of product development activity undertaken, with its plc status, long history in and strong commitment to the Irish industry (as well as its local community) combining together to lead it to adopt a strongly development-focused strategy.

II had therefore recently invested heavily in the development of new products, most notably in the yoghurt, liquid milk and food ingredient areas, within the context of an overarching 'cheese and nutrition' strategy aimed at harnessing the expertise both within the company and broader institutional environment in exploiting the increasing consumer and manufacturer interest in health-enhancing 'functional foods.' As noted in chapter eight, in addition to the favourable industrial policy context, II's large size and resource capabilities and strong management cadre were central in accounting for the highly successful product strategy adopted.

Opportunities for Upskilling

Interviews identified that the product strategy adopted meant that six of II's factories (two liquid milk plants, one milk powder factory and the yoghurt, whey and casein factories) were characterised by ongoing development activity and therefore significant change in products produced.

While the detailed findings relating to skills outcomes at a number of these factories will be outlined in section 9.3.1 below, it can be noted here that the development-focused product strategy adopted, at a general or 'theoretical' level provided highly notable opportunities for upskilling for production operatives and other staff at these factories. For example, a steady stream of innovative new products had been recently introduced at II's yoghurt and milk factories, all of which were branded and heavily marketed. At the former these included a 'high-calcium' yoghurt and a completely new range of 'probiotic' yoghurt drinks, and at the latter a vitamin-enriched 'super milk' as well as a probiotic/functional milk drink and innovative new cream formats. Many of these products constituted radical new developments for both the yoghurt and liquid milk factories.

Similarly at II's ingredients subsidiary, some very notable product development activity was also in evidence. While here there had been greater continuity in the nature of the products

manufactured, the vast majority of products were now tailored to the requirements of individual customers with whom I1 developed close, partnership-based relationships. Most notable here was the company's supply of lactose to the babyfood sector and cream and caseinate to the company making Bailey's Irish Cream.

Therefore while at a general level it was clear that the product strategy adopted by I1 provided very substantial opportunities for upskilling, at another six of the company's factories (one liquid milk, two cheese, one butter, one milk powder and a spreads factory) due to the mature/stable nature of the products and processes used and also consumer demand in associated product markets, little new development had taken place; with these factories therefore characterised by stability in terms of products produced and consequently providing few opportunities for upskilling. Notably, the latter factories accounted for 263 out of I1's total employment of 1020.

The Production Environment

Managers at I1's principal ingredients site outlined how the limited financial resources resulting from the recent merger creating the company as well as difficult environmental/competitive conditions, meant that expenditure on capital investment was sharply constrained across the I1 group as a whole. However while, as the group quality manager explained, some of the very large driers and evaporators needed to be replaced, it was evident that in general terms the factories visited had seen significant ongoing investment. Most notably, they were highly automated and used the most advanced, up-to-date operating systems.

Similarly, while stability in plant and equipment was the dominant theme, the HR manager of the company's liquid milk dairies and the factory manager at its yoghurt plant also outlined how some new equipment had been recently introduced at these factories in order to facilitate the production of new products.

Employment, Conditions & Prospects for Career Development

Dairy related employment at I1 had fallen by over 400 people in the five years to 2004, although this was primarily attributable to the recent merger that had formed the company. Nevertheless it was evident that a firmly established policy goal was the ongoing reduction of numbers employed with the objective of reducing costs. As opposed to reflecting the operational performance of the company *per se*, this was seen to be mainly due to the increasingly competitive and cost-focused nature of the dairy industry, particularly in light of

recent and further impending reductions in CAP market support measures that were highlighted in chapter four.

However while recognising the likely ongoing relevance of reductions in numbers employed, the competitive success, scale and resources of I1 meant that it provided excellent long-term employment prospects and opportunities for career development for the majority of its employees. In addition, it was also evident that I1 was seen to be a highly desirable company to work for, particularly where its factories were located in rural areas. For example, the ingredients business HR manager noted how he had received a 'deluge' of job applications when he had recently advertised a number of general operator positions.

9.2.2 I2: The Traditional Large Co-operative

Product Strategy & Key Influences Thereon

The large majority of products manufactured by I2, another of Ireland's larger dairy processors, were found to be of a traditional/basic or commodity nature. Apart from Ireland's status as a small, remotely located consumer market, this situation was attributable to two primary influences.

Firstly and most importantly, as a farmer owned cooperative I2's primary, express objective was to provide its farmer owners/suppliers a high price for the raw milk they supplied, which had the consequence of deterring management from making potentially risky investments, for example in the development of resource-intensive, branded consumer products. In contrast, when possible I2 made extensive use of EU-funded intervention support for the manufacture of commodity/basic skim milk powder and butter as well as production subsidies for casein manufacture, as these offered a risk-free source of income.

Secondly, the company was found at a general level to be characterised by an unstrategic, indecisive and weak senior management team and also extremely powerful/militant trade unions, which combined meant that while I2 lacked a clear strategy and direction, it employed too many people at uncompetitively high wages; a situation which had negative consequences for profit margins and hence also the possibility to invest in product development.

Opportunities for Upskilling

As a consequence of the competitive strategy adopted, I2's spreads, cheddar cheese, casein, skim milk powder and butter factories had seen very little recent investment in product development, with operators at these factories therefore provided with few opportunities for

job change or upskilling. While the processed cheese factory had seen some significant investment in new products, the general picture here was also one of stability. The only two factories where significant product development *had* taken place were the continental cheese and whey factories, which between them accounted for 130 of the company's 400 production-related staff. While the skills outcomes at I2's whey factory will be examined in some detail in section 9.3.2 below, the main focus here is on elaborating the outcomes at the majority of factories in the company where little product development had occurred, and the spreads factory is used as the primary representative example in this regard.

While I2 *had* been a pioneering force in the spreads area in that it was the first dairy company to introduce a 'yellow fat' spread product to the Irish market (a feat it achieved in the early 1980s) and continued to possess the brand leader, it was evident that the company had not made any concerted effort to build on the success of the original product, for example by developing a range of products under the same brand name. According to the spreads R & D manager, 'one would have to say there hasn't been the development or the follow-on one would have liked.'

The only major development had been the introduction of a 'light' version of the branded product three years previously. At the factory visited, which was the principal production unit, the same two basic spreads products - the branded yellow fat spread and a similar own-label product supplied to one of the Irish supermarkets - had been manufactured, unchanged for many years. Aside from the introduction of a machine to produce 'mini' portions, the only recent product development had been the introduction of a bulk, low-fat product supplied to the industrial sector. However the R & D manager described this as quite a basic product and the volumes manufactured were very small.

The overriding finding from the fieldwork at the spreads factory was the extent to which the lack of investment in and development of the products manufactured meant that the day-to-day experience of work for production operatives was characterised by stability and a lack of change. For example, aside from packaging the only difference between the branded spread and its own-label variant was in the relative proportions of vegetable oil and milk/cream mixture used in the blending process, an adjustment that was very straightforward for the blender operator to make, in that it was simply a case of adjusting the flow rate of the two products going into the blending machine.

The primary consequence of the lack of new product development and hence potential for job change for the majority of operators interviewed was boredom, frustration and low levels

of job satisfaction. For example one of the packing machine operators explained how the job he was doing 'gets boring' and that he needed to 'walk around a good deal because of it', while also highlighting how there had been 'very little change over the years.'

Many operators commented how they would welcome the introduction of new products and machines or, alternatively, a change in the current work organisation system (away from the existing heavy reliance on over-time). For one of the general operatives, the spreads factory was 'in a rut' and the possibility of working with new machines or in a new work system was therefore seen to be highly attractive - for example, it would be 'more stimulating if there was a bonus and a drive to get extra tonnes.'

The Production Environment

In parallel with the lack of investment in product development, it was also evident that I2 had failed to invest sufficiently in the plant and equipment used in many of its factories.

In this regard, the spreads factory visited was highly manual, used antiquated process plant and packing machines and was generally in a poor state of repair. Operators described the factory as 'old-fashioned' and 'a bit primitive' and in particular highlighted the fact that the butter-making and packing machines had to be washed manually, whereas in contrast at factories elsewhere this was done automatically via computers.

Similarly the interviews and observation undertaken at I2's casein factory highlighted a lack of investment in plant and equipment at that factory. Most obviously, the casein process continued to be operated from old-fashioned wall panels as opposed to the more modern and user-friendly PC screens identified at the bulk product factories of I1; while the general impression was of a plant and production process that had seen very little investment in recent years.

Employment, Conditions & Prospects for Career Development

Due to its cooperative status I2 had traditionally been and, indeed, continued to be a large and 'good' employer in its local area. In addition, the strong influence of trade unions in the company operated to keep employment (and wage) levels high. However as indicated above, both employment and wage levels at I2 were excessively high when placed against the context of the company's commodity-focused product range and the strong product market competition it faced. Therefore prompted by a change in senior management, soon after the fieldwork was completed I2 embarked on a wholesale rationalisation programme, which resulted in very significant job losses at its dairy factories. While job security and career

prospects remained strong at the whey and continental cheese factories, the majority of factories were therefore characterised by high levels of insecurity and uncertainty.

9.2.3 I5: The Struggling Smaller Producer

Product Strategy & Key Influences Thereon

I5 was a limited company with a long history as one of the leading Irish producers of fresh dairy products. While having been acquired by the cooperative I2 a number of years previously, I5 had retained its independence and autonomy in terms of both the product and operational strategies it adopted. Located in a city environment, I5 manufactured liquid milk and cream for supply to its local area and a range of branded and own-label yoghurts and desserts sold on a nationwide basis. It possessed the second largest mainstream Irish yoghurt brand and employed around 160 people in total.

I5 had traditionally undertaken substantial new product development on an ongoing basis and had in the early 1990s developed a number of 'value-added' dessert products including 'crumble' and 'crunch corner', dual-pot products similar to those pioneered by the German company Muller, as well as 'Chambourcy' type and indulgent desserts such as 'Mississippi Mud Pie.' However by 2002 the company was experiencing intense competitive pressure emanating from a number of different sources. Firstly in the liquid milk sector, the concerted recent drive by retailers to increase the volumes of own-label milk sold through supermarkets and also, the recent increase in cheaper Northern Irish milk being sold in the Irish market, had placed the company under significant pressure. Secondly in the yoghurt/dessert sector, the increasing dominance of branded products produced by powerful multinationals such as Muller, Nestle and Danone in the Irish market, had prompted a sharp fall in sales volumes and profit margins. As the general manager explained, I5's small scale and limited financial resources meant that it was not in a position to make the very large investments in new product development and marketing now necessary for success in the mainstream yoghurt/dessert sector.

As a consequence at the time of the research I5 was only able to undertake minor product development projects. In this regard it had recently begun producing a new range of fruit-based, low fat yoghurts, which, as the general manager explained, were very similar to the company's previous low fat range (the principal differences being that different fruit and packaging/branding was used). I5 had also recently launched a new, vitamin-enriched 'bio milk' in its local market; with this and the low fat yoghurt range marketed under the same health-promoting product label. In addition to these new products, the R & D manager outlined that a number of basic product/line extensions had also been introduced, for

example the introduction of new fruit flavours for yoghurt or the addition of chocolate balls and cereal to the 'corner' products and fruit syrup to the 'double delights.'

While there was certainly therefore some ongoing product development, management in the company emphasised the limited nature of this. In particular the R & D manager highlighted how the difficult competitive position of the company meant that it was not undertaking the type of major product development necessary for it to draw on the industry support schemes operated by Enterprise Ireland, and also that the recent product development and re-branding work had been done on a shoestring budget with little or no marketing spend.

Aside from these competitive and market driven considerations, an additional notable influence on the product strategy and performance of I5 was the fact that in terms of cultural approaches, it very obviously remained a traditional, old-fashioned organisation which until recently had been characterised by a weak, paternalistic senior management team; and also continued to operate on the basis of rigid/demarcated work organisation systems and a strongly adversarial industrial relations climate. According to the general and production manager, who were recent recruits, the high manning levels and rigid work practices resulting from the latter meant that the cost base of the business was unsustainably high, particularly in light of the recent competitive difficulties.

Opportunities for Upskilling

A consequence of the reduction of new product development activity at I2 was a decline in opportunities for upskilling associated with product development. This affected the two operators in the 'prep' area of the factory - who were responsible for making up and processing the bases for the various products - the most. The operators here explained how they had stopped making a number of value-added products such as the Chambourcy-type desserts, soft frozen yoghurt and 'Tennessee Secret Liquid Milk.' In addition, the R & D manager outlined how the number of yoghurt/dessert bases used in the factory had also recently been reduced from nine to six, leading to a further simplification or rationalisation of the prep operator's job. Further, although as outlined above ongoing minor product development was undertaken in the factory in the form of the addition of different fruits or flavours to the yoghurts/desserts manufactured, these changes had no impact on the prep area.

For the dessert mixing/packing machine operative, the decision to stop producing the Chambourcy desserts meant that that job had also become more streamlined. In addition, for this and the yoghurt machine operator position the product development that had been

undertaken in recent years had involved only minor job change. For the yoghurt machine operator, the new products/variants introduced merely involved the addition of a different fruit to that used previously. Similarly, the use of new or additional savoury/sweet accompaniments such as cereal or chocolate balls, while often giving the dessert machine operator more to do, was also not seen to make much of a difference to the essential nature of that job. For the dessert machine operator interviewed, the desserts made by I5 were 'fairly basic really' and the production process straightforward. Further, while new packaging was used for a number of products on both lines, this was in the same format as before and therefore of little consequence for the operators.

For the other positions in the factory, namely pasteurisation, box-making, packing, palletisation, cleaning and distribution (which accounted for the majority of positions), the reduction in product development activity had little or no significance, as the ancillary nature of most of these jobs meant that they were largely unaffected by new product development in any case. The only significant development of note was that after manufacturing I5's new low fat yoghurt pots were being put into a cardboard 'sleeve' prior to distribution. However this was undertaken manually by generally operatives in what was a labour-intensive and low skill activity.

A number of the younger general operatives highlighted the unskilled and monotonous nature of the work in the factory and the lack of opportunities for upskilling. One of these, who was planning to shortly leave the company, explained that that he would 'go mad' if he had to stay much longer; 'not even a company car' would make him stay. He also noted how a number of the operators in the factory with long service had become so anaesthetized by the environment that they were 'like zombies going around the place'; with one or two of the latter having urged the younger operators not to make the mistake of staying in the company for too long.

Aside from a consideration of the skill levels associated with the production process, it was also clear that the work organisation systems, prevailing industrial relations approaches and training policies at the company created strong obstacles in the way of upskilling for operators. Firstly, the production manager and supervisor explained that the two operators in the prep area were refusing to take responsibility for manually adding sachets of culture to storage tanks in order to start the inoculation/yoghurt-making process because the company was offering less money for this additional duty than they felt appropriate. Instead the supervisor was performing the task. This, in the words of the production manager, was part of a 'not my job syndrome' in evidence across the I5 site. In terms of skills consequences,

this refusal arguably meant that the prep area operatives were effectively excluding themselves from *the* most knowledge/science intensive part of the production process and also denying themselves the opportunity of learning something new.

Secondly, access to the better paying and higher skilled process operator positions, i.e. the prep operator and pasteuriser positions, was restricted to a small number of operators who worked very high levels of over-time and who had been 'appointed' to the positions on the basis of seniority. For example, the general operator mentioned above explained that soon after joining the company he had asked the production manager, with a view to making his job more interesting, if it was possible to be trained-up on the prep job. However his request was met with a negative response: as this position was filled already there was no need to train someone extra.

Thirdly and finally, operator training at I5 was almost completely of a 'sit-by-Nelly' variety, with no education or training provided to operators – even process operators – on the basic principles underlying the yoghurt-making process. The consequence of this was strong dissatisfaction and frustration for those operators interested in learning more about these issues, as the following quote from one of the women packing desserts illustrates:

I would really like to learn about how the yoghurt is made. I mean, on occasion when I am out socially and meet new people, when I say that I work at I5 they are really interested and often ask me to explain how the yoghurt is made. I am embarrassed to tell them I don't know anything about it....

