Economic Development Policies and the Transnational Corporations: an evaluative study of South-East Wales

Christopher James Tunnell.

Thesis submitted for Master of Philosophy - Town Planning.
Bartlett School of Architecture and Planning.
University College London.
June 1990.

Acknowledgements.

Thanks are especially due to my supervisor James Simmie, for his help and advice with this research project. I am also extremely grateful to all the other Bartlett staff who have commented on this thesis at various times.

Abstract

The current phase of economic development can be distinguished in terms of the internationalisation and integration of the global production system. Without doubt the major actor in creating this global system has been the transnational corporation (TNC) whose location strategies increasingly shape the economic destiny of particular places. This study seeks to examine how economic development policy initiatives have been able to influence TNCs' location behaviour and thereby improve the position of particular localities. In this respect, the study examines the specific case of South-East Wales; a sub-regional that has been remarkably successful in attracting TNC investment projects and has been subject to a plethora of policy initiatives. In terms of evaluation, it is suggested that policies have been relatively successful in influencing TNC behaviour, although this role has increasingly been contingent on a number of other implicit public policy areas, particularly trade and competition policies, as well as the impact of other areas of public expenditure most notably on infrastructure. Potentially, if all these policy areas were applied in a coordinated framework, it is suggested that public policy could have a more effective role in shaping the outcomes of TNCs on local areas. In terms of implications, it is noted that TNCs have contributed to some modest job gains, as well as to the introduction of new product and process technologies. However, in the longer term, rising capital intensities associated with these new processes, could limit job gains and may contribute to an increasing

polarisation of skills.

Contents.

Introduction.		9
Chapter 1	The Internationalisation of Production	16
	Technological Change and Regional Development: A Theoretical overview	
	Research Design	40
Chapter 2	Economic Change in the South-East Wales Study Area	48
Chapter 3	Public Policy Responses to Economic Change.	67
Chapter 4	Policy Assessment	95
Chapter 5	The South-East Wales Electronics Industry	129
Chapter 6	Conclusions and Speculations	149
Bibliography		163

Continued.....

Appendices

164-179

Sampling Frame
Questionnaires
Study Contacts

List of Figures.

1.1 Hymer's Schema of Corporate Control. 27

2.1 The South East Wales Study Area 50

2.2 Employment Change based on shift-share Analysis 1971-1981 55

2.3 Wales Share of Inward Investment 1979-88 58

2.4 Total Inward Capital Investment in Wales 59

2.5 Employment in Foreign Owned Companies in Wales 59

2.6 The Five Leading Welsh Sectors Performance 1984-86 60

2.7 Shift-Share Analysis Employment Change 1981-87 63

3.1 Regional Selective Assistance by industrial sector Wales and Great Britain 1984-6 77

3.2 Summary: The Explicit Spatial Economic Development Framework 91

4.1 The Influence of Selected Location Factors on Investment decisions 102

4.2 Summary of Selected Location Factors on Investment decisions 110

4.3 Employment Change in TNC dominated sectors by Gender and Part-time SE Wales 1981-87 124

5.1 The Definition of Electronics and its Sub-sectors (based on SIC 1980) 132

5.2 Electronics Employment Change 1981-87 South East Wales and Britain 133

Introduction

It is now widely recognised that the last two decades or so have witnessed a major restructuring of production throughout the capitalist world, associated with the need to maintain profitability in the face of deepening world recession. Without doubt, the major actor to emerge from this reorganisation has been the transnational corporation[1] or TNC, whose location and investment strategies have increasingly been a major determining influence in the economic future of particular localities.

As such, the TNC has proved to be a highly controversial organisation. As Dicken has suggested:

> "Proponents of the TNC regard it as a most efficient mechanism for allocating and utilising economic resources..... . Opponents of the TNC depict it as essentially the ultimate exploitative capitalist institution; exacerbating, rather than alleviating inequalities in selfish pursuit of its own profit." (Dicken 1986. P.6)

---

1. The term transnational corporation or TNC is used throughout this study in preference to 'multi-national corporation' (MNC) because it is a more general term. A trans-national corporation is defined as a firm which simply controls operations in more than one country. Thus all MNCs are TNCs though not all TNCs are MNCs. The term TNC is the one now adopted by the United Nations. (Dicken 1986)

However, either way, it is clear from the proliferation of policies and agencies seeking to influence its actions that the emergence of the TNC has brought with it a new recipe for addressing the regeneration of declining areas. In particular, this recipe involves the 'quick fix' strategy of attempting to attract large mobile investment projects to particular urban areas on a global scale and if successful thereby creating large amounts of investment and jobs relatively swiftly.

Such strategies, clearly build upon the approach of traditional regional policies of attempting to divert investment into depressed areas. However, accompanying these strategies can be observed an interest in the relationships between technological innovation and regional development, so that traditional policy tools have been sharpened towards what are perceived as higher technology growth sectors, with electronics being the amongst the foremost targets. (Freeman et al 1982, Hall et al 1987)

In all this certain areas have been perceived as particular beneficiaries. Amongst these, perhaps rather surprisingly, has been Wales which has attracted over 300 overseas companies in sectors such as electronics, motor vehicles and components, food processing engineering and many others. This pattern of inward investment is one in which policy agencies claim considerable success; particularly with regard to the fact that Wales has the largest concentration of direct Japanese investment in Europe. Moreover, policy agencies

increasingly suggest that jobs created by inward investors can explain the apparent fall in official unemployment rates over the past 36 months. (Waterstone 1990)

However, behind all this there has been little hard assessment. Few studies, in Wales or elsewhere, have actually concerned themselves with the specific effects of policy and the economic development outcomes. Rather, policy assessments have increasingly focussed on institutional arrangements of policy formation, with particular emphasis put on how policy is delivered (e.g Chandler and Lawless 1985). These studies tend to neglect to explore why policy may or may not be successful in fulfilling a particular goal. Equally, in industrial and locality studies the actual impact of policy seems rarely to be specified except in highly general terms. (e.g Cooke eds. 1987)

More generally, the actual process of new investment and job creation seems to be only poorly understood, largely in contrast to the analysis of industrial decline. Here, while there has been much theorising, particularly in terms of the production strategies, (e.g Massey 1984) frequently explanations have tended to run ahead of supportive empirical evidence.

The Aims of this Study.

This study makes a limited attempt to redress these deficiencies and seeks to evaluate the impact of economic development policies operating in the defined study area of South-East Wales. This involves answering some basic questions relating to the reality of TNC investment in South Wales; how both explicit and implicit economic development policies have been able to influence the activities of the TNC in South-East Wales favour; and finally to consider the present and longer term implications of TNCs for local economic development. The South-East Wales area is believed to be strong case for study because of its dominance by 150 or so TNCs and because of the plethora of policy agencies and measures operating in the area. SE Wales thus might be suggested to be broadly representative of processes occurring at larger spatial scales.

Overall the study enters into a field in which there is little or no consensus as to how the impact of TNCs is to be judged. Some commentators, for instance Massey (1985) have preferred to think in terms of alternative industrial futures. However, this study takes the continued presence of the TNC as given. The resulting research methodology is firmly rooted in empirical research and the day-to-day application of policy. The research concentrates on TNCs as a single policy area and, except in a general sense, does not consider how the resources devoted to TNC related policies might have been directed towards other economic development strategies.

The justification for considering TNCs as a subject on their own stems from the fact that TNC involvement raises particular policy questions relating to the influence of local areas, external control and decision making and to technology transfer and diffusion. Given this perspective, the thesis puts primary research emphasis on policy outcomes as derived from the operation experience of TNC plants themselves. Somewhat inevitably, given the material available and the particular concern of unemployment, much of the resulting evaluation focuses on employment related issues.

Organisation of this work

Chapter 1 begins with by providing a theoretical analysis of the wider processes of industrial restructuring, with particular reference to global economic change and regional development. This theoretical perspective is based upon a broadly eclectic and pragmatic interpretation of Kondratieff long waves, leaning slightly towards a Schumpeterian interpretation. This section is used to form the necessary link between global economic processes of change and local experiences, and as such is used to inform subsequent empirical investigations. This chapter concludes with the research design.