Skills Outcomes in the Dairy

In comparison with the yoghurt factory, the dairy had effectively seen no product development *at all* for many years, producing a standard/basic range of milk and cream products. Against this background, the recent introduction of the vitamin-enriched 'bio' milk was potentially significant. However while no interviews were conducted with operators in this part of the factory, the production manager explained how in his view the introduction of the bio milk had made little difference to the operative job in the dairy. In a similar situation to that in the yoghurt factory, he explained how process operators in the dairy were also apparently refusing to take responsibility for adding the 'bio' culture to the production process, as in their view the company was not offering a sufficient extra payment to account for the additional work involved. This task was therefore also undertaken by a supervisor, with operators again effectively excluding themselves from an opportunity to be upskilled or learn something new.

On the whole, the introduction of the bio milk effectively constituted just one very small development in the context of a predominantly traditional product portfolio in the dairy, which in general provided minimal opportunity for upskilling.

The Production Environment

I5 had made substantial recent investments in introducing an automatic mixing system to the yoghurt-making machine and upgrading the infrastructure of the yoghurt factory (i.e. the floors, walls etc). The dessert-making machine had also been commissioned as a new plant a number of years previously. Therefore although some notable investments had been made, many parts of the factory clearly suffered from a lack of investment. Most notably, packing and palletising (which involved six people at a time) was completely manual on both the yoghurt and dessert lines, while box-making involved operators using highly antiquated, manually operated machines.

The two women packing desserts noted how their job of reaching over, picking up cartons and placing them in a box was like 'child's play' and 'the worst job in the factory', in particular due to the strain placed on the wrists and back from the constant packing motion as well as having to stand in the one place for a long time.

While there was therefore a rather mixed picture in terms of the production environment in the yoghurt factory, in contrast the adjoining dairy had effectively seen no investment at all for many years. The production manager, who had recently returned to the company after a nine-year absence, explained that all the equipment used in the dairy was exactly the same as before, nothing had changed. As he put it, it was as if the dairy 'has been in a time warp for nine years.' In particular he highlighted how a number of the packing machines were over 30 years old. As with the yoghurt factory, the packing/palletising of milk and cream cartons was also highly manual in the dairy. For his part, the R & D manager noted how the plant and equipment on the I5 site was 'being run into the ground.'

In general, therefore, the I5 factories were badly in need of investment and operated on the basis of a highly manual and labour intensive work organisation system.

Employment, Conditions & Prospects for Career Development

It was obvious that I5 was not seen as a desirable employment in its local labour market. Although unemployment levels were very low, managers outlined how the preference of the majority of school leavers and graduates in the area was to take up positions at the multinational owned pharmaceutical/chemical manufacturing plants in or near the city in

which I5 was located. In comparison with the relatively low pay, lack of investment in product development and capital plant and traditional work organisation systems and industrial relations approaches at I5, these factories paid very well, were highly invested and offered far greater opportunities for career development. As a consequence I5 found it very difficult to recruit and retain production operatives, and in particular competent/bright individuals. As the R & D manager bluntly put it, 'because of the hours [i.e. need to work long hours due to the low level of basic pay] and the trade unions, you're left with the rubbish.'

In addition, it was evident that future employment prospects at I5 were not secure. The general manager outlined how the increasingly difficult nature of the competitive environment, alongside the need to belatedly implement the Working Time Directive, had prompted the commencement of negotiations with the company's trade union in relation to the introduction of some redundancies and a general reorganisation of work. If the system the management wanted was not obtained, then the continuing viability of the company would be brought into question.

Postscript

A follow up interview highlighted that although the new work organisation system had been introduced in the yoghurt factory (and dairy), I5 had failed to generate the required increase in product sales necessary to make the factory viable on a long-term basis. There had also been a problem of rigidity in the new system introduced, as the R & D manager and a yoghurt factory shop steward explained. In short, the new system worked on the basis that operators would be guaranteed 48 hours work each week and this meant that operators were being paid to do little or nothing for much of the time as a consequence of the low product volumes produced; a situation which was plainly not economical from the company's perspective.

As a consequence, management at I5's parent company, I2, took the decision to sell the company's yoghurt brands to one of the other two mainstream Irish yoghurt manufacturers, and the yoghurt factory was therefore closed. In addition, I2 also subsequently sold I5's liquid milk brands, with the dairy therefore also shut down.

9.3 Skills Outcomes associated with Industrial Policy enabled Strategic Change

This section will examine whether the industrial-policy facilitated move into the production of value-added or 'up-market' products by a number of the Irish firms had led to any significant upskilling for production workers at those firms. Outcomes at the I1 whey and yoghurt factories, I2 whey factory and I3 cheesesnack factory, which as explained in chapter eight had each benefited from substantial industrial policy support, will be outlined in turn.

9.3.1 The I1 Whey Factory

Product Strategy

I1's food ingredients subsidiary had in recent years progressively shifted its bulk product range away from commodity products/powders towards 'food ingredients' tailored to the specifications of individual customers. In the whey area I1 began to undertake very substantial product development from the late 1980s on. This process led in the early 90s to the successful development of a very high value-added product, a 90% protein, whey protein isolate (WPI) aimed at the sports nutrition market. The development of this product, which was undertaken using internal company resources alone, was facilitated by the discovery of a novel use for what is called 'cross-flow microfiltration' technology, with I1 taking an exclusive, world-wide patent on the subsequent production process developed. While originated in Ireland, it was decided for commercial reasons (specifically the comparatively large size of the performance nutrition market in the United States) to manufacture the WPI products in the US, where they have since sold extremely well and proven highly profitable.

Apart from the WPI, I1 had in the early 90s developed a similarly innovative and value-added product in partnership with a babyfood manufacturer. This was a 'hydrolosate' product that was a whey derivative targeted for consumption by those with specific allergies. However while the development of this had been a success, a problem arose with the customer's product trials and the project did not therefore go ahead. Despite this management at I1 were constantly looking for opportunities to develop more advanced/value added products and at the time of the research there was talk that a new whey factory would be built to produce another, advanced product developed in partnership with the babyfood sector. However the general manager subsequently explained that this had not gone ahead either, for a combination of market and return-on-investment related reasons. In summary, the ingredients market was highly competitive and there was the real danger that any product produced, even if technically advanced, might quickly be copied by

competitors. In addition, due to its plc status and also the general lack of finance in the company as a result of company-specific factors and the increasingly challenging sectoral context, investment projects at I1 had very short 'payback' periods such that it was very difficult for major new developments in the ingredients area to be approved. Therefore at I1's Irish whey factory substantial, but not transformative, product development had taken place, in particular from the mid-late 90s on.

In terms of products actually produced, while as it had done for some time, the whey factory manufactured lactose for the babyfood and confectionary industries, volumes to the former had increased substantially, with a concerted effort being made to target this sector. However the essential nature of the lactose produced had remained stable over time, with the main differences in products manufactured for individual customers being in terms of particle size and product quality/safety specifications. There were two variants of particle size manufactured (a regular and a fine product), although the factory manager explained how I1 had just recently received customer requests for greater variation/tailoring in this area. In terms of product specifications, the company's babyfood customers had recently prompted a wholesale ramp-up and tightening of plant and product hygiene and safety standards and also demanded higher specifications in relation to the bacteriological properties of the individual products produced.

Aside from lactose, the remaining whey product range had shifted from rennet mother liquor (RML; also known as 'delactosed whey powder') supplied for animal feed and basic whey powder supplied for animal feed and 'bakery-type' products; to whey protein concentrates (WPCs) produced mainly for use as ingredients in confectionary, ice cream and yoghurt manufacture. Most notable in this regard had been the recent development of a 'high gel' WPC made from acid (as opposed to 'sweet') whey. This was being marketed primarily for its functionality (gel strength) to the yoghurt sector, and together with the lactose supplied to the babyfood sector was seen to be the most advanced/value-added product on the ingredients site.

The whey products produced were described by managers in the company as 'second generation' products in terms of levels of value-added, in comparison with both 'first generation' products such as butter, cheese and skim milk powder, and 'third generation' products like WPI or milk minerals. In this regard, the whey R & D project manager noted that the products manufactured were primarily relatively straightforward additions or variations to previous products. In his view even the recently developed acid WPC was best described as a 'medium to high' value added product because it 'only' provided

functionality. In contrast, if like the WPI it also (or alternatively) offered some health-related benefit, then it could be classified as a 'true value added' product. Therefore while significant progress had been made in moving up the value chain, the product range at the I2 whey factory was substantially constituted by stability.

The Production Process & Work Organisation

Table 9.1 provides an overview of the production process, work organisation and operator training at the I1 whey factory.

Table 9.1: Production Process, Work Organisation & Operator Training at the I1 Whey Factory

	The Production Process & Work Organisation (No. of Production Operatives: 33)
The Production Process	<ul style="list-style-type: none"> • Intake & pasteurisation of liquid whey from cheese and casein factories & external sources; whey concentrated to specific protein strengths via combination of routing through seven pressure-based membranes (of three different types), evaporation & mixing with existing stock; membranes dewatering & separating whey into protein & 'permeate' streams • Evaporation & drying of resulting protein into powder form • Multi-stage lactose production process involving evaporation of permeate followed by cooling/crystallisation, decanting & drying • Finished products in bulk powder form & packed in 25kg or 1 tonne bags
Work Organisation	<ul style="list-style-type: none"> • Highly automated, continuous process operation • 3 main departments: whey intake, concentration & (re)direction (control room 1); lactose production & evaporation/drying of WPCs (control room 2); bag-off & storage. Cleaning/plant hygiene the primary ancillary function • Process operators in control rooms running plant from windows-based PC screens; four operators per shift (1 in first control room and 3 in second – 1 lactose, 1 drier & 1 evaporator operator); operator in control room 1 overseeing 6 PC screens; operators in control room 2 overseeing 2-5 each • 3-4 operators per shift in bag-off department running automatic & manual (bulk) packing processes & driving forklift trucks
Initial Training & Learning Times	<ul style="list-style-type: none"> • 13-week training period for process operators: brief, initial induction by manager, with training primarily consisting of shadowing & working alongside existing operator; minimum of a year to gain a reasonable level of familiarity with the plant • 6-week training period for general operator running automatic packing line; 2-3 months before competent; minimal training for bulk packer operator

The Extent of Job Change & Skill Consequences

General Trends

A general finding from interviews in the whey factory was that a very significant tightening and improvement of product safety and quality standards and procedures had resulted from the production of the new range of products, in particular those for the babyfood sector, with babyfood customers frequently undertaking audits of the factory. This tightening of

standards and procedures was manifested for operators in the form of new clothing and personal hygiene routines, as well as more controlled operating procedures and tighter product specifications. Operators generally had to be more careful in what they did and there was greater pressure to make sure product produced came within the correct specification.

The First Control Room

Process operators in the factory's first control room explained how the introduction of the higher-grade whey protein concentrates in the mid 90s had led to some very significant job change. Whereas before the operator here was responsible for taking in, mixing and routing whey to evaporators as well as separating some whole milk, the introduction of the WPCs meant that the control room went from being primarily a 'distribution station' to a fully-fledged processing unit. Specifically, operators stopped dealing with whole milk, continued to take in whey, but were now also actually processing the whey by sending it through newly introduced membrane plants before, as previously, sending it on for evaporation and drying. Whereas initially only two membranes were used, these had been added to on a modular basis such that by 2002 seven membranes were in place. These were of three different types - 'ultra osmosis' (used to dewater and demineralise the liquid whey), 'reverse osmosis' (used to dewater the whey) and 'ultra filtration' (used to split the whey into its protein and lactose/permeate constituents).

The introduction of the membranes and processing of whey had been a major change for most of the operators working in this control room, and they received training/mentoring from a production manager on the functions and operation of membranes over a 2-3 month period. However an older operator (membrane operator A) with longer service noted how the introduction of the new membranes had not been particularly significant for him, as they operated in a similar manner to older membranes which had been used in the factory back in the 1970s. As he put it, 'once you know how one works they're all basically the same.'

Managers in the factory were strongly of the opinion that this was the most highly skilled position on the whole ingredients site due to the number of different tasks simultaneously performed by the operator and also the volume of product handled. In addition to taking in and pasteurising whey, the operators in the first control room had to closely monitor the membrane plants and also what was happening in the lactose, drying and evaporation processes in the second control room to which they sent (and in one case received) product. The increase in the number of different product variants handled (to approx half a dozen) and a constant drive on behalf of management to increase throughput volumes and plant efficiencies, meant that operators here had become 'busier, busier and busier' in recent years.

However each of the three operators interviewed was of the opinion that the position was relatively straightforward and did not require a high level of skill. While noting that it took a considerable time to become familiar with the plant, the membranes were seen to run very well and also to be comparatively simple to operate due to the sophisticated automation systems developed by the company's software programmers. The latter meant that product was routed automatically from one membrane stage to another without intervention by the operator, while the system also highlighted operational problems and incorporated a number of 'fail-safes' preventing operators from making possibly serious mistakes. The introduction of new or additional membranes, even of different types, was also seen to have only limited significance for operators. As membrane operator B (also the factory shop steward) explained, 'if you bring in another membrane in the morning it's going to be doing much the same thing as the ones that are already there'; and also, 'if you want to make a membrane plant bigger you just get more membranes but it doesn't make any difference to the actual process, to my work.'

Although the operators here *did* emphasise that not everyone would be suited to the job due to the level of responsibility and pressure involved (particularly in working alone) and also the need to be comfortable working with computers, the consensus view was that the position here was relatively limited in terms of the skill levels involved. The following quote was illustrative of the views expressed:

[The skill levels involved are] not that high. I suppose if you can bring a lad in in 13 weeks and let him off, or maybe in less, it can't be that complicated; you have to be on the ball, at the end of the day our job is get product through plants and if I don't it's a whole chain reaction....but the skill level...you want to know the computers and be aware of what's going on, but it's no use saying it's that high, it's not, there's not a fierce lot involved.... any chap if he had 'ere a bit of a brain you could let him off there after a couple of months....

[Membrane Operator B]

In terms of the ongoing introduction/production of *different product variants* (i.e. the different WPCs), operators explained that it often took a considerable period for management and technical personnel to find the settings and operating parameters that best facilitated the production of new products/variants, during which time there was frequent communication and consultation between operators and technical staff and a need for operators to closely monitor the plant as well as try out different settings. The subsequent ongoing production of new products or variants therefore also typically involved the use of different settings.

Operators highlighted the positive consequences arising from the product development undertaken in terms of the extent to which it led to change and variety in the job and the opportunity to learn new things. For membrane operator B, the introduction of new products 'makes it a bit more interesting, you have a bit more variety in the job.' This job change and variety resulting from the product development taking place was seen to make the whey factory quite distinctive when compared with the other factories on the ingredients site. According to operator B, the whey factory was 'the only place where there is scope for change with products' and 'the only place you get variety.' In comparison, he highlighted how operators who had worked for twenty years in the cheese factory would still be using 'the exact same process every day', which he clearly viewed as a negative situation to be in.

This being the case, neither the transitional/adjustment period nor the subsequent ongoing production of new products was seen to have great significance for operators' jobs. The primary difference between individual WPCs produced was in levels of protein (e.g. a 35% as opposed to a 30% protein WPC) and obtaining this was a relatively straightforward process, in that it involved operators performing a simple calculation and then making an adjustment to the running of the membranes by increasing or decreasing the pressure levels.

The most significant product variant in terms of its impact had been the recently introduced, value added acid WPC. Both operators and one of the production managers outlined how it had taken a long time for the optimal operating parameters to produce this product to be identified, during which period there was much communication between managers/technical staff and operators. While by the time of the research the production process for the acid WPC had been fixed, this nevertheless *did* involve operators performing an additional task to those undertaken for the other WPCs, namely the remote addition of chlorine to the membranes in order to maintain a certain Ph level in the product (this was important as otherwise the membranes could become blocked up). However while recognised as constituting something extra for operators to do and be aware of, this did not lead to any significant change in the essential nature of their job. In the view of the whey R & D manager, having to do this additional task did not lead to upskilling for operators - adding the chlorine was 'just the job you do'; he couldn't see 'how you upskill there.'

The Second Control Room

In the factory's second control room, I1's twin objectives of meeting the quality/hygiene demands of its babyfood customers and increasing throughput volumes had led to the recent commissioning of a new *lactose plant*, which involved operators being sent for two days training at an equipment supplier. While significant reengineering/redesign had taken place

in order to improve plant operation, the essential nature of the production process had remained the same. Managers and the two lactose operators interviewed noted that in general the new plant ran extremely well with few operational problems.

In terms of the nature of the lactose produced, the operators explained that this had remained stable. In the words of one (lactose operator A) who like his colleague had very long service, 'there hasn't been hardly any changes now since I came in here, really, on the lactose.' While recently the product produced did, due to demands from babyfood customers in particular, vary according to particle/mesh size and quality specifications, these differences were seen to be minor and to have little significance for the substantive nature of the job. Specifically, achieving a different particle or mesh size involved varying the speed of the mill, with either a production manager or laboratory technician adjusting plant running parameters or instructing the operator as to what changes to make in this regard. Similarly achieving different quality specifications required managerial or technical input. For the operators it was therefore mainly a case of having to 'keep a close eye' on the operation of the plant, in order to ensure that the product produced remained in specification.

In terms of skill levels, operating the lactose process was seen by both operators and managers to be relatively straightforward. For example, lactose operator A commented how lactose was 'an easy product to make' and that he 'wouldn't regard [the skill involved] as a high level of skill', although he did note that he had a great deal of experience on the plant so perhaps underestimated the skill involved.

For the *evaporator and drier operators*, the move to the production of the more value-added products had prompted an increase in formal training provision, with operators having recently attended the three-day Spray Drying and Evaporation course run at Moorepark. The plan was to send all current operators on this course over a three-year period including those who had previously attended, who were to be sent back for refresher training. Babyfood customers had also been brought in to speak to the operators about their particular requirements at 'back to work days', which the company held prior to the commencement of each production season.

However while training provision had therefore been stepped-up, the introduction of the new products had not led to any significant change in terms of the fundamental nature of these operators' jobs. Specifically, the machinery, processes and operating parameters/variables used to produce the new products were the same as those used to produce previous products. Evaporator operator A explained how the principal variables he had under his control had

continued to be the flow rate and the amount of steam to let into the evaporator, with these being adjusted in order to make changes to the density of the powder. Similarly, changing either the inlet or outlet temperature in order to vary moisture levels remained the principal operating adjustment made by the drier operator. While the production of new products typically meant that the 'set-point' for these parameters would change, no new or additional parameters had been introduced.

In contrast, the evaporator and drier operators noted how the production of WPCs was in fact *significantly easier* than the production of more basic products due to the fact that the initial routing of the whey through the membranes removed many of the impurities that remained present in more basic products such as RML and whey powder, and which had historically made evaporation/drying very difficult. Evaporator operator A summarised the changes and developments for the evaporator and drier operators as follows:

When we were making the whey powder here there was a lot of hardship and hassle because it was a very sticky product, whereas now with the new ultra filtration plants down below it has improved the quality and handling of the product. It's not as sticky as before because the ash has been taken out. That's the big change really, the evaporators are more or less the same as when we started, the driers are the same, small modifications, you know.

In general terms, therefore, the experience of work of operators in the whey factory's second control room had been characterised by stability. Having attempted to tease out the impact of producing the new products in a number of different ways with three of the six operators interviewed, the researcher was met with an exasperated response from lactose operator B who commented that:

You keep asking in different ways, trying to find out if the job has been made more interesting by the production of these new products, and the answer is that it hasn't, it's still the same and if anyone else says otherwise, they are just talking rubbish.

In this operator's view the job had changed so little that he could 'do it in his sleep.' The evaporator and drier operators working alongside him did not disagree with this assessment.

However while little or no 'upskilling' was evident for the lactose, evaporator or drier operators in terms of a detailed analysis of the production process and the jobs undertaken, as with the first control room the increase in throughput volumes and number of different products produced was found, alongside the tighter specifications required, to have

significant consequences for these positions. Specifically, the need to switch from one product to another and also achieve within specification product meant that the evaporator and drier operators needed to use and remember a greater number of 'set points' and in general be more alert and aware. While the need to change from one product to another was less relevant for the lactose operators, they also had to ensure that the necessary specification requirements were met. In addition, for all three positions the increased throughput volumes also demanded greater awareness and placed increased pressure on operators due to the fact that any problem with the plant could potentially lead to an enormous loss of product.

General Operatives

For general operatives in the whey factory performing bag-off and cleaning roles, the production of new products and in particular the supply of products to the babyfood sector had led to a dramatic increase and tightening of hygiene standards and procedures. While this evidently affected cleaners in particular, it also led to some significant job change for operators in the bag-off area, with these for example having to log additional product safety results/checks. On the whole, however, the nature of both the cleaning and packing jobs was unchanged, with both remaining comparatively limited and low-skill.

Important Influences on Skills trends

Overall therefore, the introduction/production of 'second generation' products at I1's whey factory had led to only limited job change for production operatives, with stability (as opposed to radical transformation) in terms of plant, equipment and production processes utilised the dominant finding. Further while requiring capable operators, the skill levels involved in operating the various processes and plants were not found to be particularly high, with the ongoing introduction of new, value-added products also not contributing to substantial (or what we might call 'transformative') upskilling. This section will outline a number of important influences or determinants of these general outcomes highlighted during the course of the research.

Firstly, management at the ingredients subsidiary in general explained that, mirroring international trends in the bulk product/food ingredient sector outlined in chapter four, a highly tangible company policy was the drive to achieve the greatest economies of scale and throughput volumes possible, a policy which was manifested in the form of the construction of highly capital intensive, people-lean factories and plants. As the description of work organisation at the whey factory demonstrates, this was facilitated by a deliberate and extensive use of sophisticated software programming tools, which enabled engineers to write software programmes that when implemented meant that the operator's job was substantially

streamlined and much plant operation automatic. In addition, individual operators were expected to operate/oversee a large number of plants that were also processing much higher product volumes. Therefore as opposed to coinciding with an increase in the levels of autonomy and discretion exercised by operators, the new, value added whey products were being introduced in a context in which the operator's job was being increasingly streamlined and harmonized, with more limited or *reduced* input compared to before.

Secondly and partly related to this, a general finding from the whey factory was that although the core elements of the production processes utilised and operators' jobs typically remained stable, the introduction of new products and equipment evidently required a large amount of work and effort and called for very significant knowledge and expertise on the part of production management, R & D and laboratory staff. Therefore while the introduction of new membranes made little difference to the operators' job, this clearly involved significant research input on the part of management and technical personnel in terms of aligning the new equipment with existing membranes and finalising running parameters etc. Similarly the tailoring of existing products and the recent introduction of the acid WPC, in particular, also required management and R & D personnel to undertake very substantial research/deskwork. Further, while the lactose production process was evidently straightforward from an operator's perspective, one of the lactose operators explained how it had taken 'years of trial and error by the lab people and the chemists' to achieve a consistent, well functioning crystallisation process.

It was also apparent from the research that what might be described as the inherently or essentially limited nature of the operator position placed substantial obstacles or limitations on the possible extent of upskilling. As the whey R & D project manager explained:

...I mean what sort of skills do you want an operator to have, how upskilled do you want an operator to be? Some people mightn't want a skilled operator, they don't want him changing anything or working on his own initiative...Say you sent an operator here making WPC down to Wyeth to make babyfood or up to pharmaceutical factory, he's going to learn new things, obviously higher hygiene levels and all that, but at the end of day the operator's probably going to be minimal decision-making, you know, and I would imagine in a pharmaceutical environment, zero decision-making, because everything is supposed to run 100% right all the time.

In the whey R & D manager's opinion, even for the 'true value added' product whey protein isolate developed at the ingredients site, while possibly involving substantial initial learning

due to the different production processes used, in the 'long-term' there wouldn't be 'much of a difference' for operators between producing this product and the current products at the I1 site, which was 'the way you'd like to have it.'

Relevant here was the fact that at the time of the research I1 was conducting a strategic review of all aspects of business operation, with a key theme being the question of how the company might achieve greater consistency in the quality/specification of products produced. The general manager of the ingredients site subsequently explained that following this review process it had been decided to create 'standard operating procedures' for each production process on site in order to counter the lack of consistency in product quality that was seen to result from the inconsistent and somewhat idiosyncratic ways in which operators ran their plants. When fully implemented the effect of this policy would have been to further limit the discretion/autonomy exercised by operators.

Thirdly, while not highlighted as a determining influence *per se*, another relevant factor impinging on the possibility for upskilling to be achieved was the demographic-educational profiles of the production operatives at I1. The majority of operators were 50 years old or over and had typically left school at any early age without any qualifications. As a result, as management explained, a significant number were quite weak in terms of literacy and numeracy skills as well as more general capabilities, and this was identified as having been a primary cause of a number of recent operating problems at the ingredients site. It was therefore questionable whether many of the operators would have been capable of taking on more responsibilities or demanding duties.

Finally, the generally informal and on-the-job nature of operator training was also highlighted as being problematic. While it was recognised that operators had many years experience and had also recently attended short courses at Moorepark designed to increase their levels of knowledge and awareness, a number of managers noted how the predominantly on-the-job nature of the training provided meant that although operators were typically good at their jobs, they lacked a basic understanding of the fundamental, underlying processes taking place within specific pieces of equipment or the plant in general. For example, the laboratory manager who himself had undertaken a number of two-week modules on the principles of dairy processing at Reaseheath college in the UK in the 1970s and 80s, was of the view that such courses should be delivered to all personnel on site. He explained how 'a lot of the guys would be working here without *really knowing* what they are doing' (original emphasis) and commented that if the constant improvement of processes and products was *really* at the core of the IUI strategy (as opposed to consisting merely of

rhetoric and policy statements), then it made a lot of sense to provide operators with the skills and knowledge to be able to make more of a contribution.

For the whey R & D manager, there would be little point in granting operators more of a role or discretion in the production process, as '[the operator] doesn't really know about the product, he can only go on his experience with it.' On the contrary, for operators to have more of a role they would arguably need to undertake some sort of a formal qualification similar to the diploma in dairy processing (apparently) completed by process operators in Denmark, as this would enable them to understand 'why that's acid WPC or why this temperature should be this and that temperature should be that.'

Some Additional Evidence from the II Yoghurt & Milk Factories

Interviews with a factory/production manager at II's yoghurt factory and the HR manager of its liquid milk business indicated that similar findings and trends to those uncovered at the whey factory were also in evidence there. Both managers explained that there had been a high degree of stability in the production processes utilised despite substantial new product development activity.

For example at the yoghurt factory, while the introduction of a range of fromage frais products in the early 90s *had* involved the installation of a new production unit and process that were very different to those used before and therefore involved substantial new learning, the new products introduced in recent years had in the main been manufactured using existing processes and equipment and therefore did not lead to any upskilling. In this regard, the new, high-calcium yoghurt was manufactured on the existing yoghurt machine, with the production manager explaining that the only change for operators was the addition of a different fruit base.

The company's new, probiotic yoghurt drink *did* involve some substantial change, as a new bottling plant was introduced for which operators received three days training at an equipment supplier. However the 'wet' area plant and equipment used to manufacture this product was the standard equipment used to make existing products. In addition, while operators were required to undertake the new task of adding a number of vitamins to the base used to make the product, according to the production manager this was a very straightforward task. Similarly, the use of a 'probiotic' as opposed to a normal/standard culture merely involved operators adding a different sachet of culture to the same inoculation tank.

While as noted the introduction of new products had clearly involved some new training, it was clear that in general terms the remit of the training provided remained narrow. Specifically, the yoghurt production manager explained that process operatives had not received any education or training in relation to how the probiotic yoghurt culture differed to the standard/normal cultures used. In addition he noted how he was not aware of operators having attended any formal course on the principles of yoghurt-making similar to the courses on drying/evaporation available at Moorepark.

In this regard, for his part the liquid milk business HR manager explained that while a quality manager from one of the three milk factories had recently attended a technical course at Moorepark, production operatives 'definitely wouldn't have' attended any such course. Although operatives were provided with training on an annual basis, this was limited to health and safety issues such as manual/chemical handling.

9.3.2 The I2 Whey Factory

Product Strategy

Up until the late 1980s, the whey generated from cheese and casein manufacture at I2 was either dumped as effluent or, after basic processing (mainly into whey powder), sold as pig feed. There was therefore only limited plant and personnel dedicated to whey processing. However with the dual purpose of complying with new environmental regulations prohibiting the dumping of liquid whey and in an attempt to 'add value' the company decided to build a completely new whey factory, which commenced production in 1990.

Initially the products from the new factory, primarily demineralised whey powders, were sold to the confectionary industry. However with the help of extensive R & D grant funding from Enterprise Ireland and the assistance of Moorepark and MTL, from the mid 90s on I2 embarked on an ambitious and strategic product development programme. Management identified three specific targets: firstly, to shift the sale/marketing of demineralised whey powder away from the confectionary sector to the babyfood sector and alongside this to begin the production of lactose for the same sector; secondly, the development and production of a range of 'functional proteins' (whey protein concentrates - WPCs); and thirdly, the development of 'milk mineral' products to extract or harness particular mineral components of whey.

By the time interviews were conducted in 2002, I2 had succeeded in achieving the first two objectives and was at an advanced stage of product development with regard to the third. Therefore around 90% of the demineralised whey powder manufactured was being supplied

to the babyfood sector, along with lactose which the company had begun producing a number of years previously. Both of these products were tailored to meet the requirements of individual customers. In addition, the previous year had seen the installation of a new plant which was producing the functional WPCs and which was seen to have been an outstanding success. Similar to the functional WPCs manufactured by I1, I2 placed emphasis on the gel-strength of its products, with the majority of these also being marketed to the yoghurt industry.

The Production Process & Work Organisation

Table 9.2 below provides an overview of the production process, work organisation and training provision at the I2 whey factory.

The Extent of Job Change & Skill Consequences

Mirroring the experience at I1, the commencement by I2 of the production of large volumes of product for the babyfood sector was found to have led to a very significant upgrading of product safety and quality standards at the I2 whey factory, with operators in particular having to meet substantially tighter product specifications than before. However in contrast to the experience at I1, the product development undertaken at I2 *had* involved the successive introduction of new and significantly different production processes, technology and equipment.

In this regard, the demineralisation process, which constituted the cornerstone of the new factory opened in 1990, was radically different to the standard/traditional processes of evaporation and drying which had previously been used to transform the limited volumes of liquid whey processed into powder form. This new process involved a large number of interrelated pieces of equipment covering a very wide floor space and a complex sequence of production stages centred on the direction of liquid whey through 'ion exchange resins' and 'electrodialysis membranes', which utilised chemicals and electrical currents to separate the liquid whey into its various sub-components. The enormous scale and the nature of the processes used made this part of the factory appear more like a chemical or pharmaceutical plant than a traditional dairy factory.

In addition, the lactose plant, which had been built in the mid/late 90s, had also involved the introduction of a new and substantially different production process, while the more recently introduced 'functional protein' plant was also a highly novel development for the factory, with the introduction for the first time of pressure-based membranes similar to those used at I1.

Table 9.2: Production Process, Work Organisation & Operator Training at I2 Whey Factory

The Production Process & Work Organisation	
No. of Production Operatives: 32	
The Production Process	<ul style="list-style-type: none"> • Highly automated, continuous process production • Demineralised whey powders: liquid whey routed through 'ion exchange' columns/resins & an 'electrodialysis' membrane separation system that removed certain minerals via the use of chemicals & electric charges; the remaining solution next evaporated twice in order to concentrate, then crystallised/cooled & sent to a 'standardisation tank' where chemicals added; finally dried in a dryer • Lactose: separation of permeate & protein streams during ion-exchange & electrodialysis processes; evaporation of permeate followed by cooling/crystallisation, decanting & drying • Whey protein concentrates (WPCs): routing of liquid whey through ion exchange columns, then through 'nano filtration' pressure-based membranes; followed by pasteurisation, 'ultra filtration' membranes, evaporation, standardisation, evaporation again & drying • Product produced in bulk form, mostly powder (1 tonne or 25kg) but some liquid
Work Organisation	<ul style="list-style-type: none"> • Operators running process plant from a mixture of DOS & windows-based PC screens & wall panels from three control rooms. Control room 1 (3 operators): whey intake, operation of demineralisation & WPC plants, standardisation (including manual addition of chemicals) & routing of product to other two control rooms; control room 2 (2 operators): operation of lactose plant - crystallisation, standardisation & evaporation processes; control room 3 (2 operators): evaporator & drier operation; 5th operating 'floating' between controls rooms 2 & 3 • 4 operators per shift in bag-off department running automatic & manual (bulk) packing processes; cleaning an ancillary function
Training & Learning Times	<ul style="list-style-type: none"> • 13-week training period for process operators; approx one year to gain a comfortable level of familiarity with the job. • Approx 6 week training period in bag-off department

The following quote from the ingredients R & D manager provides a sense of the extent and nature of change faced by operators at the factory as a consequence of the development activity undertaken:

In the old days you had evaporation, drying, bagging-off and they [the operators] were just working with densities and moistures and stitchers and things like that. Now you're some way between electrodialysis, ion-exchange, and resins...membranes, ultrafiltration, nanofiltration, different permeate streams and they still have the evaporation, but now they have one-stage evaporation, two-stage evaporation, crystallisation, flash-cooling, they're all different technologies, so it has moved on....