Chapter 2 begins by defining the nature of problems faced by the the South Wales economy. This involves conducting a comprehensive analysis of aggregate employment and output change and an examination of the pattern of inward investment based upon available

secondary data sources.

Chapter 3 provides an outline of the explicit and implicit policy responses towards TNCs at international, national and local levels. In particular, the chapter examines the agencies involved, the resources devoted to them and the way in which strategies have adapted to changed economic circumstances. With Chapter 2 this chapter forms the background for a detailed examination of policy outcomes in chapters 4 and 5.

Chapters 4 &5 really constitute a single body of analysis; seeking to explore the location decision process and to locate a policy effect within it. These chapters also examine the impact of TNCs on the local economy of SE Wales. Specifically, chapter 4 builds upon chapters 2 & 3 to examine how policy has affected TNC decision making at various spatial scales. This part of the study draws upon a survey of 80 SE Wales TNCs.

Chapter 5 focuses on the specific case of the electronics industry. This chapter affords a particular opportunity to examine more closely the significance of new technologies for future economic development, as well as examining the specific case of the leading Japanese sector. This chapter also speculates about the future quality of employment in this sector.

Finally chapter 6 concludes the analysis and examines future policy models.

Chapter1

The Internationalisation of Production, Technological Change and Regional Development: A Theoretical Overview.

This chapter examines the processes behind the emergence of spatial inequalities and the public policy responses to them. It is suggested that many of the problems faced by localities can be perceived as adjustment problems arising from a more general process of sectoral restructuring which has accelerated since the early 1970s. It is demonstrated that this process can be understood within the long run historical perspective provided by long wave theories of economic development. In particular, this analysis is preferred as it can provide an explanation for highly diverse process of change which includes de-industrialisation, technical change, concentration and the internationalisation of production.

The economic development of Britain and many other advanced capitalist economies have witnessed progressive shifts in their production and employment patterns. Internationally, this has been reflected in the rise to economic power of some newer industrial leaders such as Japan. At the inter-regional scale, it has been reflected by a succession of prosperous and declining industrial regions. This process took a sudden downward turn into general economic decline in the late 1960s fuelled by what at first seemed like an unusual bunching of events (Dicken 1986). However, as the

process unfolded, it became increasingly clear that more fundamental changes were occurring. Often this process has been presented as the unbroken collapse of Britain's manufacturing industry. However, as Martin and Rowthorn (1986) have suggested the quantitative process of de-industrialisation was accompanied by more qualitative changes in ownership, control and technical organisation. Changes in ownership reflected an increasing internationalisation of production. Technical change enabled the development of hierarchical production structures over large spatial areas (Henderson and Castells 1987). As a result of these changes, the last two decades, can be construed as a period of 'restructuring' towards a new model of development.

In industry a small number of TNCs now overwhelmingly dominate world output and trade. In 1980 some 350 of the world's largest TNCs had sales equivalent to 28% of gross domestic product (GDP) of the developed and developing countries and accounted for 25% of the total manufacturing employment in the developed countries (United Nations 1983). In the EEC, the share of total manufacturing turnover accounted for by the 280 largest firms (all TNCs) was 31% in 1972 rising to 37% by 1981 and estimated to have risen further since then. (Amin and Smith 1987) This group of TNCs were also responsible for some 38% of EEC total manufacturing workforce in 1981. (EEC 1984)

In response to these changes, new models of policy were also emerging. At the national level the post war Keynesian consensus was

at first adapted and then replaced by a different kind of model which sought a reduction in government intervention and expenditure. Inflation was the key problem to be tackled through fiscal austerity and monetary restriction, including attacks on the welfare state and the reduction of production costs, particularly labour costs. In terms of spatial policy, regional policies were increasing replaced by urban policy and the scale of regional aid was reduced, although specialist development agencies such as those for Scotland and Wales have survived (Armstrong and Taylor 1985). Left unrestricted, the process of restructuring had dramatic effects in particular localities. In some the previous economic base has been removed, while others have experienced changing divisions of labour as their positions in the hierarchical structures of production have altered. Although these processes have been manifested in different contexts, they would seem to have common features which suggests that they are determined by wider processes, albeit with specific developments and different social effects.

Long Wave Theories of Economic Development.

Several competing perspectives may be adopted on the nature of these changes. One view is that capitalist economic development is subject to 'long waves' of around 50-60 years duration. The Russian economist Kondratieff is usually credited with the initial explanation of long waves in the 1920s, although they had certainly been observed by earlier analysts (Van Duijn 1983). Strictly long waves are an

empirical rather than a theoretical concept (Hall and Preston 1988) the identification of which are matters of considerable debate as are causes, although it is generally accepted that each wave follows four phases; prosperity, depression, recession and recovery (Dicken 1986).

The existence of these waves were subsequently embraced by Schumpeter (1942), and more recently have received renewed attention from a number of Marxist and non-Marxist writers. (Freeman et al. 1982, Hall and Preston 1988, Mandel 1980, Sterman 1985, Van Duijn 1983). Within these competing perspectives much controversy centres around the impetus to the initial upswing, but all analysts tend to observe what has been termed 'techno-economic restructuring' (Henderson and Castells 1987) within each wave. In particular, it is suggested that each wave has been accompanied by particular technical revolutions which occur with an upsurge in replacement investment and the acceleration of older capacity retirement.

The strongest statement of this view can be found in the work of Schumpeter (1939,1942). Schumpeter stressed structural economic disequilibrium as the basis for economic development. This disequilibrium necessitated a continual adjustment process consisting of a reallocation of resources among profit maximising entrepreneurs. Schumpeter suggested that one explanation for disequilibrium could be that technical change made older production methods unprofitable and enabled the development of new products.

Peaks, troughs and turning points within this system arose from the empirical tendency of innovation to bunch at particular periods of time and particularly during recessions, as suggested by Schumpeter's famous description of the capitalist process as 'the perennial gale of creative destruction.' This view has generally been supported by the work of Mensch (1979) who plotted the dates of the introduction of a list of basic innovations and identified a tendency for the temporal clustering of innovations for instance in the late 1930s and again in the 1950s.

This view has also gained some further empirical support in the work of Freeman et al. (1982) although this group of researchers note a number of ambiguities in Mensch's work. While noting a decline in major innovations in both the 1920s and 1970s, they also note a continuing flow of innovations through the 1950s and 1960s although with process innovations outnumbering product innovations by the 1960s. Following this analysis, Freeman et al. (1982) suggest that an upswing in economic activities not only creates an increase in demand, but also depends upon it for its impetus. Similarly, Van Duijn (1983) argues that the decision to innovate is in fact likely to vary by type and industrial sector over the long wave. In some cases, innovation may be more likely when market conditions are favourable, i.e during expansion rather than depression.

Following the work of Forester's system dynamics model, Sterman

(1985) ascribes a dominant cycle-forming role to the time lags in the supply response of capital goods industries to changes in demand. Since the capital goods sector has initially to reequip itself to meet increased demand in the consumer goods sector, an initial growth stimulus is likely to be prolonged and amplified via the couplings of individual firms to one another, to the labour market and to the financial markets. The resulting capital investment is seen as a consequence rather than a cause of growth.

From Mandel's (1980) Marxist viewpoint, the above does not constitute an adequate explanation. Specifically, he argues that the distinctive feature of long waves is that they mark a phase of more intensive capital accumulation associated with mainly exogenous changes in the external environment of capitalism, such as a war. Mandel agrees that once an expansionary wave is underway, technological developments may help to sustain its momentum, particularly in terms of the opportunities for innovative firms to gain economic rents which may help to drive up the average rate of profits in the short term.

Overall however, there seems no reason to dispute the significance of endogenous or exogenous factors in determining the long wave. In the current fourth wave for instance, it is clear that a number of exogenous events have influenced development, not least oil crises, wars and changes in the exchange rate mechanism. However, a number

of pervasive technology systems have also emerged. Freeman et al. (1982) for instance identify electronics and synthetic material as two leading technology systems, while Dicken (1986) notes the importance of the motor vehicle industry, petrochemicals and pharmaceuticals as growth generators of the fourth wave.