Aside from the introduction of fundamentally new processes and equipment, it was also evident that frequent changes were made on an ongoing basis to both existing processes and equipment and those recently introduced. For example, demineralisation operator A from the factory's first control room explained that 2002 was the 'only time in eleven years' that management had not made changes to the demineralisation process. What typically

happened from year to year was that management would 'bypass this and add in that', leaving operators to 'learn it all again', i.e. the direction of product flow etc. Unsurprisingly, many of the operators interviewed outlined how their jobs had 'changed the whole time' or that there was 'always something happening' in the factory.

While the first two control rooms were found to be most affected by these changes, some significant changes were also evident in the third. Although evaporation had remained largely stable, the drying process had witnessed substantial change and modification - for example two-stage drying with a 'fluid bed drier' was used for a number of the products produced, while the new whey protein concentrates were being dried through 'nozzles.'

Skills Outcomes

A general finding from the fieldwork was that the essential nature of the products produced and production processes utilised and the comparatively frequent introduction of new (and adjustment of existing) product and processes meant, firstly, that the I2 factory required highly skilled operators, and secondly, that very significant opportunities existed for operator upskilling. In this context, the site manager explained that as far as seniority rules would allow, the 'best of the operators' had been chosen to work in the factory.

The first control room was seen by managers to be the most complex and skill-intensive, with one noting that the large number of PC screens and complex nature of the demineralisation process made it a 'savage' working environment. Similar to the first control room in the I1 factory, operators here had to simultaneously perform or monitor a number of different tasks or functions, including communicating with and sending/receiving product to and from the other two control rooms. An additional notable characteristic of the demineralisation operator position, in particular, was the need to memorize an enormous number of 'set-points' relating to different stages of that production process, a requirement which was exacerbated by the fact that, as noted above, R & D and production management made frequent changes to the production process.

Further, while as a production manager explained, the plant was 'as automated as it probably can be' and like I1, I2 placed a very high emphasis on increasing automation levels via the creation and use of software programs, due to the complex and multi-stage nature of the production processes operated in the first control room (and again the demineralisation process in particular), there were a significant number of eventualities that the automation evidently did not cater for, which required operator intervention and placed a premium on operator skills and competencies. Specifically, the frequent occurrence of unforeseen events

or 'blips' in plant operation meant that the operators in this control room needed to be able to analyze, problem-solve and make quick decisions.

While the first control room was identified as being the most complex and skill intensive, the operator's job in the second control room was also highly challenging due to the amount of plant being supervised and also the complex nature of the production processes used. The operators here highlighted the 'challenging' nature of the processes they were controlling and also again, the very large number of set-points they needed to memorise and the frequency with which R & D staff made changes to the plant.

Operators' Views

While operators explained that the complex nature of the production process and high production volumes produced meant that the factory was a pressurised working environment, the intellectually challenging, high-tech and changeable nature of the work evidently provided a great deal of stimulation and job satisfaction for capable operators interested in learning new things. The following quotes were representative in this regard:

I really like working here because I am very interested in machines and machinery and the whey plant is all new technology, so I enjoy it a lot.... there is often something new, you are always learning a bit.

[Drier operator B]

It's a very interesting job. When you settle the plant down you can reflect on what is happening and because the process is computer programmed, when something goes wrong you can try and work the problem out yourself or you can ring Tom [the software engineer] and talk to him about it.... when you have an idea of the plant it's very good because you can then try and solve the problem yourself...you are always learning new things.

[Protein Plant operator A]

Even where, as in the third control room, the production processes and equipment used had remained largely stable, the need for operators to communicate closely with their counterparts in the other two control rooms arising from the nature of the products produced and also the fact that a number of different variants were made, was seen to make the job more interesting than before, when operators had tended to be 'isolated' and very much working on their own. As drier operator A outlined, 'you are [now] always in contact with

the other control rooms', which for him meant that the job was 'definitely more interesting than before.'

It was apparent from observing the body language of operators, that for those with an interest in technology and an intellectual capability, the factory was an extremely stimulating place to work. One particular episode demonstrated the extent to which operators could use their analytical/diagnostic capabilities in the resolution of production problems. Demineralisation operator B arrived for his shift one evening to be told that a production problem that had been present the previous day (namely low conductivity levels in the electro dialysis plant) had still not been resolved. He explained and subsequently demonstrated that he could use a specific piece of equipment known as a 'Setsim' to run a simulation of the previous day's production in order to identify the specific time the problem had arisen. By doing this he was able to confirm his hunch that the water filters in the plant were blocked and was therefore able to make the adjustments necessary to remedy the situation.

In addition it was clear that the fact that the operators in the I2 whey factory had on a daily basis to work together with management in tackling plant operation problems, was highly significant from the point of view of their levels of job satisfaction. Specifically, the recognition and respect accorded to operators for their knowledge and expertise of the plant was particularly important for operators, many of whom had little or no formal education, as the following quote illustrates:

I left school at 14 to go and work in an undertaker's and I don't have any real qualifications as such, so for me to be able to work with the managers who have various degrees and all that, and for them to ask for my opinion about problems on the plant, means an awful lot....

[Demineralisation operator A]

General operators

As with the situation at I1, the production of new products and in particular the supply of products to the babyfood sector had led to a significant tightening of hygiene standards and procedures for general operatives undertaking bag-off and cleaning roles at the I2 factory. However these positions evidently remained limited and low-skill in nature and had witnessed little substantive change in terms of the nature of the key activities undertaken.

Ongoing Limitations on the Possibility for Upskilling & the problem of Training Provision

In summary, therefore, there was strong evidence that the entry of I2 into the production of value-added whey products had led to very significant job change for process operatives (although not for general operatives), created skill-intensive and intellectually demanding positions and provided ongoing opportunities for new learning and upskilling. This being the case, however, limits on the extent of operator autonomy/discretion and the potential for upskilling were identified with regard to operators' involvement in the achievement of product tailoring, while in addition serious weaknesses in operator training at the I2 whey factory were also identified. These two findings are now briefly outlined here.

Managers explained that the key difference between the individual demineralised powders manufactured was in terms of mineral specifications, in that some had more or less of certain minerals remaining than others. Achieving these different specifications involved adjusting the number of cycles of electro dialysis the whey solution was passed through, and also the addition of minerals to the standardisation tank. To produce different *whey protein concentrates*, the principal change made was the variation of chemicals in the standardisation tank, although a number of these products also followed different steps in the production process.

Operators in the first control explained that the changes to plant operation needed to produce the different product variants were in the main made automatically, being incorporated into customer-specific operating programmes written by software engineers which operators simply had to start up. The principal difference for operators was that for different products they *did* have to vary the number of bags of chemicals they needed to manually add to the standardisation tank.

In general terms, the operators in the first control room were of the opinion that producing different product variants was not overly significant or substantial. They did note, however, that it was important to pay careful attention in order to ensure that the correct specifications were being obtained. For his part, the factory manager noted that producing a different product variant 'wasn't a huge difference as regards how it's going to affect' the job of the operator in the first control room. Similarly, lactose/evaporator operator B from the second control room explained that while 'holding times', temperatures and also final packaging formats were different for particular customers, on the whole this did not amount to a substantial change for the operators in that control room.

In addition, aside from these limiting considerations, the lack/weakness of training provision at the I2 whey factory was also found to be a highly problematic issue.

With the exception of food hygiene and safety training, training at the I2 whey factory was found to be effectively entirely dominated by 'sit-by-Nelly' type provision. While a small number of operators had been taken to France for a week's training at an equipment supplier and had also undergone some classroom-based training before the whey plant was first opened in the early 90s, the operators concerned were dismissive of this training as having been insignificant. Neither they nor the other operators had since received any similar formal training and none had attended courses at Moorepark, and it was very apparent that the ongoing move towards the production of more advanced and up-market products and the frequent introduction of new plant and equipment did not lead to any significant new training for operators. For example, operators in the factory's first control room explained how they had received no training with regard to the new WPC plant that had been introduced the previous year. The experience in the whey factory was found to mirror training practice across I2 as a whole, with instruction of operators predominantly restricted to on-the-job training. The factory manager's description and assessment of training in the plant was as follows:

Training is poor, to be quite honest. It's 'sit by Nelly' type training....that's the way it has been.... so I wouldn't be entirely happy, I wouldn't be happy at all actually with our training, because we should have a plan, we should measure it to see that it is effective and we should be continuously improving it.....I think our training could be better.

Operators were unanimously harshly critical of training policy at the factory, with the absence of formalised and well-resourced training constituting a major bugbear. They emphasised how they were the ones continually left to 'carry the can' in terms of ensuring new operators were trained up. The following quotes were illustrative of operator views:

New guys should be given more of an understanding about what is going on inside the machines, as it is mighty advantageous to know what is happening.... the system we have at the moment is like starting one of those big, complex university courses in chemistry or physics today and then being expected to sit the final exam tomorrow, its ridiculous.... training is a real a 'pet hate' of mine.

[Drier operator A]

In the 1980s there was a training officer here who explained the plant to me when I started. That was really useful because he also acted as a sort of a 'trouble-shooter' and he knew a lot

about different plants and equipment, whereas now there is no one like that, cos it's all about production.... 'sit-by-Nelly training' is fine if you're riding a High-Nelly [i.e. a push bike] but there should be specific training for the plant here because it's so complex and because of the volumes we're doing.

[Lactose/evaporator operator B]

The lack of training was seen to sit particularly uneasily with the highly complex nature of the production process and sophisticated and expensive equipment used. As demineralisation operator A noted, 'membranes are multi-million pound pieces of equipment but we have had no training on them.'

9.3.3 The I3 Cheese Snack factory

Product Strategy

The I3 cheese snack factory had been opened as a brownfield development in the mid 90s with, as outlined in chapter six, the help of very substantial financial and technical support from Irish state agencies and the research institute/university sector. The basic product manufactured was a 21-gram stringy/stretchy cheese stick made from natural cheese that was branded and heavily marketed as a healthy snack for children, and the technology for which I3 had licensed from a North American supplier.

Due to the enormous success of the product, both the factory and product range manufactured had seen very substantial ongoing investment and development since the opening, with an average of three new products and line extensions introduced each year. Recent years had therefore seen the introduction of new, substantially different products such as 'minis' and 'twisters', as well as the addition of extra ingredients/flavours to the original product format.

As access to the factory was not permitted for confidentiality reasons, what follows draws on an in-depth interview with the factory manager as well as additional interviews with I3's Cheesesnack R & D manager and the SIPTU official responsible for representing workers at the factory, who had directly observed the factory layout and production process. Operatives themselves were not interviewed.

Work Organisation & the Production Process

Table 9.3 provides an outline of the production process, work organisation and training and learning times at the I3 cheesesnack factory.

Table 9.3: Production Process, Work Organisation & Operator Training at the I3 Cheese Snack Factory

	The Production Process & Factory layout
	No. of Production Operatives: 120
The Production Process	<ul style="list-style-type: none"> • Batch-based production process involving 'wet' & 'dry' components • Wet area process: manual placing of ingredients into large containers/skips; automatic cooking & blending involving some operator intervention; resulting blend cut, 'extruded' & dropped automatically onto conveyor belt in dry area • Dry area process: two production lines; 21-gram sticks manually sorted on conveyor belts, then lifted by robots (line one only) in preparation for automated wrapping into individual wrappers; individual wrappers automatically placed into outer wrappers/multipacks; multipacks manually placed into boxes, boxes manually palletised & transported via forklift to storage/distribution area • Wet area process predominantly automated, dry area dominated by manual activities
Work Organisation	<ul style="list-style-type: none"> • Wet area operators (5 per shift): manual placing of ingredients into skips, operation of cooking/blending, cutting & extrusion processes; frequent rotation of operators between different positions • Dry area operators (26+ per shift): manual sorting of cheese sticks on conveyor belts, monitoring of product transition to wrapping machines, operation of wrapping machines, manual packing of boxes & palletisation, fork-lift operation, cleaning
Training & Learning Times	<ul style="list-style-type: none"> • Six weeks training given to new operators in the 'wet' area & 4-6 weeks to machine operators in the dry area. Manual positions in dry area involving minimal training

The Extent of Job Change & Skill Consequences

General Trends

It was evident that very substantial job change and opportunities for new learning or upskilling had resulted from the initial opening and subsequent development of both the products produced and technology/equipment utilised at the cheesecake factory.

The product, production process and technologies initially adopted had been entirely new for managers, operators and technical personnel alike. While many of the factory's operators were new recruits, a significant number transferred there from the adjacent processed cheese factory, and for these the move to the factory clearly involved very significant job change and also opportunities to learn about new products and processes.

Apart from the initial start-up and development, the factory had also witnessed very significant ongoing change. The expansion required by the success of the products had resulted in the installation of an additional cooker and three extra 'extruders.' The R & D

manager also explained how a major part of the dry area process had recently been fundamentally redesigned in order to facilitate improved plant performance.

Aside from the relative frequency of change in products and the production process, the cheesecake factory was found to involve the utilisation of highly sophisticated and advanced production processes, technologies and equipment. The R & D manager explained how the central manufacturing process used was 'highly technical' and required the exercise of large amounts of expertise on the part of I3 personnel. She suggested that the complex and sophisticated nature of the process was reflected in the fact that none of the company's competitors had managed to successfully develop a comparable product. In addition, the factory manager outlined how the first packing line in the dry area involved the use of highly advanced 'robots', which were used to lift the cheese sticks from one part of the line to the next. Further, the R & D manager noted how the recent redesign of the dry area process, which involved developing a system on the second line of correctly aligning the cheese sticks ready for packing without the use of robots had been extremely challenging, with management having worked closely on the project with a food process engineering specialist from University College Cork.

Skill Levels & Trends at Operator Level

The Wet Area

Four operators from the 'wet' area of the factory had received two weeks training at a foreign equipment supplier prior to the opening of the factory and these subsequently acted as trainers to new starters in that department. It was evident that these operators were viewed by managers as being highly skilled and valuable, with both the factory manager and R & D manager explaining that they were typically heavily involved in any new product development projects in the factory (particularly in undertaking trial production runs) and also when new pieces of equipment were being installed.

It was also clear that wet area operators, in general, experienced quite significant ongoing job change, most notably in the form of the introduction of substantially different products in terms of makeup and consistency (i.e. the 'minis' or 'twisters') as well as new ingredient/flavour combinations in the original format. As the R & D manager explained, an additional consideration in relation to the wet area operator position was that as a consequence of the seasonal milk production system in Ireland, the raw material used by operators in the wet area (natural cheese) changed quite substantially throughout the year, with the production process having to be adjusted accordingly. While recognising that there was a technical manager dedicated on a full-time basis to addressing this issue of variability

in the raw material, the R & D manager was of the opinion that combined with the above considerations, this made the wet area operator's job a skilled position.

The factory manager was in contrast more reticent in assessing the skill levels involved in the wet area. He outlined how the production process in that department had been substantially automated in recent years. While initially there had been a significant amount of manual work involved, for example placing cheese into and removing it from blenders, this had been automated such that 'all you do is put the skip into a cage, press a button and from there its taken into the blender, press a button [again] and its sent to the cooker'; with the operator's role here now being 'all observation'. The factory manager's conclusion was that the wet area operator jobs were 'skilled, but I wouldn't say highly.'

In addition, he explained how he and his colleagues were currently looking at *further* automating the wet area process in order to prevent the variation in product manufactured which resulted from differences in the manner in which operators exercised what limited discretion they *did* have, namely the pressing of buttons controlling the cooking and blending processes for specific lengths of time in order to produce products of the required consistency. As he outlined:

When you have five people on a shift and you multiply that by three it's a lot of people to have in an area, whether we like it or not we all have our own way of doing things and I would like that to be more controlled and automated.... that you're working to parameters and you're keeping it within that.... we want to take out some of the manual observation because its an intricate process and my idea of tweaking and you're idea of tweaking may not be the same.

The plan was to put in a 'complete plc system' that would effectively 'create robots.' The factory manager recognized this as being potentially problematic in terms of the consequences for operator jobs and skill levels, particularly against a context of increasing education levels and job expectations on the part of new recruits:

People change and they want change. Now obviously there's a lot of unskilled positions and the thing about even the skilled jobs that we had there, you know we've automated some of the jobs.... you've 'idle minds' as I call it. That is the difficulty because how far do you take automation? A number of people are very happy doing the unskilled work but....

The Dry Area

There were a number of machine-operator positions in the dry area, namely operating the robots sorting/placing the cheese sticks ready for wrapping and also the wrapping machines used on both lines to firstly individually wrap and then place the cheese sticks into multipacks. These positions involved the use of advanced technologies and equipment, with the robots in particular seen to be highly sophisticated. The operators running these machines were also faced with some notable change relating to the introduction of new products, for example having to adjust machine settings to account for the introduction of the mini versions of the standard 21-gram product.

However here again the factory manager expressed the view that these positions provided operators with only limited opportunities for upskilling or new learning. As he put it, 'it's the same type of work that you do every day.' In addition to this, the R & D manager explained that management had decided not to install robots for the factory's second production line as these were seen to be *overly complex/complicated*. Instead a system of using shutes to drop the cheese sticks onto conveyor belts ready for wrapping had been developed. Although this project had been highly challenging for the R & D manager and her colleagues, the result was evidently a simplified and less skill-intensive production process from an operator perspective.

Arguably of greater significance, the essential nature of the production process and products manufactured, i.e. 21-gram cheese sticks which were individually wrapped, packaged again, boxed and palletised, meant that employment in the dry area was dominated by unskilled packing-related activities. For example, on the first of the two production lines, while there were three machine-operation positions there were six totally unskilled positions: four conveyor-belt positions involving manually placing the cheese sticks onto the belt or making sure they remained straight, and two manual packing and palletising positions at the end of the line. While exact details were not provided, a similar dominance of unskilled positions was also likely on the second production line; and as employment in the factory as a whole was dominated by the dry area (with around 26 people per shift there compared to five in the wet area), it was therefore clear that the majority of operator positions in the cheeesnack factory were low-skill.

The unskilled and unfulfilling nature of many of the jobs in the dry area was highlighted by the factory manager:

There are unskilled jobs and it's a bore if you're on the sorting or if you're straightening sticks or just making sure they're going into the multi-vac [the first wrapping machine] properly. That is the job and the level of skill you require for that isn't [high].

The SIPTU official concurred with the analysis, noting that many of the jobs in the factory were of an unskilled nature and also highlighting the generally uncomfortable nature of the working environment in the dry area resulting from the fact that this was very restricted in terms of space. In this regard also, the factory manager explained that the packing and palletising processes had not been automated due to space restrictions in the factory, with the factory being too small to fit automatic case packers and palletisers.

9.4 Attempting to Quantify Skills & Employment Outcomes in the Irish Sector

As was the case with the English firms, with a view to attempting to quantify the significance of the industrial policy context in Ireland for skills outcomes, employment at each of the seven Irish firms researched was broken down and analysed on the basis of both the extent of product development undertaken and value of the products manufactured. Therefore a distinction was again made between employment relating to 'traditional/stable' product areas characterised by little or no product development, those witnessing 'minor' product development and product areas where 'major' product development was undertaken; and also between employment relating to 'low-', 'mid-' and 'high-value' products. This was a necessarily rough exercise in a number of cases due to the inexact nature of the data to hand. Tables 9.4 and 9.5 below outline the breakdown of employment at the Irish firms according to extent of product development undertaken and product value respectively.

I1 was the 'high water mark' in terms of the extent of employment located in development-focused areas, with 55% of its employees working in areas characterised by major product development activities, 19% in minor product development areas and only 26% in stable/traditional areas. I3 was also notable in terms of the extent of product development undertaken, with 30% of employment there associated with major and 26% with minor development activities. While no major product development was taking place at I4, the vast majority (93%) of employment in the company was in product areas subject to minor ongoing product development. In comparison, the remaining companies fared less well on this measure with I2, I5, I6 and I7 respectively having 67%, 60%, 67% and 96% of employment located in stable/traditional product areas. Overall a majority of employment was in development-focused areas (i.e. combining major or minor development activity) at

Table 9.4: Breakdown of Employment at the Irish firms by Extent of Product Development undertaken 2004

Company	Stable/traditional Product areas	Numbers Employed (%)	Areas experiencing minor product development	Numbers Employed (%)	Areas experiencing major product development	Numbers Employed (%)	Total
I1	One liquid milk dairy; butter; milk powders (ingredients site 1) spreads; hard cheese/cheddar	263 (26)	Casein; cream & milk powders (ingredients site 2)	198 (19)	Two liquid milk dairies; yoghurt factory; whey products	559 (55)	1020
I2	Milk powders; casein; butter; spreads; cheddar & processed cheese	232 (67)	Continental cheese	65 (19)	Whey products	50 (14)	347
I3	Processed cheese; liquid milk	172 (44)	Powder	102 (26)	Cheesesnacks	118 (30)	392
I4	Butter	5 (7)	Milk powders, continental cheeses	71 (93)	None	0 (0)	76
I5	Liquid milk	54 (60)	Yoghurt/dessert	36 (40)	None	0 (0)	90
I6	Butter; powder; consumer products: - milk, yoghurt & desserts	100 (67)	Industrial/bulk supply products: liquid milk, yoghurt, cream	50 (33)	None	0 (0)	150
I7	'Standard' butter; spreads; liquid milk; milk powder; casein	134 (96)	Herb & flavoured butters	6 (4)	None	0 (0)	140
Total		960 (43)		528 (24)		727 (33)	2215

Note: figures for total employment in some cases are lower than figures for total company employment presented in table 8.1 due to the need to exclude non-production related activities, e.g. distribution.

three firms and in stable/traditional areas at the remaining four, with only three of the seven firms having some employees working in major development areas. On average 43% of total employment at the seven firms was in stable/traditional product areas, 24% in areas experiencing minor product development activity and 33% in areas characterised by major product development.

However it is necessary to highlight that as the most innovative company, I1, accounted for a very high proportion of total employment at the seven firms (46%), this aggregate figures is arguably somewhat misleading²⁸.

With regard to the results of the breakdown of employment at the Irish firms by product value outlined in table 9.5 below, I1 was again the company which performed best with just under half of employment there associated with the production of 'high value added' products and only a fifth associated with low value products. While the vast majority of employment at I4 related to 'mid value added' production, in contrast at I5 and I7 the same was the case in relation to *low* value added activities. Only three companies (I1, I3 and I4) had a majority of employment in mid- and high value areas combined, while in contrast the remaining four firms (I2, I5, I6 and I7) had a majority of employment located in low value areas. On average 33% of total employment across the seven firms was in high, 21% in mid and 46% in low value areas, although the fact that these figures are arguably substantially skewed by the I1 figures again needs to be emphasised²⁹. On average these results could be described as somewhat 'worse' than the average figures for the breakdown of employment by extent of product development undertaken, in that a greater proportion of employment here was located in the least desirable category.

In terms of *product areas*, employment associated with certain products such as butter, spreads and cheddar cheese was categorised as both traditional/stable and low value across all companies. In contrast, employment in a number of other areas, for example milk powders and casein, varied in that at some firms these areas were not subject to development while at others they were; and also in that in some cases these were sold as

²⁸ However if it had been possible to calculate an aggregate figure for all of the top twelve Irish dairy processors by employment then it is likely that the average figures would have been broadly similar to those outlined here. This is because while two of these firms were likely to possess a traditional product range, the other three (which each had relatively high employment levels) undertook some very significant major product development.

²⁹ However here also if an aggregate figure for each of the twelve larger companies had been obtained, the average figures would have again arguably been likely to be broadly similar to those outlined.

Table 9.5: Breakdown of Employment at the Irish firms by Product Value 2004

Company	Low Value Added	Numbers Employed (%)	Mid Value Added	Numbers Employed (%)	High Value Added	Numbers Employed (%)	Total
I1	Butter; spreads; hard cheese/cheddar	213 (21)	Whey products; casein; cream & milk powders	307 (30)	Three liquid milk dairies; yoghurt factory	500 (49)	1020
I2	Milk powders; casein; butter; spreads; cheddar & processed cheese	232 (67)	Whey products	50 (14)	Continental cheese	65 (19)	347
I3	Butter; processed cheese; liquid milk	172 (44)	Milk powders	102 (26)	Cheesesnacks	118 (30)	392
I4	Butter	5 (7)	Milk powders; continental cheeses	71 (93)	None	0 (0)	76
I5	Liquid milk; yoghurt & dessert	90 (100)	None	0 (0)	None	0 (0)	90
I6	Butter; powder; consumer products: - milk, yoghurt & desserts	100 (67)	Industrial/bulk supply products: liquid milk, yoghurt, cream	50 (33)	None	0 (0)	150
I7	'Standard' butter; spreads; liquid milk; milk powders; casein	134 (96)	Herb & flavoured butters	6 (4)	None	0 (0)	140
Total		946 (46)		586 (21)		683 (33)	2215

low value, commodity products which in others a mid-range product margin was obtained. Similarly while the liquid milk and yoghurt factories of I1 were profitable businesses producing high margin products and also characterised by major ongoing product development activity, in contrast the other liquid milk and yoghurt producers I5 and I6 obtained only low margins for the products they produced, with these being at best characterised by minor product development activity.

9.5 Wage Rates & Average Earnings

Figures on wage rates and average weekly earnings were provided by six of the seven Irish firms visited and these are outlined in table 9.6 below. As is evident from the table, hourly wage rates and in particular average weekly earnings were relatively high at most of the firms, with only operators at the I7 liquid milk and butter factories earning comparatively little.

The (relatively) high wage levels were found to be attributable to four principal factors: the predominantly capital intensive and automated nature of work organisation in the Irish dairy industry resulting from the industry's focus on the production of bulk products for export; the strength, bargaining power and in some cases militancy of operators and trade unions; the very high annual wage increases in the 2000-2002 period resulting from the national wage agreement system; and the industrial policy context, which facilitated the production of high value products and, in turn, the payment of high wages.

Focusing on the last influence mentioned, the supportive/benign industrial policy context was found to underpin high wages in a number of cases, most notably at I1 and the I3 cheesesnack factory. While the high wages paid to process operatives at I1's ingredients subsidiary in part reflected the highly capital intensive work organisation system there (i.e. a continuous process, bulk product manufacturing factory), managers explained how there existed an iterative, two-way relationship between the payment of high wages and the (industrial-policy enabled) production of up-market, value-added products. On the one hand as a good employer the company wanted to pay high wages and due to industrial relations considerations at local and national levels was to a significant extent required or *forced* to do so, with this providing a strong impetus to draw on industrial policy support in attempting to move up-market. On the other hand, the move up-market and development of value-added products which I1 had been able to achieve with the aid of industrial policy support, at the same time *enabled* the company to pay the high wages it was paying.

Table 9.6: Wage Rates & Average Earnings at the Irish Firms 2004 (all figures in euros)

Company	General Operator		Machine Operator		Process Operator	
	Hourly Rate	Average Weekly Earnings	Hourly Rate	Average Weekly Earnings	Hourly Rate	Average weekly earnings
I1 - Liquid Milk Division	11.15	435	14.49	565	15	585
I1 - Principal Ingredients Site	9.40	558	9.40	558	NA	882.53
I2 – Group Level	8.77	477.50	10.04	539.65	10.72	572.50
I2 - Whey factory process operators					NA	Approx 1000+
I3 Cheese snack factory	8.81	544.05	9.60	584.11	9.46	577.01
I3 Powder factory	9.26	566.87	9.26	566.87	9.82 – 10.26	595.26 – 617.57
I5 Yoghurt Factory	9.24	609.80	9.24	609.80	9.24	535.87
I6	'no operator earning less than 10 euros an hour'; no information provided on average weekly earnings					
I7 - Liquid milk & butter	8.97	350	9.62	375	9.62	375
I7 – Powder	9.42	459.15	9.42	459.15	10.10	492.42

Key: NA = not applicable

Note: Average weekly earnings include shift premia (25% on top of basic wages in all cases where applicable) additional bonuses & productivity payments, where relevant. Earnings are calculated on basis of a standard/basic 39 or 40-hour week in all cases except for process operatives at the I1 ingredients site & I5, where basic weekly hours were 42 and 48 respectively.

Also in relation to the significance of the industrial policy context for wages paid, the high wages paid to *general* operatives at I3's cheesecake factory was arguably highly notable in that as outlined in section 9.3.3, that factory was centred on a highly manual production process and work organisation system. The I3 cheesecake factory, which was highly successful and profitable, can therefore arguably also be seen as a direct example of the industrial policy context underpinning high wage levels.

In contrast, it was very evident from the competitive fortunes of I2 and I5 that the wages paid at those companies were excessively high, with managers at both firms noting as much. This conclusion was subsequently confirmed in that after the research had been conducted very significant rationalisation in numbers employed (and ultimately closure in the case of I5) took place at both companies with a view to addressing cost profiles.

More broadly, average earnings for production workers across the dairy sector in general were found to be relatively high, with figures from the 2002 Census of Industrial Production (CSO 2004) showing that the average annual industrial wage in the sector in 2002 was €29,935 (figure for dairy processing and manufacture of vegetable fats combined) compared with €24,277 for the wider food/beverage/tobacco sector and €24,477 for manufacturing as a whole.

9.6 Conclusion

This chapter has examined the principal skills and employment outcomes at the Irish firms researched. It began by providing an overview of the main findings at three 'representative' firms, I1, I2 and I5. This section demonstrated, in the form of the discussion of I1, how the supportive industrial policy context in Ireland underpinned very positive skills and employment outcomes at a number of the larger, well-resourced firms in the sector (in particular those with plc status). In contrast, it also illustrated how other larger/medium firms (such as I2) as a consequence of their cooperative status, among other factors, remained largely wedded to the continued production of lower-value, commodity-type products, with generally negative skills and employment outcomes therefore in evidence. Further this section demonstrated how due to the recent intensification of competition both at national and international levels, smaller firms such as I5 did not have sufficient resources to harness industrial policy support in an attempt to move up-market, with such firms therefore also characterised by generally negative skills and employment outcomes.

The second section of the chapter examined the question of the skill consequences of the industrial policy enabled production of 'value added' products. In this regard the evidence from the three cases considered was rather mixed. While very significant operator upskilling had occurred at the I2 whey factory, skill levels and the experience of work for operators at I1's whey factory had in the main been characterised by stability. At the I3 cheesesnack factory, while sophisticated processes and technologies were utilised, employment was dominated by unskilled manual positions, with the more advanced positions also quite limited in terms of skill intensity. In general terms the potential for upskilling was found to

be highly contingent on the exact nature of the production processes and technologies utilised. Moreover, sharp constraints on the possibility for operator upskilling were found to result from the 'inherent' nature and design of the production operative function. In addition, the case of the I2 whey factory demonstrated that even where significant upskilling did occur, the employment experience of operators could be sub-optimal due to the fact that training remained of a limited, on-the-job nature.

The third section of the chapter attempted to quantify the extent of upskilling and 'employment upgrading' in the Irish sector by breaking down company employment according to two sets of categories, firstly the proportion of employment associated with stable/traditional product areas, those subject to minor development and experiencing major development; and secondly the proportion of employment in low-, mid- and high-value product areas. One company (I1) had succeeded in shifting the majority (or almost the majority) of its employment into major-development and high-value areas. The vast majority of employment at a second (I4) was associated with the minor-development and mid-value categories, while at a third (I3) the majority of employment was in major/minor-development and high/mid-value areas combined. This meant that the remaining four firms (I2, I5, I6 and I7) were dominated by employment in traditional/stable and low-value product areas.

On average 43% of total employment across the seven firms was in stable/traditional product areas, 24% in areas experiencing minor product development activity and 33% in areas characterised by major product development; while 33% was in high, 21% in mid and 46% in low value areas. The fact that the majority of employment across the companies as a whole was in the more 'desirable' categories reflected the high proportion of total employment accounted for by I1, although these figures were seen to be arguably likely to broadly reflect the average picture at the 'total' population of mainstream/large firms in the sector.

Finally in this section, wage rates at the Irish companies were outlined. These were in general high. Significantly, while a number of parallel influences were identified, the supportive industrial policy context was found to be underpinning the high wages paid in a number of cases.