Long Waves, Product Cycles and Concentration.

At the bottom of the endogenous explanations, particularly in the Schumpeter-Mensch interpretation, is what has subsequently been termed the product or profit cycle (Markusen 1984). The essence of the product cycle is that the growth and sales of a particular product follows a systematic path from an initial innovation through a series of stages; early development, growth, maturity and decline. While the early stages are characterised by the exclusivity of production, by maturity, the market becomes increasingly saturated and competition is extremely fierce. At this stage, following Markusen (1984) the product cycle becomes a profit cycle as firms in the innovative core react by cutting costs.

Following this approach, the transition into depression and recession can be seen in terms of a failure to sustain market creating innovations comparable in their impact to those which sustained the prosperity phase of the 1960s. The wealth generated by the industries of the fourth wave (electronics, motor vehicles, petrochemicals etc.) fuelled the post war consumer boom. However, by the 1960s many of

the new products were maturing and the second half of the 1960s witnessed what Rothwell (1982) has termed a consolidation phase. This phase witnessed a shift to process and organisational change as firms sought to realise economies of scale and to increase productivity and market power. Here the major cost minimisation strategy was reflected by a rapid increase in merger activity, and thus in concentration, as increasingly large production units sourced low-cost labour on a global scale and sought to exploit scale economies. This stage has also frequently been associated with the standardisation of products and components.

Moreover, the increasing prevalence of routinised assembly-type production processes that followed reorganisation, provided a growing range of manufacturing activities with greater locational flexibility. Rothwell (1982) suggests that by the 1970s a phase of 'maturity and market saturation' had set in and the pressures to adopt such a strategy intensified. Clearly the system also received a series of exogenous shocks at this time such as the 1973 oil crisis which severely increased production costs. In addition, helped by the relaxation of trade restrictions, international competition in manufactured goods intensified in the 1960s and 1970s. The result has been the emergence of essentially dual economies composed of a leading sector of transnational corporations (TNCs) and a second informal and small business sector. The latter sector including casualised and unregulated work practices, (Pahl 1985) as well as an

often dynamic small firm sector.

For future growth prospects, there has been some divergence of opinion, particularly as to the source of new innovations. Drawing on historical experience, it has often been suggested that a dynamic small firm sector is more likely to develop innovations required for a Kondratieff wave recovery phase. Correspondingly, economic development policies have often attempted to encourage small scale innovation or enterprise e.g through science parks and enterprise agencies. However, the counter argument to this is that that research and development expenditure is strongly concentrated in large corporations. As the Freeman group (Freeman et al. 1982) have noted, this divergence of views can only be partially resolved by long wave theory. Schumpeter, for instance, offers two models of development. In his early work, (Schumpeter 1939) it is suggested that the innovative process is largely exogenous to existing firms and market structure. As a result, risk taking entrepreneurs are the key actors who stand to make monopoly profits if the innovation is successful. These monopoly profits would subsequently be whittled away by the entry of swarming secondary innovators, giving rise to the cyclical phenomena already described. The second of these models reflects later work (Schumpeter 1942). The major difference here is that scientific and technical innovation becomes an endogenous activity of large firms. In particular, there is a strong feedback loop from successful innovation to increased research and development

activities; setting up a virtuous self reinforcing circle. Quite clearly there is no reason to doubt either of these two models, although as the Freeman group suggest TNCs have been the principle providers of innovation in recent years.

The Implications for Spatial Economic Development

In terms of employment generation, there has been considerable debate as to the significance of phases of the long wave for job creation and job destruction. One view derived from Freeman et al. (1982) has been the large scale job creation is characteristic only of the initial product innovation stage, whereas by maturity, the increased pressure to raise productivity and lower costs has been characterised by large scale investment in fixed capital. As a result, with corresponding increases in the capital to labour ratio, it is suggested that future growth may be 'jobless' or even involve 'job-loss.' The Freeman group (1982) support this view by a close analysis of the change in the relationship between manufacturing output and employment. For instance, they note that for nine EEC countries in combination in the period 1966 to 1974, while output continued to grow, employment remained stable. Between 1974 and 1980, manufacturing output grew slowly, while employment showed a sharp decline. To the extent that TNCs and the introduction of new technologies may contribute to local areas clearly depends upon the extent to which new growth may be 'jobless'.

Freeman et al (1982) also note the considerable social disequilibrium which the progression of the long wave implies. The replacement of labour by capital may result in changes in skill structures and the nature of work. More generally, the extent to which local areas may benefit from the increasing integration of the global economy may depend on the role that the particular area comes to play in the overall spatial division of labour. The fourth wave, for instance, has been accompanied by shifts in the location of investment and production and TNCs have decentralised production to functionally specialised and thereby scale-efficient plants in low cost locations.

At a theoretical level a number of approaches have been adopted to examine the pattern of development. One leading perspective on the resulting corporate structure and location can be derived from the work of Hymer (1975) who attempted to develop a model of the relationship between corporate structure and location. Variations on this theme can also be found in the so-called 'New International Division of Labour Thesis' (Frobel et al 1980), as well as Massey (1984). These approaches argue that the modern TNC seeks constantly to rearrange the spatial division of its activities so as to reap maximum profits. Accordingly, the TNC views virtually the whole world as its space economy which it can manipulate to its advantage, typically through a hierarchical division of its activities. In the Hymer model, for instance, a three level hierarchy is identified, as

illustrated in figure 1 below.

Figure 1.1 Hymer's Schema of Corporate Control.

Level of Control	Type of Area		
	Major Metropolis e.g New York	Regional Capital e.g Brussels	Periphery eg S. Wales? S.Korea
1. Long Term Strategic Planning	A		
2.Management of Divisions	D	B	
3.Routine Production Work	E	F	C

Source: Hymer (1975)

According to this simple schema, level 1 headquarters and strategic planning functions might be located in a major metropolis, divisional management in a regional capital, while routine production functions might be located in a rather vaguely defined 'periphery' comprised of locations in both developed as well as less developed economies.

The implication of the Hymer model has often been taken to be that peripheral locations will have little control over their economic fates; crucial decisions are taken hundreds or even thousands of miles away. In addition, investments in peripheral locations are often suggested to be highly insecure. The implication here is that plants may relocate to lower cost parts of the periphery. Closely associated

with the Hymer stereotype has also been the notion that production has been feminised and that the decentralisation of production can be associated with the search for 'cheap, docile and dexterous' female labour to undertake routine production work (Massey 1984). More generally, under the influence of Braverman (1974) and apparently supportive empirical studies, it has become conventional wisdom that on balance changes in the capital-labour process necessarily induce a net de-skilling effect as machinery displaces labour in skilled tasks. Although from Braverman's (1974) thesis, it is far from clear whether the term 'deskilling' applies to the skills of individual workers or the whole labour process.

However, many of these largely theoretical propositions have run ahead of the empirical evidence. The largest transnational corporations have by no means forsaken the developed economy. Indeed as Dicken (1986) has suggested the 'DE&F' roles in the Hymer model (Fig 1.1) have remained important. Moreover, the evidence shows that by far the largest proportion of foreign investment undertaken by the trans-national involves mergers, share purchases, reequipping within the established OECD group of countries (Lipietz 1984, Jenkins 1984, Cooke 1986) . In addition, there is some evidence that the existence of limited numbers of TNCs in low wage economies has contributed to wage increases and reduced the strong competitive position as against developed economies as recipient locations. (Dicken 1986)

However, with the move into recession by the 1980s, a number of analysts have noted new pressures on the overall spatial division of labour. To the extent that significant labour forces remain in employment, the increasingly competitive and recessionary environment has meant that a growing numbers of plants have had to restructure their operations and undertake a serious rethinking of traditional work organisation and work practices. As Massey and Meegan (1982) have suggested, firms faced with a severe competitive challenges can rationalise both capacity and employment or intensify labour processes to achieve greater output from the same workforce, or undertake an investment programme aimed at updating technology.