Chapter Ten: Comparison & Analysis

10.1 Introduction

The purpose of this chapter is to compare and contrast the principal findings from the fieldwork undertaken in the English and Irish sectors and to discuss how they relate to the central issues and themes addressed in the research. The chapter contains two main sections. In the first the key similarities and differences between the principal strategy, skills and wage outcomes in the English and Irish sectors and the significance of the industrial policy context in both countries for the same will be discussed. Following this the second section will discuss how the findings relate to the two key themes or research issues highlighted in chapter two, namely the potential for the adoption of a strategic, resource-intensive industrial policy to facilitate upskilling and the pros and cons from a skills perspective of different variants of 'liberal market' economic models.

10.2 Key Points of Comparison

10.2.1 Product Strategies Adopted

In terms of product strategies adopted, only two of the English processors (E6 and E7) had recently undertaken major product development projects and notably these were both foreign owned. The major development activity at these firms was found to involve the production of highly sophisticated products and the utilization of advanced processes and equipment, although in the case of E7 this activity only accounted for a very small proportion of that company's overall product portfolio. Unlike the foreign firms, none of the four indigenous English firms (E1, E2, E3 and E4) had recently engaged in any major product development. Two of these (E2 and E4) effectively undertook no product development at all, therefore remaining solely in traditional areas. While the strategies of the two remaining indigenous firms (E1 and E3) and the final English case study company (the Irish-owned E5) were centrally founded on *minor* product development, this was arguably comparatively limited in terms of the potential for upskilling in that it related to the manufacture of own-label dairy desserts and cheese. In general terms therefore the extent of investment in new product development was found to be very limited at the English firms, with the large majority characterized by the continuing adoption of strategies centred on the manufacture of a traditional or basic range of products. While secondary data pointed to some significant product development among the four remaining 'top thirteen' English companies (at two of these in particular), this took place in relatively traditional product areas/formats.

Despite this lack of substantial or major product development activity, it was notable that three of the English firms (E4, E5 and E7) were found to undertake significant *process* development activity as a consequence of competitive trends and customer demands in the own-label milk and cheese sectors; and for this purpose had introduced some quite sophisticated processes and technologies.

Three of the seven Irish processors (I1, I2 and I3) had recently undertaken major product development projects. This product development had taken each of these companies into groundbreaking, advanced areas such as whey protein derivatives or the broader 'functional food' sector, thereby in theory at least creating the possibility for significant upskilling on the part of production operatives. In addition, although a fourth firm (I4) in the main undertook only minor product development, this was also in comparatively advanced areas, namely continental cheeses and milk powders tailored to the requirements of the babyfood industry. While undertaking some minor development, the remaining three firms (I5, I6 and I7) were in the main characterized by the production of a traditional range of products. Secondary evidence demonstrated that three of the four remaining 'top twelve' Irish firms engaged in major product development in advanced areas.

On the whole therefore the Irish firms were in general found to be more likely than their English counterparts (in particular their indigenous English counterparts) to undertake major product development projects in general, and also product development of a groundbreaking nature; although the relative lack of product development at the English firms was in part compensated by the strong emphasis in that sector on producing the same products in more efficient or sophisticated ways.

10.2.2 Breakdown of Employment by Product Area

By the Extent of Product Development undertaken

Mirroring the overview of product strategies adopted, at only one of the English companies (E6) was a sizable proportion of employees (in this case a majority) working in 'major development' areas. While three of the English firms (E1, E3 & E5) had a majority of employment in 'minor development' areas, employment at the remaining three (E2, E4, & E7) was associated with the production of stable/traditional products. At two of the latter (E2 & E4) *all* employment was in these areas, while at the third (E7), 85% was in the same. Overall 54% of workers at the English firms were working in stable/traditional areas, 30% in minor and 16% in major development areas. This figure was seen to reflect the broader

pattern in the English industry more generally, with the dominance of own-label products supplied to retailers in the product portfolios of the mainstream English firms the key factor.

Three of the seven Irish firms (I1, I2 & I3) had at least a significant proportion of employment in major development areas, with each of these firms as well as three others (I4, I5 & I6) also having from 19-93% of employment located in minor development areas. This being the case, a majority of workers at four of the Irish firms (I2, I5, I6 & I7) remained in stable/traditional areas. Overall 43% of workers at the Irish firms were working in stable/traditional areas, 24% in minor and 33% in major development areas, although this figure was arguably artificially high due to the large proportion of employment accounted for by I1, over half of whose product range was in major development areas. However when set against the broader context of the industry, the average figures were seen to be a good reflection of the Irish industry as a whole.

By Product Value

In summary, when employment at the case study firms was broken down by product value, 65% of workers at the English firms were working in low value, commodity areas, 19% in mid and 16% in high value areas. In comparison, 46% of employment at the Irish firms was in commodity areas, 21% in mid value and 33% in high value areas. These figures were again seen to reflect the broader pattern in both industries.

Summary

Overall it is evident that when an attempt is made to analyse and quantify the 'qualitative' nature of employment in both sectors, production operatives at the Irish firms fared significantly (if not hugely) better than their English counterparts in terms of opportunities to work in advanced areas and with higher value products.

10.2.3 Wage Levels

In relation to wage levels, in England, while the foreign companies E2 and E6 paid quite high wages, rates at the other five companies were relatively low, with a number well below the broader food industry average. In contrast, with one exception these were found to be comparatively high at the Irish companies, with figures from official publications demonstrating that this was also the case for the sector more generally.

10.2.4 A More Detailed Comparison of Skills Outcomes

With regard to the *actual* as opposed to the 'theoretical' nature of skills outcomes at workplace/production level in both countries, in England what might be called 'transformative' upskilling was only identified at one firm, the branded yoghurt producer E6 (no data was collected on skills outcomes at E7, the other company that had undertaken major product development, and it is recognised that similar findings may have perhaps been identifiable there). Notably however as mentioned above, three of the own-label firms (the milk producers E4 and E7 and cheese producer E5) had introduced some quite sophisticated processes and technologies that were found to lead to some upskilling on the part of production operatives; while more broadly competitive trends in these sectors were found, in general terms, to be resulting in some not insignificant upskilling for operators, albeit typically alongside increased work intensification.

In Ireland, the major product development undertaken was found to have resulted in 'transformative' upskilling of production operatives at only one of the three firms where such development had taken place. While in this case totally new and highly complex production processes had been introduced, at the second firm the new products were being manufactured using existing plant and processes with operators' jobs therefore characterized in the main by stability; while at the third, the particular nature of the product and production process meant that employment was dominated by unskilled positions, with more demanding process and machine operator positions existing also quite limited in terms of levels of skill intensity.

Therefore despite the significant differences between the two countries in terms of the extent of advanced/major product development undertaken, the (relatively limited) evidence collected indicated that the day to day experience of work for the majority of production operatives in Ireland was likely to remain broadly similar in terms of substantive skills outcomes to that experienced by operators in England - i.e. the shift/upgrading of product strategies in Ireland was not leading to a wholesale, qualitative change in the nature of production employment there. Moreover, the evidence suggested that operators in the English sector were in certain respects possibly exposed to *greater* upskilling than their Irish counterparts, namely in terms of the extent of upskilling associated with process development activities in the own-label sector identified in England.

10.2.5 Significance of the Industrial Policy Contexts for the Outcomes identified

In England, combined with company-specific considerations (in particular the prioritization by management and shareholders of short-term profits over medium/long term returns), in the form of the overriding emphasis by government on the promotion of competition and efficiency over other concerns, its relative failure to effectively regulate the competitive strategies and commercial practices adopted by retailers, and the lack of innovation-supporting measures and institutional supports, the industrial policy context was found to have broadly negative consequences for the product strategies adopted by and employment/skills outcomes at the firms researched - in particular the indigenous plcs and the Irish-owned cheese producer E5. However this predominantly negative picture was in part mitigated by the fact that the foreign multinationals E6 and E7, which had been attracted to invest in England due to the large size of the consumer market, did engage in major product development of an advanced nature, arguably mirroring the broader pattern of high levels of foreign direct investment into the British economy, which it is widely acknowledged the British industrial policy context has facilitated. In addition, the fact that the enormous power and influence of retailers meant that they were effectively driving the introduction of *process* innovations across the dairy industry might also be seen as an indirect, positive outcome resulting from the industrial policy context.

In Ireland, the industrial policy context was found to provide a more supportive context for firms and to underpin significant product development and at least some upskilling for production operatives. In particular the provision of grants for research and development, funding by government of research institute and pilot plant facilities and presence in the sector of large numbers of technical graduates as well as sophisticated customers (in the form of the babyfood companies which had been attracted to set up in Ireland), was found, alongside the commitment to organic development on the part of processors, to have directly underpinned the major development activity and hence the (notional) opportunities for operator upskilling at the Irish firms.

With regard to wage levels, while the wage levels identified were found, particularly in Ireland, to be attributable to a number of different factors or influences, there was strong evidence to suggest that the industrial policy context in Ireland was supporting a high standard of living for at least a significant minority of production operatives there. In comparison in England, by placing a premium on the promotion of efficiency, competition and the free operation of market forces and by providing no effective measures or assistance to enable firms move up-market, the industrial policy context was arguably substantially

accountable for the low standard of living on the part of operators at the majority of the English firms. In particular, the intense nature of competition in the sector and price/margin pressure from retailers was found to exert strong downward pressure on wage levels and directly account for the low wages paid. Therefore while there was evidence that the industrial policy context in Ireland was facilitating the 'upgrading' of employment to a higher value (if not necessarily a higher skill) trajectory, in England the industrial policy context was arguably contributing to the *downgrading* of employment, relative to employment outcomes and trends in the economy more generally.

10.3 Significance of Findings in light of the Key Themes & Research Issues Examined

Introduction

This section will analyse the findings from the research conducted in light of the two key research issues or themes highlighted in chapter two, namely the potential for the adoption of a strategic, resource-intensive industrial policy to facilitate upskilling and the significance and relative advantages and disadvantages from a skills perspective of different variants of 'liberal market' economic models.

10.3.1 The Potential of an Industrial Policy to Promote Upskilling

Introduction

The empirical evidence outlined in chapters six to nine and summarized above arguably clearly illustrates the importance of a supportive industrial policy context to the pursuit of development-focused strategies and hence the provision of opportunities for upskilling to production workers in the dairy sector. However before enlarging on this it is firstly necessary to provide an initial qualification of this general finding.

Specifically, the profit margins earned by processors were found, arguably unsurprisingly, to be the primary determinants of the possibility for product development to be undertaken and therefore upskilling to be achieved. If profit levels were high or higher (for example as they had been in the English sector under the Milk Marketing Board system) then both the Irish and indigenous English firms would have been in a position to invest more in product development and there would consequently have possibly been less of a need for financial assistance (for example for research and development) from industry support programmes.

Profitability levels were seen by interviewees to be a function of a number of different influences but structural factors were highlighted as being particularly important. For example in Ireland the fragmented nature of processing and low economies of scale in the sector in general and on the part of many individual processors (such as I6 and I7) meant that the latter could not afford to invest substantially in product development, particularly as they were often competing in international markets emphasizing extensive scale, efficiencies and low costs. If the sector were to consolidate further then more positive consequences, in terms of a greater ability on the part of firms to invest in new product development, would arguably be likely to result (Promar and Prospectus 2003).

10.3.1.1 The Specific Ways in which An Industrial Policy May Be Useful

The above qualification aside, the research findings strongly point to the general value of the adoption of a strategic/proactive industrial policy. While evidently limited in terms of breadth of impact (an issue which is discussed further below), against the context of a general predisposition to invest in organic development on the part of the Irish processors, individually and collectively the various subcomponents of industrial policy in the Irish sector, namely financial support for research and development, the existence of strong research institutions and pilot plant facilities at Moorepark and UCC, the large numbers of graduate dairy scientists and technologists in the sector, and the presence in Ireland of multinational babyfood producers with very demanding standards and which were producing sophisticated new products, were found to underpin most if not all of the major product development at the Irish firms.

In terms of placing the research findings within the context of discussion and debates on industrial policy in the British skills, broader political economy and strategy literatures, as outlined in chapter two there are numerous possible dimensions or aspects of an industrial policy that are potentially relevant to the facilitation of strategic upgrading. Specifically, seven key aspects were highlighted - the provision of direct financial support to companies, government/public investment in research and development, the development of industry clusters and 'institutions for collaboration', strengthening of 'factor conditions', the stimulation of competition within and regulation of product markets, and the development of sophisticated downstream or consumer demand (e.g. Porter 1990; Porter and Ketels 2003; Wilson *et al* 2003; Cooke and Morgan 1998; Schmidt 2003).

As was discussed in chapter two, particular emphasis tends to be placed in the literature on the promotion of private investment in research and development, high levels of government

investment in the same, the development of clusters/networks and supportive intermediary institutions, and the strengthening of factor conditions; with the potential for the regulation of product standards and the development of sophisticated consumer demand to prompt a move into higher value markets also frequently highlighted.

The evidence presented in the data chapters arguably demonstrates the tangible ways in which five of these dimensions of industrial policy may in fact facilitate a move into more advanced product markets.

Firstly, the Irish data illustrates how the *provision of direct financial support* to firms to enable them undertake research and development can be particularly important in promoting product development, particularly in low margin sectors. The provision of grants for research and development had enabled a number of the Irish firms to successfully move into advanced product areas. In contrast, the absence of similar measures in England meant that processors there arguably did not have the financial capability or 'buffer' necessary to enable them undertake product development.

Secondly, the Irish data also highlights the value of *public investment in research and development*, the *strengthening of factor conditions* and the *development of institutions for collaboration*.

In this regard, the very substantial government investment in the dairy-related research infrastructure in Ireland was found to be highly significant for the strategies adopted by individual processors. The existence of well funded industry related research institutes and universities undertaking basic and applied research, had greatly facilitated the Irish processors in moving into new, groundbreaking product areas. As highlighted in chapter eight, interviewees at the Irish processors I1 and I2 emphasised how Moorepark and UCC possessed expertise which they themselves did not have, but which was extremely valuable in facilitating the development of new whey products. Moreover it was evident that Moorepark in part also directly prompted the entry by these firms into the development of these products by setting up collaborative research projects involving a number of the Irish based babyfood multinationals.

In addition, the Irish government's investment in the construction of dedicated pilot plant facilities had also been highly valuable, in that the existence of these meant that individual processors did not need to make very large investments in purchasing or constructing their own, individual pilot plant facilities, which would have arguably limited the extent of

product development undertaken. In contrast, the provision of advanced, shared-use facilities that firms could (apparently) use relatively cheaply was found to directly facilitate new product development activities.

In relation to the creation of *factor conditions*, the research arguably also demonstrates that for an upgrading of product/competitive strategies and hence the possibility for upskilling to be achieved, individual companies and economic sectors in general need to possess the factor conditions necessary for competitive success in quality or differentiation-focused market niches (cf. Porter 1990). In this regard, the Irish firms I1, I2 and I3 had only been able to enter sophisticated market niches such as functional foods and food ingredients because of the strong educational backgrounds and subject expertise of their management cadres, supported by the expertise of personnel in the research institute and university sectors. Similarly but in contrast, the scope for indigenous English firms to successfully harness fast-growing and high-margin sectors such as functional dairy products, was arguably sharply limited due to the weak nature of technical skills in these companies resulting from the recent rationalisation processes and the lack of highly qualified new graduates entering the sector.

In terms of *institutions for collaboration*, the Irish data clearly highlights the potential role and importance of such institutions. The various agencies and institutions in Ireland – in particular Moorepark, UCC and Enterprise Ireland - and also their associated structures (for example the dairy industry research committee coordinated by Moorepark), were evidently of enormous value to individual companies and the industry as a whole in terms of both prompting and facilitating a move into more advanced areas. For example, as mentioned above the proactive sponsorship of collective R & D projects involving multinational babyfood manufacturers by the Moorepark Dairy Products Research Centre, had enabled a number of the Irish firms to enter advanced market niches in the whey protein/fractions area, which in turn prompted a notable strategic step-change at these companies.

Finally and related to the last observation, the research also highlights the manner in which the *development of sophisticated consumer/customer demand* can facilitate upskilling. Again, the existence of multinational babyfood companies as downstream customers of the Irish processors directly underpinned the entry by the latter into a number of advanced product areas, most notably whey protein derivatives and 'functional foods' more broadly. (Indeed the existence/role of these companies might also be taken to demonstrate the value/potential of *cluster development*). In addition in England, although the strong market position and power exercised by the large retailers was effectively found to *impede* new

product development (in that processors were generating profit margins that could not support investment in the latter), there was also evidence that the demands of retailers were leading to some significant *process* development/innovation that was in turn found to contribute to some upskilling (cf. Porter and Ketels 2003: 35).

Therefore while the above individual components of an industrial policy were clearly found to be important in facilitating a move up-market, in contrast the evidence from England arguably demonstrates the very limited potential for the *deregulation of product markets* and the *promotion of competition* to promote strategic upgrading in the absence of other institutional changes/supports. Specifically, the recent deregulation of the sector and consequent breakup/decline of collective industry structures (including those for research and development) and the government's subsequent prioritisation of efficiency and competition between processors was found to heavily impede product development and the pursuit of innovation-focused strategies on the part of the mainstream English indigenous firms. A strong correspondence was therefore identified between the research findings and the analysis of Porter and Ketels (2003: 42-6) who highlight that while deregulation and the enhancement of product market competition is important in promoting dynamism and efficiency, a reliance on this alone is insufficient to move economies into more higher value and sophisticated market niches.

10.3.1.2 Limits on the Potential of Industrial Policy

While the above discussion has highlighted the potential and importance of an industrial policy in promoting upskilling, it is necessary to highlight and discuss a number of important limits on the practical impact of such a policy identified during the research.

Firstly and most importantly, the data presented in chapters eight and nine showed that only four of the seven Irish processors engaged with state agencies and research institutes in relation to their product strategies. Three firms did not possess the necessary scale or organizational resources to engage in major product development and/or product portfolios suitable for development, and consequently were either not seeking or were not in a position to harness state agency support. Moreover, not all of the product areas/factories at those firms which *had* engaged with such agencies benefited from support. Even at the highly innovation-focused company II, a significant number of product areas (e.g. butter, spreads, cheese) remained characterized by stability and a lack of development and had therefore not benefited from industrial policy support, with these product areas notably accounting for over a quarter of total company employment. The reason for the lack of product development

in these areas was a combination of a lack of resources and also the stable nature of the products and processes concerned. Clearly, therefore, there were sharp limits on the potential of industrial policy to facilitate upskilling in the sector, with considerations of organizational resources and sectoral/product market trends being of central importance; and similar considerations would arguably have been likely to emerge even if a stronger industrial policy had been identified in England.

In relation to the determining influence of product market characteristics and trends, while not expressly examined in the data chapters, enough evidence was presented in those and also the review of the dairy sector in chapter five to enable some systematic analysis of this issue here and this is undertaken briefly next.

The Determining Influence of Product Market Characteristics & Trends

Four groups of products were identified which had distinctive characteristics in terms of competitive trends, dominant mode of delivery (e.g. branded versus commodity), profit margin and, crucially, consequences for operator skills. Table 10.1 below outlines the key features of each group.

The production of those products in the first two rows of the table (i.e. liquid milk, cheddar cheese, spreads, basic milk powders) was found to provide the least opportunities for upskilling or employment upgrading due to the stability in products produced and processes utilized and predominant marketing of such products as either own-label consumer products or in international commodity markets. Arguably of central importance in relation to the former was the relative lack of consumer demand for more sophisticated and innovative products in these areas. For example, Euromonitor's recent *World Market for Dairy Products* report (Euromonitor 2003a) outlines that, on a worldwide basis, liquid milk, cream, butter and large parts of the cheese sector continue to be packaged and consumed as commodity/staple product niches that are characterised by a high proportion of own label sales and with competitive strategies centrally founded on price competitiveness. In this regard, although the development and success of I1's range of branded milk products (including a number of innovative new, health-focused products) and E7's new branded filtered milk range undoubtedly reflect an increasing consumer demand for more sophisticated products in these sectors, the findings from the Euromonitor report arguably demonstrate a lack of demand for more sophisticated/advanced products on behalf of *the majority* of consumers. The latter appear quite content to purchase standard or basic milk and cheese and therefore it can possibly be expected that there will be comparatively few

Table 10.1: Distinct Product Market Niches & Consequences Skills & Employment

Market niche/product	Key Competitive Trends	Dominant Mode of Product Delivery	Opportunities for Operator Upskilling & Employment Upgrading	Illustrative examples
Staple Consumer products: liquid milk, butter, cream, spreads, majority of cheeses (particularly cheddars, but also most processed cheese)	Stability & homogeneity in products produced; decline in number of firms; continuous downward price pressure; increasing emphasis on scale & production efficiencies	Own label	Few opportunities for upskilling associated with NPD due to mature/stable nature of products & processes; however some significant upskilling resulting from <i>process</i> changes/adjustments; declining employment levels & low wages	E4 & E7 (liquid milk); E5 (hard cheese)
Bulk commodity products: basic milk powders, standard/basic casein, whey powder, bulk butter, bulk commodity cheese	Stability & homogeneity in products produced; decline in number of firms; continuous downward price pressure; increasing emphasis on scale & production efficiencies	International dairy commodity market sales	Few opportunities for upskilling associated with NPD due to mature/stable nature of products & processes; some significant upskilling resulting from <i>process</i> changes/adjustments; contracting employment & relatively low wages	I2, I6, I7 (basic milk powders, casein)
'Mainstream' short-life-dairy-products (yoghurts, dairy desserts, fermented milk drinks etc.)	Increasing dominance of high volume multinational dairy companies & corresponding closure/decline of lower volume mainstream indigenous processors	Increasingly dominated by branded products from large multinationals; however indigenous producers continuing to manufacture some branded products alongside substantial amounts of own-label yoghurts/desserts	Substantial opportunities for upskilling, high wages & employment creation at branded multinationals due to large volumes & high profit margins obtained; also due to strong consumer demand for innovative products in this sector; while similarly some significant opportunities for upskilling at indigenous firms, these significantly fewer as a result of lower volumes produced & dominance of own-label production; employment in decline & lower wages here also	E6 (branded high volume MNC), E1, E3 (indigenous processors having sold branded but retaining own-label products); I5, I6 (indigenous processors struggling to compete with MNCs)
Food ingredients & 'non traditional dairy' products: traditional bulk products tailored as food ingredients, e.g. casein, fat-filled milk powders; whey derivatives, (e.g. whey protein concentrates, peptides etc.)	Increasing incidence of partnerships & joint development activity between processors & food manufacturers; and also the babyfood & sports performance/nutrition sectors	Products sold under specialist supply contracts; increasing brand presence	Substantial potential for upskilling but contingent on nature of production processes used - stability in work experience where traditional processes utilized, some significant upskilling where substantially different/novel products & processes introduced; general stability in employment levels but relatively high wages	I1, I2 (functional whey proteins, lactose to babyfood sector), I3, I4 (skim milk powder to babyfood sector)

Note: product markets engaged in by large/mainstream processors only. The existence of farmhouse or handcraft production of yoghurts & cheese is acknowledged.

opportunities for upskilling associated with product development or the creation of higher value employment in these sectors in the short-to-medium term at least.

In the yoghurt/dessert sector, the increasing demand for innovative, branded products had recently been stimulated (and was in turn itself prompted by) the adoption by large multinational dairy companies of strongly innovation focused, high volume product strategies. However the positive consequences of these trends for the English sector, in the form of the expansion of innovation-focused and high wage employment at E6, were accompanied by a decline in fortunes and negative outcomes at indigenous processors such as E1 and E3, where the inability to compete with the level of investment made by the multinational producers had resulted in the sale of the branded yoghurt businesses of those companies, and where substantial ongoing reliance on own-label production was in evidence. Similar, more negative outcomes were also identifiable in the Irish sector at the small indigenous producers I5 and I6.

Finally, the expansion of the market for specialist or 'functional' food ingredients as well as the increasing production by processors of 'non traditional dairy' products (Jansen and Krijger 2003) which was highlighted in chapter five, provided (in theory if not always in practice) significant opportunities for upskilling for the production operatives working in those sectors, as well as leading to enhanced employment security and higher wages.

In terms of attempting to *quantify* the importance of each of these groups, the figures on the proportion of employment at the case study firms in major development, minor development, stable/traditional and low-, mid- and high-value areas presented in the data chapters, demonstrate that the large majority of employment in England was associated with the production of those products in the first row of table 10.1, a situation that evidently provided few opportunities for upskilling or a move into higher value areas. In contrast, employment at the Irish firms was more evenly distributed, reflecting a greater balance between the 'desirable' and 'non-desirable' product areas. However even here 43% of employment (when broken down on the basis of development activity) was associated with the production of products in the first two rows of the table, which arguably clearly demonstrates the strong limits on upskilling arising from the nature of product market characteristics and trends.

The Contingent Nature of Skills Outcomes at Production Level

A further clear limit on the potential usefulness of an industrial policy was identified in that as noted above, the detailed examination of work organization and skills outcomes at three of the Irish companies that had benefited from industrial policy support demonstrated that at

only one of these had significant upskilling for production operatives occurred. Therefore as opposed to leading in a straightforward way to upskilling, the consequences for operator skills of industrial policy enabled strategic upgrading were found to be heavily determined by the types of products introduced and the nature of the production processes utilized.

In addition, the Irish research also uncovered the adoption of a number of common operational and general management policies that placed strong limits on the potential for operator upskilling to be achieved such as, in the bulk product sector, requiring individual operators to take responsibility for running a very large number of production plants at one time.

These findings arguably closely resonate with the discussion undertaken in chapter two regarding the contingent relationship between product strategies and skills outcome and the importance of integrating labour process issues into analytical frameworks for skills research (Lloyd 2003).

The Ongoing Need for Broader Systemic Reform

Finally, the Irish research findings also arguably clearly validate the suggestion in chapter two for the adoption of a conceptual distinction between 'skills' and 'training' outcomes. For example and arguably most graphically, while it was clearly evident that the industrial policy facilitated move up market had led to very substantial operator *upskilling* at the I2 whey plant, operators there expressed acute dissatisfaction with the *lack of formalized training policies* at the factory, a situation which was seen to result in very substantial stress/pressure and a reduction in levels of job satisfaction.

These findings closely echo Lloyd's (2002) research which found that *ad hoc* training approaches and a reliance on on-the-job training were dominant at the aerospace and pharmaceutical firms she examined, despite the fact that these were operating at the higher ends of the quality spectrum; and suggests that in the absence of broader institutional change (i.e. in the form of the strengthening or an increase in the formality of vocational training), then the introduction of an industrial policy alone is likely to result in lower levels of job satisfaction than might otherwise be the case. In particular, the evidence from both countries illustrates the importance operators/general workers accord to the provision, firstly, of well resourced and formalized training, and secondly, *general/underpinning knowledge training* (as particularly evidenced in England by the data collected at the high training, foreign-owned firm E6).

10.3.2 *Significance of Findings from the Perspective of the Varieties of Capitalism Literature*

Related to the discussion of industrial policy, the research findings also enable direct analysis and critique of the central theoretical and policy recommendation from the *varieties of capitalism literature* (Hall and Soskice 2001; Wood 2001) that liberal market economies like the UK should accentuate the deregulated/fluid nature of capital, labour and product markets and focus attention on activities/sectors dominated by 'radical' as opposed to 'incremental' innovation. The research evidence from the English sector, where the institutional and policy environment closely mirrored such a policy recipe, arguably demonstrates that such a strategy provides workers in such sectors with few opportunities for upskilling and also leads to comparatively poor wages and working conditions. In contrast, as the discussion thus far in this chapter illustrates, the development in Ireland (like Britain also a 'liberal market economy') of thick institutional structures and substantial industry support measures, *was found to underpin* relatively favourable skills and employment outcomes there. Following the recommendations of the varieties of capitalism school would potentially therefore leave large swathes of the British economy stuck in low skill and poorly paid employment.

10.4 Conclusion

This chapter firstly compared the principal findings from the fieldwork conducted in the English and Irish sectors. In this regard the Irish sector was found to demonstrate 'superior' performance in terms of the nature of strategies adopted, proportion of employment in 'major development' and 'high value' areas and wage levels. In contrast, there was seen to be a continuing high degree of similarity between the two sectors in terms of actual/detailed skills outcomes at production level.

The supportive industrial policy context in Ireland was identified as having underpinned the 'better' skills/employment outcomes there, while the generally *unsupportive* industrial policy context in England was found to have contributed to the comparatively negative, unsatisfactory outcomes identified in that country.

These findings were next placed within the context of the key, general theme addressed in the research, namely the potential for an industrial policy to facilitate upskilling. In this regard, while recognizing the overriding importance of profitability levels at both company and industry levels in facilitating product development and hence opportunities for

upskilling, the identification in the literature of a number of potentially positive features or dimensions of an industrial policy was found to be supported in the data collected.

In contrast, the English research demonstrated how the deregulation of product markets and the promotion of competition, in the absence of other institutional changes/supports, arguably provides very limited potential to promote strategic upgrading and hence upskilling.

However while the analysis of findings therefore demonstrated the importance and potential of an industrial policy, the clear limits and restrictions on the potential for the latter to facilitate upskilling were emphasised. In particular, the possibility for such support to facilitate a move up market was identified as being heavily contingent on both broad sectoral and specific product market characteristics and trends. In addition, even where strategic upgrading was facilitated, the fact that skills outcomes at workplace level were strongly contingent was highlighted. Moreover, the parallel need to develop/strengthen institutional supports for vocational training, and in particular the provision of general/underpinning knowledge training, was flagged up as requiring recognition and consideration.

Chapter Eleven: Conclusion

11.1 Introduction

The purpose of this chapter is to outline the suggested contribution of this research, highlight its limitations and make some suggestions as to how this project might be built on by future research efforts.

The chapter will proceed as follows. Firstly, the contribution of the thesis in terms of the substantive nature of the research conducted and data collected and its implications for theory development in both the skills and employment relations fields, will be outlined. Secondly, the suggested contribution of the research to the development of useful and appropriate research designs in the same fields will be discussed. Thirdly, the limitations of the thesis will be considered before finally, some suggestions for future research are outlined.

11.2 Contribution of the Research

This section will address three ways in which this thesis makes a contribution to the British skills and employment relations literatures, namely in terms of its substantive, theoretical and methodological contributions.

11.2.1 Substantive Contribution

A key contribution of this research is that a large amount of high quality empirical evidence has been collected on an important but under-researched issue, namely the 'British skills problem'; or more specifically, how the British economy might be shifted to a 'higher skills trajectory' that would facilitate upskilling and higher wage levels for general workers to be achieved.

In this manner, the thesis builds on the relatively few recent examples of research in the *British skills field* that has empirically addressed these issues, most notably the studies by Finegold (1999), Lloyd (1999) and Wilson *et al* (2003). The research can be seen as constituting an important contribution to this field due to the fact that it provides detailed evidence as to how the dominant neo-liberal approach to economic management in England compares, in terms of its consequences for skills and employment outcomes at sector level,

with a significantly different approach adopted in another broadly similar country, Ireland, where over recent years government has placed a strong emphasis on active intervention in influencing industry development and performance.

In this regard, by demonstrating how the deregulationist/neo-liberal policy recipe in England was associated with predominantly negative skills and employment outcomes, and in contrast that the more proactive and interventionist approach adopted in Ireland underpinned more positive outcomes there, the thesis represents not only one of the few pieces of 'hard', empirically grounded evidence on the 'British skills problem' in recent years, but also provides evidence that in substantive terms is highly insightful due to the combination of the nature of the findings and the comparator country used. Specifically, the findings can be seen to be of particular interest because they demonstrate how a country that has historically been (and indeed continues to be) very similar to England in many ways, has in terms of the sector studied managed to substantially break out of the 'low-skills/low-quality' trap by adopting a different approach to industrial policy.

Aside from the skills field, as outlined in chapter two the *British employment relations discipline* and in particular its leading academic journals, have in recent years been characterised by a distinct lack of engagement with political economy of skills issues, and more specifically the possibility for upskilling and employment upgrading to be achieved for general workers in the UK. It was argued that this was an unsatisfactory state of affairs given the importance of these issues to the day-to-day employment experience of British workers. As a consequence, the recent calls by a number of employment relations academics (e.g. Ackers 2002; Heery and Wood 2003) for a broadening of industrial relations research were supported.