Cooke (1988) has suggested that much of the production rethinking that has taken place has been heavily influenced by the Japanese experience and cites the case of the Ford Motor Company, which refers to its revised management approach as its 'AJ Strategy' (AJ=After Japan). Cooke suggests this refers to the introduction of what are termed 'flexible' or 'postfordist' production organisation; a theme embraced by a growing number of analysts (Cooke 1988, Morris 1988, Milne 1990, Meyer 1986). The actual definition of 'postfordism' is itself flexible and is used to describe both the relationships between firms, as well as the internal organisation. In the former case, the term usually applies to the introduction of 'Kanban' or 'just-in-time' (JIT) production systems which removes the need and cost of holding large components stocks; typically the method relies very heavily on

regular components supply from small firms. In addition, because of the uncertainties associated with the current phase and the high capital cost of developing new products, 'postfordism' has also been associated with an increase in in subcontracting and collaborative projects between firms.

Within the firm, flexibility has been seen to embrace new technologies and work practices. Flexible technologies involve the use of common components and equipment to produce a range of present and future products, thus eliminating the need for expensive retooling to meet particular market demands. Flexible work practices frequently involve a breakdown of traditional job demarcations with workers, some of which might be employed on a temporary or part-time basis, being expected to move between tasks and between product lines. In this respect, flexible work practices have been perceived as an attack on the hard fought status and demarcations of organised labour. (Cooke 1988)

The resulting spatial organisation implicit in these theoretical approaches has been suggested to differ considerably from the Hymer stereotype of decentralised production operations. While the precise spatial outcomes have generally not been resolved, a number of analysts (Cooke 1988, Morris 1990) have begun to hypothesise a pattern of spatial concentration, or reconcentration, of production functions with subcontractor and suppliers in order to maintain

just-in-time relationships. In this respect, as Sayer (1989) has noted, much academic research effort in the 1980s has shifted from the examination of branch plants towards the search for industrial agglomerations. Sayer questions whether it is useful to conceptualise the highly differentiated strategies of transnational on the basis of simple polemical contrasts such as 'fordism' or 'postfordism.' Moreover, given the long wave perspective adopted here, the much stressed 'crisis' of fordism would seem to arise from competitive pressures arising from a failure to sustain a flow of market creating product innovations in the current phase. Quite clearly any major market creating new product innovation may be accompanied by a return to 'fordist' or any other kind of production organisation based on product rather than cost competition.

The importance of these debates relates to the extent that linkages may be made into the local economy. In this respect, the extent to which firms follow the Hymer stereotype; strongly associated with the maintenance of existing, spatially extensive, supply relationships, or the local sourcing that has been associated with 'postfordism' is an important question to be addressed by empirical research.

The Political Context and Local Response.

The picture presented so far is one of the dominance of TNCs in the economic development process which, following Schumpeter's creative destruction thesis, is constantly seeking to rearrange its activities and thus have a determining role in the economic futures of particular localities. However, the problem with explanations such as this is that they suggest a degree of economic fatalism which could be made to fit some present day government thinking; justifying the view that governments can do very little about the recession except to hope that it may stimulate investment or entrepreneurship. However, the exception to this view would seem to be the evidence of Freeman et al. (1982) who suggests that the widespread diffusion of new technologies tends not only to stimulate, but also to require, a general upswing in economic activities. This suggests a link between the Schumpeterian technology-push approach to economic development and a Keynesian perspective which tends to emphasise the importance of aggregate effective demand. It follows that the state can play an important role through it macro-economic policy instruments. Some empirical support for this perspective can be derived from the experience of Japan and in particular the experience of the Ministry of International Trade and Investment. This ministry has followed a very deliberate Schumpeter-inspired long term policy towards the promotion of technical innovation based on a range of incentives and state aid. Although taking a number of forms, most recently policy has taken the form of the 'technopolis' programme

which attempts to develop high technology complexes in peripheral areas via inward investments (Toda 1987, Masser 1990).

However, even in the UK it is suggested that the importance of political and policy involvement towards TNCs should not be underestimated. It has been political decisions, with regard to trade and industry policies, which have allowed international production to go ahead. Moreover, nation states can still create major discontinuities in the flows of economic activities through the extensive kit of tools relating to industry and investment policies. In the late 1960s for instance, a key element of UK policy was the encouragement of mergers in sectors such as motor vehicles and electronics - through the Industrial Reorganisation Corporation. Other European Countries, particularly France under the Mitterrand government, have chosen a strategy of technological independence and resisted much inward investment and have instead invested in certain high technology sectors. In West Germany, for instance, the government has intervened to stimulate technological development in key sectors. In contrast, the UK has adopted a largely inconsistent policy with government involvement being primarily macro-economic and the creation of an amenable and unrestricted 'business climate'. A brief attempt in the 1960s was made to operate a national plan. The attempt was short-lived, largely because of external pressures on the countries balance of payments and a currency crisis. (Dicken 1986)

A consistent strand of UK industry policy has been its spatial dimension; particularly through the mixture of controls and incentives provided by central government regional policy. However, with the retreat of regional policy in the 1980s, and widening spatial inequalities, it may also be argued that the recession-depression phase has provided the basis for local mobilisation of policy efforts by local authorities. As a result, the period since the mid 1970s has witnessed increasingly aggressive marketing efforts, by local authorities, frequently based on whatever is idiosyncratic or unique about a particular locality, which is then packaged and sold to the outside world of mobile investors. (Cooke 1989). Empirical evidence tends to suggest that prevailing levels of unemployment have been an important factor underlying levels of policy activity. (Chandler and Lawless 1985). Often the strategies adopted link closely with the Schumpeterian perspective outlined above. As Saxenian has suggested, strategies based on raising the technological profile have become "the economic development strategy of the 1980s.....the only economic development strategy in town" (Saxenian 1985 p121, quoted in Hall 1988).

The Meaning of Local Economic Development

As the above analysis has suggested, there are many factors which influence spatial change and development, the major factors being plant location, technology, strength of linkages, industrial

organisation and finally the direct and indirect effects of government policy. The complexity of the process means that currently no single theory adequately explains regional or local economic development. Most models of development adopted by policy makers have been based on attraction models. The basic economic theory which underlies attraction is that a locality can alter its market position with industrialists by offering incentives and subsidies. (Blakely 1989)

Traditional theories can however, still provide some limited insights. Economic base theory for instance, makes an important distinction between two types of activity in the local economy. Basic activities which export goods and services to firms and individuals outside the locality; and non-basic activities which provide goods and services for local consumption. Adherents of economic base theory postulate that the determinants of local economic growth is directly related to the demand for goods and services from other areas. In essence, the growth of industries that use local resources, including labour and materials for final export elsewhere, will generate both local wealth and jobs. In practical terms it has clearly proved very difficult to separate basic and non basic activity; often manufacturing industry has been assumed to be the basic sector (Glasson 1978 Fothergill and Gudgin 1982). However, the service sector may take this role to the extent to which it provides services to purchasers outside the local area. Clearly differences in definition will provide wildly different results. The practical policy conclusions which follow from this

approach is that some account must be taken of the linkage patterns in the local economy; in particular concerning the export and import capacity of the region. (Balchin and Bull 1987)

Given the increasing dominance of TNCs in the global economy, it is suggested that local areas have increasingly been unable to ignore the powerful role played by the TNC, particularly in terms of their dominant role in technology transfer and the creation of newer industrial sectors. The actual level of development in a particular area may increasingly be determined by where those areas stand in relation to the overall hierarchical structures of production. Moreover, as Cooke (1987) has suggested the actual changes in production structures themselves may be kaleidoscopic and impact differently in regions and localities. In this respect, it is clearly no longer realistic to talk simplistically in terms of 'cores' or 'peripheries', nor may it be possible to talk in terms of a single 'branch plant' stereotype. Incoming sectors may also require locational conditions very different from traditional sectors or even 10-20 years ago (Fothergill et al. 1986). A semi-rural setting may be though essential for a research laboratory or even a product facility. These considerations are clearly important to the forward planning and economic development function at the local level.

Conclusion

This chapter has examined the wider processes of restructuring and the responses to them by adopting a theoretical perspective based around Kondratieff long waves. This is considered to be a useful approach in that it provides a long run historical perspective in which to understand the motives for transnational production as well as the role of new opportunities for investment, profits, growth and employment arising from new technologies.

Focussing particularly on the experience of the fourth Kondratieff wave, this chapter has noted the increased complexity of the global pattern of production and trade. This has involved substantial changes in the relative positions of the old established core economies and the spectacular emergence of Japan as a leading industrial nation. While at the inter-regional scale the decline of particular areas can be related to their overall position in the emerging spatial division of labour.

While the major actors in this process have undoubtedly been the trans-national corporations, it is also suggested that these organisations have themselves constantly had to change course and adjust their economic strategies with the move into the recession-depression phase.

In policy terms, it has been noted that economic development issues

have increasingly sought to address themselves to a more integrated and competitive global economy. This has been through the attraction of inward investments and the promotion of high technology. In this respect, it is suggested that evaluation of these policies should be placed in the broader debate about the role and implications of TNCs and technological change in regional development. In terms of the research to be conducted here, it is suggested that these debates pose a number of questions which need to be borne in mind when considering TNCs and economic development. These are set out below.

1. What sort of growth has really occurred in SE Wales behind much of much of the hype surrounding the attraction of inward investment?

2. In what respects can regions or nation states influence the activities of the TNC? If as has been suggested regional development is becoming more and more governed by international forces, then how does it weaken the thrust of nationally or locally based policies?

3. Is it the case that all regions might benefit from inward investment strategies or is it the Schumpeterian case that structural economic disequilibrium is built into the capitalist economy?

4. How have TNCs contributed to raising the technological profile of a peripheral region and how central have the new technologies been for economic recovery in the region?

5. Do inward investments with an emphasis on process technologies in the recession-depression phase of the fourth long wave represent 'jobless growth'. In addition, what have been the costs on labour of the introduction of new process technologies?

6. What has been the overall effect of TNCs on the local economy? Can TNCs offer long term positive benefits or are they to be associated with the insecure branch plant stereotype?

7. Finally, what form should economic development policies towards TNCs take ?

Research Design

Having established a framework for the analysis of economic change and identified a number of issues to be addressed, this section turns to the question of establishing a research methodology within which to to locate subsequent empirical investigations. At the outset it is clear from the previous analysis that policy measures may only be one of a number of influences on TNC behaviour; foremost amongst which are cost and market considerations as well as the direct and indirect effects of national policy. In this respect, techniques of evaluation relying on statistical correlations between policy inputs and outcomes seems highly problematic. Moreover, the long wave theoretical perspective serves to remind that that rather than simply trying to extrapolate the experience of recent years, it may make more sense to try to understand the behaviour of the economic system and within it the responses of TNCs to policy initiatives.

Given the issues identified in the previous section, the extent that TNCs may create a net benefit to the local economy depends upon a package of qualities; financial, technological and managerial and thus the precise benefits are extremely difficult to quantify. This problem is compounded by the 'counterfactual problem' of establishing a realistic alternative against which to measure impact. Moreover, the problem is multidimensional. One set of factors relates to the

location decision, while another concerns the TNCs subsequent behaviour.

The research approach adopted here is to explore processes; how policies are seen to affect decisions and produce impacts. Clearly such an approach puts much reliance on informed value judgments rather than statistical rigour or 'quantitative evaluation' of policy measures and their cost effectiveness. As Willmott (1975) has suggested, 'in the real world in which most action research operates, a detailed description of the processes is as important as the often illusory search for statistical rigour,' hence what is needed is 'as careful a balance as is possible between precise measurement and more qualitative case history.'

In particular, what is needed is a methodology that can move between the theoretical analysis of global change, and the responses of TNCs in the study area. This may be achieved by extensive analysis of overall economic change, together with more intensive analysis of the processes of change. The actual research undertaken is listed below.

Extensive analysis

1.Analysis of Economic Change.

Analysis undertaken here was primarily based upon the reprocessing of a number of secondary data sources. Information on inward

investment projects was supplied by the Welsh Office, the WDA and Local authorities and taken from other research in this area, e.g Jones (1988), although to an extent this information has proved to be highly disparate and far from ideal.

The primary information available on the overall restructuring process relates to employment change, as very little information on investment or output was available. Employment information was gained from the Census of Employment between the years 1971-1987 via the National Online Manpower Information Service based at Durham University. This analysis focussed on employment rather than unemployment changes, the latter being particularly problematic with regard to changes in calculation and area definitions and no meaningful results could be gained from the figures that were available. With regard to employment data, changes in area, standard industrial classifications (1968 & 1980) and sample size meant that data had to be examined in two separate time periods; 1971-81 and 1981-87. Lamentably confidentiality restrictions relating to the Statistics of Trade Act (1947) mean that results cannot be disclosed for certain sectors and levels of disaggregation, although these were available to me and have formed part of the overall analysis. The statistics as presented in this study largely reflect these confidentiality restrictions.

The study sought to discern the local effects of employment change and in this respect, shift-share analysis has been used to provide some insights into the performance of the local economy relative to the national economies taken as Great Britain. However, it is fully recognised that the shift-share technique is only a standardisation procedure and not a theory of economic development. In this respect, its main purpose is to serve to raise questions for the more detailed intensive survey based inquiry concerning why the particular pattern of development has emerged.

Policy Research

Information was collected on the policy environment via a comprehensive review of policy documents, as well as via a significant number of face-to-face interviews as listed in appendix 3 of this study. The major aim of this research was to establish the major policies being pursued, their evolution, objectives, methods of implementation and the resources involved. Particular emphasis was placed upon identifying the resources devoted to particular policy initiatives and how far the pattern of resource expenditure might be said to constitute a consistent economic development strategy behind much of the rhetoric with which policies are presented. In practice, this proved to be a highly difficult task; apparently, how regional policy incentives are allocated amongst sectors is of no concern to the Department of Trade and Industry or Welsh Office. In this respect,

the study relies on some attempts at analysing published payments to firms by this author as well as some secondary analysis e.g Johnes (1989).

Intensive Analysis. - TNC Surveys

A particular emphasis of this study was to examine the responses of actual firms in the study area to policy and other location factors by means of a survey of TNCs operating in the study area. This was designed to provide a means of identifying the links between policy inputs, other location factors and the changed statistical indicators identified in the extensive analysis above. This survey took the form of a postal questionnaire and a limited number of face to face interviews.

The Questionnaire Survey.

A postal questionnaire was used to establish an overall picture of firms responses to policy and non-policy location factors, as well as to collect empirical material on the nature of plants operating in the study area. A copy of this questionnaire is contained in appendix 2 of this study. In the first section, firms were asked to rate the influence of a number of policy and non-policy factors on a five point scale from 'none' to 'extremely' influential passing through 'some' 'moderately' and 'very'. The results from this analysis were subsequently summed across factors to give an overall ranking. Comprehensive statistical analyses of associations of these factors,

between these factors and with plant characteristics was undertaken, although the results were almost entirely inconclusive and statistically insignificant. However, it is believed that considerable insights have been gained from treating factors in isolation.

The sampling frame for this survey was constructed from information supplied by the Welsh Development Agency, the Welsh Office and various industrial directories. The resulting list of TNCs is believed to be a near 100% complete list of TNCs in the study area and as such formed a particularly useful information source. A copy of the sampling frame is contained in appendix 1. Initially 25 questionnaires were sent out, with and without stamped addressed envelopes. Response rates did not vary between these samples and hence the remaining questionnaires, without stamped addressed envelopes, were sent out to the remaining 125 firms. Of these 81 were returned, giving a response rate of 54% which seems to be good for this kind of study. Approximately 15 of these questionnaires were secured after subsequent telephone calls. No real response bias was detectable, although as a rather unscientific comment on plant efficiency the Japanese plants were amongst the earliest repliers!