It is argued here that the empirical research undertaken for this thesis, both in terms of the substantive issues examined and the research design/methodology employed, represents the type of research that might potentially reinvigorate ER as a discipline, in that it squarely addresses the calls for a broadening of scope. In addition, the research also arguably relates closely to the recent support for an increase in the number of international comparative studies and the conduct of research of relevance from a policy as well as a theoretical perspective (Whitfield and Strauss 1998; Kochan 1998; Ackers 2002).

Further the research also closely resonates with Edward's (2005: 274-7) more recent recommendations that IR research should more fully explore the significance of context (e.g. sectoral) for substantive outcomes, increase its 'relevance' by addressing issues such as

competing models of capitalism and the 'benefits of coordinated market economies'; and also be designed in a strategic, planned and systematic manner so as to facilitate substantial advances in knowledge regarding particular issues to be achieved. This thesis arguably meets each of these criteria in that it consists of an in-depth examination of the significance of institutional and sectoral context for skills outcomes, directly addresses debates about competing models of capitalism and the benefits of coordinated market economies and was designed in a planned, systematic manner so as to enable a substantial advance in knowledge regarding the British skills problem to be realised.

11.2.2 Theoretical Contribution

This section will consider the theoretical contribution of this thesis, firstly in relation to the British skills literature and secondly, recent debates arising from the 'varieties of capitalism' literature.

Contribution to Theoretical Debates in the British Skills literature

The central debate in the British skills literature with which this research engaged was the question of the potential for the introduction of a strategic, resource-intensive industrial policy to facilitate upskilling in the UK. A number of conclusions can be outlined on this issue.

The research findings demonstrate that the interest of skills researchers in the potential of an industrial policy has arguably been well founded. Specifically, while recognizing the overarching importance of profitability levels and competitive trends at industry level in influencing/determining strategic outcomes, the data collected clearly demonstrates how a supportive industrial policy context may underpin superior skills and employment outcomes. Further it can arguably be concluded that a supportive industrial policy context is in fact a *necessary precondition* for the achievement of desirable skills and employment outcomes. Specifically, without direct financial support for research and development, heavy government investment in dedicated research and pilot plant facilities and a highly qualified/skilled management cadre, the Irish dairy industry would not have been able to move into the advanced product areas in which it is now in no small part located.

Similarly but in contrast, unless the English dairy companies are encouraged or prompted to invest in product development and unless the technical capabilities of managers are improved, then it is likely that the English sector will continue to be characterised by the

production of low value, basic products and, moreover, be unable to successfully move into more advanced and higher value market niches.

Therefore echoing the recent Porter review of the UK's competitive performance (Porter and Ketels 2003), it can be concluded that unless the British government begins to invest in the development of an industrial policy, for example by increasing government investment in research and development and the creation of strong 'institutions for collaboration' (ibid: 31, 45), there is little prospect for generalized upskilling or 'employment upgrading' to be achieved in Britain.

While this is a general conclusion in relation to the potential role of industrial policy emerging from the research, the second, strong conclusion on this issue is that even though the introduction or implementation of such a policy may promote upskilling, the extent to which it can do so is heavily contingent on a number of different factors or influences.

Most obviously, the finite nature of resources possessed by individual companies typically means that not all products produced or services delivered by them can be in high value or up-market areas. In addition, the substantive makeup of particular sectors in terms of the size and ownership status of companies may either facilitate or impede the operation of an industrial policy. Further the nature of broad sectoral features and characteristics and more specific product market trends, will also centrally determine the potential of an industrial policy to promote upskilling.

As a consequence, it is necessary for skills researchers to undertake a detailed engagement with these various influences or factors in relation to whatever sector or product market is being examined, before concrete awareness and understanding of the practical potential of an industrial policy to facilitate upskilling may be achieved.

However alongside this it is also necessary for skills researchers to address the possibility, or indeed likelihood, that strategic upgrading may not, in fact, lead to upskilling for the workers affected as a consequence of issues relating to the nature of the particular production or service delivery processes utilised, or organisational policies on job design. Moreover, broader issues relating to the relationship between strategic upgrading, training provision, skills and job satisfaction outcomes also need to be examined closely; and in particular the problematic issues arising from the weak nature of vocational training systems in liberal market economies.

In summary, it can be concluded that the introduction of an industrial policy is a *necessary but insufficient condition* for the achievement of upskilling; and that for more specific information on the extent to which upskilling in any particular sector might be possible, skills researchers need to carefully address and examine a very wide range of issues indeed.

Contribution to Debates on 'Varieties of Capitalism'

The empirical data collected for this thesis has provided an opportunity to interrogate the practical implications of the theoretical and policy-related recommendations for economic policy in the UK and other 'liberal market economies' in the 'varieties of capitalism' (VoC) literature (Hall and Soskice 2001; Wood 2001).

In this regard, the evidence in the data chapters and analysis undertaken in chapter ten clearly demonstrate the validity of the discussion in chapter two regarding the potentially negative skills and employment outcomes likely to result for many sectors and workers from the recommendation in the VoC literature that LMEs such as the UK should accentuate those institutional characteristics which mark them out as LMEs, namely the deregulated/fluid nature of their capital, labour and product markets (Hall and Soskice 2001; Wood 2001).

Specifically, the intense, unchecked nature of competition within the dairy industry prompted by deregulation and substantially exacerbated by the (weakly regulated) commercial strategies adopted by the larger retailers, meant that there was little substantial investment in product development undertaken and consequently, negative skills, employment and wage outcomes at the indigenous English firms as well as across the industry more broadly. In addition, the high management turnover at business unit level at a number of companies and the more generalised rationalisation in numbers of technical personnel that had taken place in the sector with a view to cost reduction, was found to have both impeded the recent development of the industry and left it in a weak position in terms of its future potential to undertake innovative product development.

In summary therefore, a VoC-like liberal market economy policy recipe in England, emphasising the deregulated and fluid nature of product, capital and labour markets, was associated with strongly negative employment and skills outcomes; and if applied on an ongoing basis more broadly, would arguably leave large parts of the British economy stuck in low skill and poorly paid employment.

In contrast, the development in Ireland, also classed by Hall and Soskice (2001: 19) as a liberal market economy, of a strategic industrial policy incorporating a number of industry

support measures and the development of 'public good' research and development facilities - arguably policy interventions more closely associated with 'coordinated market' economies than liberal market economies - was found to substantially account for the relative success of the Irish sector in moving into higher value market niches; an outcome that was in turn associated with more positive consequences for employee skills and wage levels.

The evidence from this research would therefore suggest that for upskilling to be achieved in the many traditional, low-skill sectors in the UK, policy-makers should endeavour to develop CME as opposed to LME-like institutional structures and policies. While additional research would be necessary to explore these issues further, as discussed in chapter two, arguably the central problem of the VoC model from the perspective of skills and employment relations research is its focus on *macro* outcomes to the neglect of substantive outcomes and processes at *meso* and *micro* levels; i.e. the end result, of a certain level of aggregate national welfare, is what is prioritised, with little attention given to the process or means through which this is achieved. If *generalised* upskilling is the theoretical or policy-related aim, then from the perspective of liberal market economies, the varieties of capitalism framework is not likely to be a particularly helpful model to adopt.

Overall, therefore, this thesis provides concrete evidence that skills and employment relations researchers can use to interrogate the VoC literature. It can arguably be seen to make a substantial contribution to the employment relations field in particular, as while the VoC literature is evidently the subject of growing acclaim and influence, thus far the ER field has largely failed to respond to and critique its central arguments in an empirically grounded manner.

11.2.3 Contribution to the Development of Methodological Approaches in Skills & Employment Relations research

The discussion in this section will focus on two ways in which it is suggested this research makes a contribution to the development of methodological approaches for employment relations and skills research, namely in terms of the nature of the thesis as a comparative case study focused at the level of the sector that adopted particular data collection techniques and the use of a particular conceptual framework and analytical/measurement tools.

Comparative Research at the Level of the Sector using Multiple Case Studies, Expert Interviews & Secondary data

As discussed in chapter five, a significant weakness of research based on case studies at a small number of firms, even where this is comparative in nature, is that it is either difficult or impossible to draw *generalised* conclusions from such research in relation to skill trends and outcomes and more specifically, political economy of skills issues. In contrast, it is suggested here that comparative case study research focused *at the level of the sector or industry*, constitutes a research design that overcomes this problem and that could therefore usefully form the basis of future skills research.

The research undertaken for this thesis, in that it succeeded in providing a comprehensive picture of outcomes and trends at the population of 'mainstream' firms in the dairy sector of both countries, illustrates how sector focused research can facilitate the achievement of what is an inherent (but often implicit) goal of skills research, namely to make 'empirical' generalisations regarding the significance of institutional context for skills outcomes that can feed into meaningful theoretical and policy debates. In contrast, if only two or three individual firms had been examined in each country, then few definitive conclusions could have been drawn regarding the political economy of employment outcomes in either sector.

However if the research has shown that the sector is the most appropriate unit of analysis for skills research, it arguably also demonstrates that to fully harness the advantages of such research requires the adoption of a particular research design. The issue of what research design to adopt was discussed at length in chapter five, with the central dilemma identified as the need to account for the twin objectives of obtaining the deep, qualitative insights into the manner in which institutional contexts influence strategy and skills outcomes, and quantifying the significance of the same. The design adopted, namely a combination of multiple case studies (including in-depth and 'mini' cases), expert interviews in industry bodies and the use of secondary data in the form of industry reports, trade press and government statistics, successfully achieved these two objectives. As the data and analysis chapters demonstrate, it facilitated the achievement of deep insights into the complex issues of the significance of the industrial policy context for product strategies pursued and skills outcomes at workplace level, and also the formulation of an overarching, general picture regarding the population of mainstream firms in both countries, with the conduct of multiple case studies and use of expert interviews and secondary data sources of particular importance with regard to the latter.

It can therefore be concluded that the combination of multiple case studies (of both the in-depth and 'mini' varieties), expert interviews and secondary data collection within the context of sector-based studies, is a research strategy/design that offers significant potential for future research aimed at examining the potential for employment upgrading or upskilling.

Conceptual Clarity & the Development of Analytical & Measurement Tools

Chapter two emphasised the importance of developing a clear conceptual framework in advance of undertaking fieldwork in relation to political economy of skills issues. In particular, time was taken to attempt to unpick the meaning and scope of general concepts such as 'upskilling' or 'employment upgrading.' In this regard, it was argued that a systematic examination of these would incorporate consideration of a number of distinct issues or elements, namely employment levels and trends and wage levels in addition to the more 'obvious' question of skills outcomes.

The presentation of data on employment and wage outcomes was arguably shown in the data chapters to be a strength of this research and a strategy that should be copied in future research. In particular, the information on wage rates provided important evidence on the 'quality' or 'value' of employment in both countries.

In addition, the distinction drawn between *skills trends* and *training outcomes* found strong support in the research. Specifically, it was very evident from the Irish data that operators at a number of firms were strongly exercised about what was perceived to be either the lack of or weak nature of job-related training received. Moreover, where the introduction of new, higher value products or processes was not accompanied by substantial, high quality training or indeed any training at all, very significant dissatisfaction on the part of operators resulted. As a consequence, it is suggested that future skills research should also be sensitive to the strong differences between 'skills' and 'training.'

The development of *analytical tools* that can be used in both problematising and, as importantly, *quantifying* the potential for upskilling and employment upgrading to be achieved in particular sectors, is also a notable contribution of this thesis. Specifically, the development and use of the 'stable/traditional', 'minor development' and 'major development'; and 'low-', 'mid-' and 'high value added' categories can be seen to constitute a useful addition to the research methods and techniques available to the skills researcher.

The 'stable/traditional', 'minor development' and 'major development' categories are arguably particularly suitable for measuring the extent of product development and,

consequently, potential for upskilling to take place in any particular company or production unit. Meanwhile, the 'low-', 'mid-' and 'high value added' categories facilitate a distinction being made in terms of the *value* of products produced or service delivered, and are therefore useful in assessing the possibility for 'employment upgrading' to occur.

11.3 Limitations of the Research

It is suggested that the collection and 'triangulation' of information from a number of different sources means that this research avoids a possible limitation or weakness of case study research, namely that conclusions are drawn on the basis of one or a small number of pieces of information or organisational perspectives that do not reflect the complete or 'true' picture of the situation or issue being examined (Yin 2003: 97-101; Denscombe 2003: 131-4). However while some significant use was made of *quantitative data*, the focus of the thesis was primarily *qualitative* in orientation and this might possibly be seen as something of a limitation. While the high quality and triangulated nature of the qualitative data obtained means that the findings and analysis outlined are robust, it is recognised that greater use could have been made of quantitative data, most notably in the form of figures on individual company profitability and change in this over time. For example, although interview data outlined how the English own-label producers such as E2 and E6 were experiencing very harsh financial pressures, no figures were presented to illustrate this. The use of such data could possibly have increased the robustness of the evidence and analysis presented, by providing an additional tool to use for validation purposes.

As noted in chapter five, it is common for qualitative researchers to emphasise the limitations on generalisation arising from the conduct of case study research, with such research generally seen to be limited to 'theoretical' as opposed to 'statistical' generalisation. However as also outlined in that chapter and as discussed above, the research design adopted in this study (i.e. the combination of in-depth and 'mini' case studies etc.) meant that it was, in fact, possible to draw general conclusions and to make 'empirical' (as opposed to 'statistical') generalisations in relation to the population of 'mainstream' firms in both countries. Detailed and comprehensive information on the impact of the industrial policy context on the strategies adopted, employment and skills outcomes at these companies was collected.

Aside from this, however, as only one sector has been studied, it is evidently not possible to similarly generalise the research findings to the English or Irish economies as a whole,

although what *can* perhaps be said in relation to England in particular, is that the research has uncovered outcomes and processes that may be likely to be mirrored across a substantial number of other sectors, due to the fact that the institutional conditions in the dairy sector closely reflected the 'national type.'

11.4 Suggestions for Future Research

In terms of specific research projects, there is arguably great potential in undertaking further comparisons between liberal market economies. The great value of such comparisons lies in the fact that if, as in the current study, substantial differences in skills and employment outcomes are identified, it can firstly provide powerful evidence and insights to academics and policy-makers in the home country, due to the fact that broadly equivalent outcomes would be expected as a result of the *apparent* similarity between the countries. Secondly, while policymakers and academics might therefore be prompted into action and a review of theoretical models respectively, the overarching similarity in institutional structures with the comparator country should mean that the 'successful' policy interventions or innovative institutional structures in the latter are subject to appropriation or use by policymakers and academics in the home country.

Ireland could again be used as a comparator for England, possibly by means of a comparative study of the furniture industry in both countries. This is another traditional industry, which the NIESR reports (Steedman and Wagner 1987) identified as suffering from significant weaknesses in terms of product quality/specification and workforce skills in the UK. Although of a much smaller size, like the dairy sector the Irish furniture industry been the recipient of concerted state agency attention and support in recent years (Heanue and Jacobson 2001-2), and it could therefore similarly serve as a useful subject of comparison for its sister sector in England.

Aside from Ireland and closer to home, comparisons could be made with sectors in either Scotland or Wales. In this regard a further dairy comparison might be possible, as both Scotland and Wales (and particularly the latter) have developed quite strategic agendas for the development of their respective industries and possess well resourced development agencies that operate a significant number of industry support measures (Scottish Enterprise 1999; Agri-food Partnership 1999). Comparisons with these countries could be made from the perspective of England as a whole or particular regions. Aside from these countries, as

noted in chapter two, comparisons with other liberal market economies such as the US, Canada or Australia would also be potentially fruitful.

While additional liberal market economy and intra-UK comparisons would therefore possess substantial potential, comparisons with 'coordinated market economies' such as Germany could also be insightful along a number of dimensions. It would be interesting, for example, to examine whether retailer-supplier relations and the policies and priorities of government in relation to consumer and competition policy in Germany, a country that is of a comparable size to the UK, have similar consequences in terms of profit margins, levels of investment in product development and skills and wage outcomes to those identified in England.

Finally, it would also be both possible and beneficial for purely domestic-focused research to be undertaken. This thesis has emphasised that it is important for significant advances in knowledge and understanding regarding the potential for upskilling and employment upgrading across the British economy in general to be achieved. To this end it is suggested that this research could be built on by projects examining other specific product markets in the food industry, in order to identify the particular processes and outcomes within these and, consequently, draw out features common to the industry as a whole and their significance for skills trends. In addition, similar research could also be undertaken in other sectors. In this way a clearer picture regarding the potential for upskilling across the economy as a whole could be obtained.

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