Face to Face Surveys

Initially an attempt was made to stratify respondents in this survey according to sector and country of origin. In practice however, many

firms proved to be unwilling to give me an interview. The secrecy of a large number of TNCs, particularly with regard to future development strategy (which may not be known at plant level) would seem to a particular feature of plants. However, with a great deal of persistence, an interesting range of firms were interviewed; broadly reflecting particular research questions which arose out of theoretical issues and from questionnaire survey responses. These interviews were largely unstructured and the content varied considerably; particularly as interviews occurred at various times in the project research, both before and after I had developed any firm notions about theories of locations. As a result, questions at the early stage were generally more open ended, whereas by the later interviews questions tended to be more direct and aimed at specific issues especially in the case of Sony and Panasonic. Broadly speaking these interviews were concerned with reasons for location, effect of policy initiatives, the effect of other central government policy areas, the level of corporate structure and production organisation. Many plants were also willing to provide some information over the telephone, while others were willing to provide further postal information e.g company report or in two cases press releases. Significant information about firms was also gained by some follow up interviews with policy-makers. This proved particularly useful in the Bosch case. A comprehensive list of those contacted is provided in appendix 3.

Posing the research in this order clearly makes it all seem very tidy - after the event. The actual reality was of course a good deal messier than that. The study had a good share of definitional headaches and grappling with data, not least trying to get round the confidentiality restrictions associated with the use of census of employment data and still provide meaningful analysis. Having focussed the research on outcomes and on firm responses, it is not difficult to see why so many policy researchers have concentrated there efforts so heavily within the cosy environment of the policy agencies, the computer screen or even the armchair. However, at the same time, the help I received abundant help from many of the firms and agencies interviewed and the experience though immensely time consuming has been immensely worthwhile.

Chapter 2

Economic Change in the South-East Wales study area.

The experience of recent economic change has been far from uniform amongst either the advanced industrial economies or particular industrial regions, a point to be borne firmly in mind against attempts to employ long waves to post war economic development. While as been suggested, there was a tendency for the capitalist system as a whole to enter an apparent downswing from the early 1970s, it is also suggested that experience of the South Wales economy has been particularly extreme and may be related to the final demise of traditional sectors from previous waves of development.

This chapter provides an overview of this process of 'creative destruction' and in particular examines how the incoming TNC sector has begun to compensate for the job losses in older sectors. In conducting this analysis, the chapter provides a basis for examining the effectiveness of policy, as well as more qualitative aspects of change in later chapters. The chapter firstly identifies the historical context of economic change in South-East Wales. This is followed by a comprehensive analysis of local employment change 1971-87 and also some examination of the components of employment change in the latter part of this period. The chapter concludes that South-East Wales has proved to be remarkably successful in attracting inward

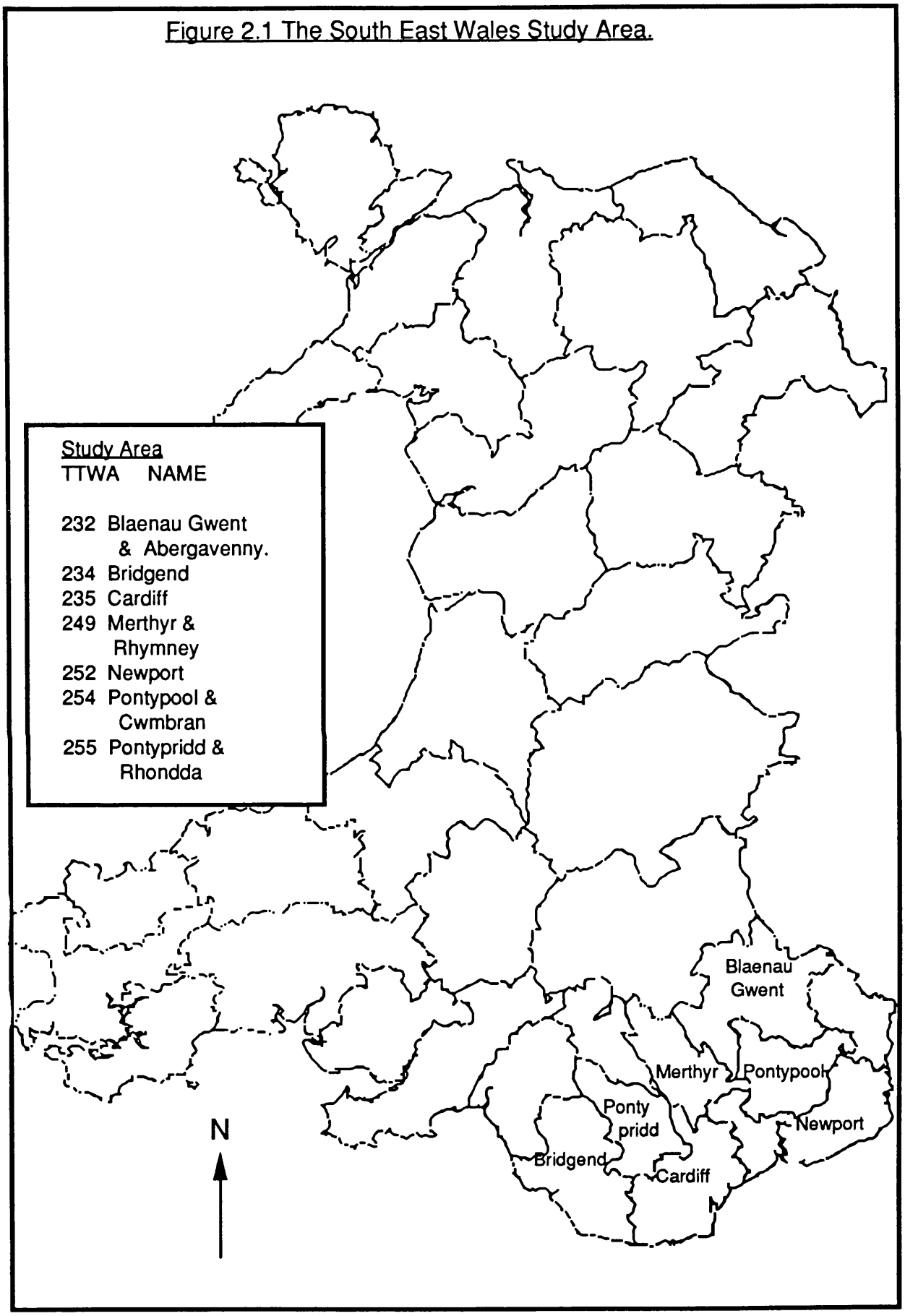
investment and that this has been partially instrumental in offsetting employment decline in longer established sectors.

The SE Wales Sub-region

The study area has been defined with respect to labour market relationships, statistical availability and the application of regional policy. The building blocks for this definition are based upon the Department of Employment defined 'Travel to Work Areas' (TTWAs). Travel to work areas are approximations to self contained labour markets reflecting the daily work pattern of inhabitants and are defined on a consistent basis, based on the aggregation of wards or job centre areas. TTWAs also represent the spatial units of assisted areas under regional policy.

Analyses of employment change are crucially affected by the prior selection of statistics and the areas in which they are drawn. The figures used here were drawn from the 1980 and 1968 standard industrial classification (SIC) and correspond mainly to statistical availability. The seven TTWAs used for this study are treated in aggregate. It is suggested that this forms a meaningful study area as each shows broadly similar trends and none can be seen to have distorting effects. Most analysis was undertaken at the level of individual TTWAs and no significant differences between TTWAs were found.

Figure 2.1 The South East Wales Study Area.



Historical Context

In terms of restructuring, Wales is a particularly extreme case. The basis for its original industrialisation was coal mining, iron making and later steel making. Following a long wave analysis, these sectors might be seen as classic technology systems of the first and second Kondratieff waves. In 1913, the peak year of coal production, Cardiff was the largest coal exporting port in the world, while some two-thirds of the working population of South Wales were engaged in coal and steel production. Over-dependence on these narrow range of industries was already felt by the third Kondratieff wave, emerging in the 1920s, when a worldwide fall in demand for South Wales narrow range of output resulted in widespread economic depression and high unemployment reaching some 50% in some mining areas.

With increasing demand for steel during World War two, and the immediate reconstruction period that followed, the industrial structure was given a degree of reprieve. In addition, the industrial structure was cushioned by the state ownership of the coal and steel industry, a factor which earned South Wales the epithet of a 'Nationalised Region' (Cooke 1987), although this factor was eventually to prove to be a burden with the failure to modernise the steel industry. In relative terms, the state's role was reinforced by the introduction of regional policy from the late 1940s to alleviate the process of decline and create a more diversified industrial

structure. However, with the transition into recession in the economy nationally and the wholesale collapse of manufacturing from the late 1970s, the South Wales economy was hit particularly hard in terms of rising unemployment. By the 1970s, increasing reliance on employment fell directly upon the public sector, particularly following the formation of Cardiff as administrative capital of Wales in the 1970s.

However, regional specialisation in the leading industries of earlier expansionary waves not only meant vulnerability to structural decline, but also inhibited diversification into new sectors and can be described as locating South Wales firmly in the 'old international division of labour' (Frobel et al 1980). This role has clearly been instrumental in producing a relatively homogeneous social structure, described by Rees and Cooke (1984) as the nearest approximation to a single 'working class' region in Britain and with it a traditionally 'labourist' culture of unionism and demarcation. These factors have also contributed to a far from passive reaction to the coal and steel closures. In addition, as Morgan (1986) has suggested, the legacy of this former specialised role, along with external control and shift work has created a socio-economic structure profoundly unconducive to new firm formation as well as to capitalist entrepreneurship itself. The rationalisation and restructuring of employment opportunities during this period has also been instrumental in the fact that Wales has consistently offered the lowest wage rates of any

British region (Regional Trends 1988).

The Economy in Transition: Employment Change in the 1970s.

The 1970s witnessed a major structural transformation of the local economy with an accelerated rundown of the coal and steel industry as well as job losses in newer manufacturing sectors, as the national economy moved from depression into recession. Some evidence of the form that this restructuring process has taken, in terms of employment change, is provided in figure 2.2 based on Census of Employment data. Shift-share analysis has also been undertaken, by this author, to gain further insights into the performance of the local economy relative to the national economy.

The shift-share technique disaggregates employment change into different elements. The *national* change may be defined as that change in employment which would have occurred in the region if employment had changed at the same rate as total employment in the nation as a whole. The *structural* change may be defined as that change in employment that would have occurred in a region if each industry had changed its employment at the same rate as that industry nationally, minus the national component. The structural component thus measures the favourability of a region's employment structure, a positive structural component signifying a favourable mix of industries. The national and structural components sum to the 'expected' employment change. The third *differential* change

represents the difference between the expected employment change and the actual change. Differential components reflect influences peculiar to the industry or the region.

Figure 2.2 Employment Change SE Wales based on 'Shift-Share' analysis 1971-81

SIC 1968	Absolute % change 1971-81	National Component	Structural Component	%	Differential Component	%
Agriculture, Forestry	-16.6	-96	-605	-16	+68	+2
Mining and Quarrying	-29.8	-820	-3973	-12	-4902	-15
Food ,Drink,Tobacco	-17.9	-308	-1527	-13	-356	-3
Coal and Petroleum products	+6.6	-40	-328	-15	+382	+24
Chemicals and Allied Ind.	+6.4	-255	-807	-8	+1706	+17
Metal Manufacture	-56.6	-1054	-16863	-40	-5714	-13
Mechanical Engineering	-16.8	-427	-3239	-19	+820	+5
Instrument Engineering	+36.7	-27	-164	-15	+586	+54
Electrical Engineering	+4.5	-425	-2168	-13	+3344	+20
Shipbuilding and Marine Eng.	-29.0	-21	-178	-21	-47	-6
Vehicles	-7.9	-334	-2965	-22	+2251	+17
Metal Goods N.E.S	-35.4	-296	-2805	-24	-1061	-9
Textiles	-50.6	-203	-3395	-42	-473	-6
Leather and Fur	-11.4	-10	-116	-29	+81	+21
Clothing and Footwear	-45.1	-232	-3165	-35	-745	-8
Bricks Pottery Glass Cem.	-40.0	-132	-1410	-27	-546	-11
Timber Furniture etc	-8.3	-109	-723	-17	+473	+11
Paper Printing and Pub.	-12.7	-212	-1074	-13	+221	+3
Other Manufacturing	-23.9	-212	-1777	-21	-22	+1
Total Manufacturing.	-27	-4926	-37127	-22	-4587	-3
Construction	-9.0	-753	-1658	-6	-278	-1
Gas,Electricity and Water	-6.9	-257	-593	-6	+151	+2
Transport and Comms	-19.1	-875	-2108	-6	-3641	-11
Distributive Trades	-2.9	-1230	+3692	+8	-3874	-8
Insurance Banking and Fin.	+32.8	-333	+4934	+37	-276	-2
Professional and Scientific	+25.3	-1760	+19886	+29	-469	-1
Miscellaneous Services	+37.1	-917	+12194	+34	+2207	+6
Public Administration a	-8.9	-1002	-998	-3	-1536	-3
Total all Industries	-7.2	-12339	-11841	-2	-11237	-2

Source: National Online Manpower Information Service (NOMIS). Shift-share analysis based on authors own calculation using Great Britain (TTWAs 1-322) as benchmark.

These figures tend to suggest that within traditional sectors, such as coal and steel, conditions have deteriorated rapidly with especially severe and serious consequences for South-East Wales. In absolute terms, between 1971 and 1981 total employment in the whole of the study area fell by 7.2%. Moreover, the strongest impact of this fall was felt in manufacturing recording a 27% decline and extractive industries collectively recording a 28% decline. This decline has largely been concentrated in traditional heavy manufacturing sectors reflecting the long term problems of lack of competitiveness and competition compounded by falling demand in conditions of recession.

The shift-share analysis reveals that the overall negative differential shift was actually worse than might be expected. Indeed the figures reveal the severe structural disadvantages faced by the region with exclusively negative structural and national components in the primary and manufacturing sectors. In particular, the figures provide evidence of the continuing decline of sectors such as mining and metal manufacture. They also tend to suggest that the service sector, although experiencing some absolute and relative growth in sectors such as insurance, banking and finance and professional and scientific services, has not grown as fast as national trends and certainly has not been able to compensate for manufacturing job losses.

However, offsetting these general trends of employment decline, some sectors such as instrument engineering, electrical engineering,

chemicals and allied products have experienced absolute job growth. In addition, most of these sectors, as well as others such as motor vehicles, have also recorded positive differential shifts suggesting that employment change in these sectors has been better than expected given national trends in these sectors.

Analysis of Components of Employment Change.

While suitable data is unavailable to provide a full components of change analysis, some evidence is available on the pattern of inward investments over this period. In this respect, the general absence of indigenous firms in sectors such as electronics, motor vehicles, chemicals etc. means that it is not unreasonable to suggest that employment changes can be strongly related to production inward investments in newer manufacturing sectors and disinvestments in the older heavy ones. For instance, employment growth in chemicals and electrical engineering and the better than expected performance of motor vehicles can be seen as a reflection of large scale inward investment, particularly by foreign capital. Thus positive employment growth can be related to the relative success of Wales in attracting a growing proportion of all inward investment to the UK.

Evidence to support this view is derived from a number of sources. A comprehensive list of TNC plants by sector is provided in appendix 1, while information on the scale of this investment is presented in figures 2.2 - 2.5 showing the Welsh share of British inward foreign

investment, the sources and location of inward investment the contribution of these investments to overall manufacturing employment respectively, as well as some information on the profitability and performance of some of these sectors.

Figure 2.3 Wales Share of Inward Foreign Direct Investment 1979-88

Year	No of Projects	Jobs	Wales Share of Inward Investment in Britain
1979	18	854	6.0%
1980	16	3323	17.9%
1981	20	1986	12.1%
1982	17	901	8.6%
1983	31	4029	13.6%
1984	42	8973	14.6%
1985	45	3766	9.4%
1986	49	4596	14.5%
1987	57	4831	19.9%
1988	56	8062	22.0%

Sources 1979-87, Welsh Office, Welsh Affairs Committee.

Figure 2.4 Total Inward Capital Investment 1.4.83 - 31.10.88

	N.America	Europe	Far East	UK	Total
Clwyd	98.5	284.4	62.2	28.8	437.9
Dyfed	46.5	20.9	-	8.8	76.2
Gwent	72.1	60.7	32.4	81.4	246.6
Gwyned	30.1	1.8	-	3.7	35.6
Mid Glamorgan	87.8	27.3	70.3	21.4	206.8
Powys	0.5	-	-	38.9	39.4
S. Glamorgan	797.8	14.5	21.9	38.9	873.1
W. Glamorgan	60.3	11.9	11.0	4.6	87.8
Total	1193.6	421.5	197.6	187.8	2000.5

Source: Jones 1988

Figure 2.5: Employment in Foreign-Owned Companies in Wales

Year	Employment (OOOs)	% of all manufacturing in Wales
1979	53.2	17.5
1981	45.4	19.3
1983	40.3	19.4
1985	42.0	20.5
1986	44.3	22.1
1987	45.0	22.5
1988	54.7	24.9

Source: Western Mail and Echo 14.3.88 derived from Welsh Office Figures

Figure 2.6 Output and Export Performance 1984-86

Five Leading Welsh Sectors Performance 1984-86

Sector	Turnover 1986 £m	Overall Profits growth 84-86	Export Ratio 1984	1985	1986
Industrial and Commercial.	903	33.4	14.1	13.8	9.6
Metals	856	62.9	25.1	28.3	25.2
Retail	814	36.3	0.0	0.0	0.0
Food,Drink man.	411	27.2	0.2	0.1	0.1
Electronics	345	25.0	30.8	34.4	34.6

Source ICC Database, ICC Information Group 1988.

While mostly these figures relate to Wales as a whole, there are good reasons to suggest that the study area of SE Wales has been a particular beneficiary of investment. Taking the study area as roughly approximate to the counties of Mid and South Glamorgan and Gwent, it may be suggested from figure 2.4 that this area has received 66% of inward investment between 1983 and 1988; equivalent to £1.3bn.

Overall these figures tend to suggest that Wales has been remarkably successful in attracting TNC inward investment. Figure 2.3 for instance, presents a picture of a rising level of inward direct investment between 1979 and 1988, with investment reaching 22% of all British inward investment by 1988, although admittedly the

pattern from year to year has been patchy. In addition, it can be noted in passing that absolute foreign investment to the UK was rising over this period from £13.6bn in 1976 to £46bn by 1988 (British Business 1988). Figure 2.3 also points to the numbers of jobs created, reaching over 8000 a year by 1988.

Appendix 1 provides some information on the sectoral composition of inward investments and suggests that these investments have been concentrated in the dominant sectors of the fourth Kondratieff wave such as electronics, chemicals and motor vehicles as well as sectors such as instrument and mechanical engineering.

Figure 2.4 provides some information on the sources of investment. The sources of this investment reflect more global trends in the foreign direct investment environment (Dicken 1986). Foreign investment has increasingly outstripped UK investment reflecting the increasing integration of the SE Wales economy into the more global economy. While the United States has remained the dominant source of inward investment, this position has been increasingly challenged by European and Far Eastern sources. Indeed Japanese investment has been particularly significant.

Figure 2.5 provides further employment information on foreign owned companies in Wales. Here it is notable that the foreign sector has accounted for a growing proportion of all manufacturing over the

period 1979-1988. Although the fact that this has occurred more as a result of overall manufacturing employment decline than through growth may provide some support for the 'jobless growth' scenario.

Finally, figure 2.6 looks at the output and export performance of some leading sectors. Here it is notable that sectors such as electrical engineering have performed well in terms of profitability and output.

Depression and Recovery? Employment Change in the 1980s.

The effects of inward investment on employment were however particularly discernible by the 1980s. A shift-share analysis has been performed on employment change and is presented in figure 2.6. Here a modest improvement in the South-East Wales economy is clearly discernible. The context of continued national depression and 'deindustrialisation' over this period is demonstrated, as in the 1971-81 period, by almost exclusively negative national components in the primary and secondary sectors. Equally, the continued structural disadvantages faced by the economy are reveal by negative structural components.

Figure 2.7 Shift-Share Analysis Employment Change SE Wales 1981-7

SIC 1980 Category	%Change 1981-1987	National Component	Structural Component	%	Differential Component	%
1 Agriculture Forestry Fish.	-14	-6	-406	-11.3	-93	-2.6
2-6Energy Water Supply indust	-49.6	-56	-9514	-28	-7291	-21.5
7-9Extractive Industries	-24.9	-52	-7479	-24.0	-227	-0.7
10 Chemical Industry	-22.4	-13	-957	-12	-817	-10.2
11 Product MM fibres	*	*	*	*	*	*
12 Manuf Metal goods	25.6	-11	-1290	-20.4	2924	46.2
13 Mechanical Engineering.	-26.4	-28	-2800	-16.4	-1696	-9.9
14 Manufacture office equip	*	*	*	*	*	*
15 Electrical Engineering.	6.6	-30	-2666	-15	3878	21.8
16 Motor Vehicles	-21.4	-16	-2332	-24	275	2.8
17 Shipbuilding &repairing	*	*	*	*	*	*
18 Aerospace & transport	*	*	*	*	*	*
19 Instrument Engineering.	3.9	-2	-96	-7.6	147	11.7
20. Food Drink etc	3.7	-17	-1707	-16.3	2116	20.2
21 Textiles	2.7	-3	-312	-15.9	367	18.7
22 Leather Footwear etc	15.6	-10	-315	-5.3	1246	21.1
23 Timber and furniture	54.2	-7	324	7.7	1960	46.6
24.Paper Printing	1.9	-14	-547	-6.3	727	8.4
25 Other manufacturing	12.6	-13	-87	-1.1	1065	13.9
ALL MANUFACTURING	-4.5	-207	-22950	-5	17501	3.8
26 Construction	-10.2	-42	-2020	-7.9	-548	-2.1
27-30Distr. hotels catering	4.2	-123	2881	3.9	332	0.4
31-32Transport and Commun.	-16.1	-46	-2290	-8.2	-2163	-7.8
33.Insurance Banking &bus	20.6	-45	9148	33.6	-3499	-12.8
34-36Other Services	13	-237	15389	10.8	3355	2.4
Total all Industries	-0.7	-766	-14579	-3.2	12014	2.6

Note. Some reclassification of industrial sectors and the exclusion of certain small sectors, denoted by * has been necessary because of confidentiality restrictions. These figures however have been included in the 'ALL MANUFACTURING' sector.

Source: Census of Employment, NOMIS. Shift-share analysis based on author's own calculations benchmark taken as Great Britain (TTWAs 1-322).

However, in manufacturing at least, Wales' performance has been better than expected with an overall positive differential component significantly accounting for some 17,000 or so more jobs. Looked at by sector, this generally more favourable position can be attributed to faster than expected employment growth in a number of sectors such as electrical engineering, the manufacture of metal goods, food drink and tobacco, and timber and furniture. Notably electrical engineering is now the largest single manufacturing sector, as defined by SIC (1980) categories, accounting for some 21,500 jobs.

Notably however, some of the incoming sectors have not performed as well as 'expected.' These declining sectors include some traditional sectors such as mechanical engineering, as well as some 'modern' sectors such as chemicals and allied engineering. In part it is suggested that these losses may reflect some of the long standing inward investments, particularly in port related chemicals, and increasingly restructuring and rationalising their operations. In service sector however, it is suggested that the region has largely failed participate fully in the national expansion particularly of private producer services. Here the shift share analysis demonstrates that while expanding in absolute terms, the insurance banking and business service sector has actually contributed to over 3000 fewer jobs than actually expected, given national trends and the local employment structure.

In summary, it is suggested that over the period 1981-87 there has been some improvement in the performance of the SE Wales economy with some manufacturing sectors, associated with newer inward investments, particularly electronics and the manufacture of metal goods, and that these have contributed to overall employment growth.

Conclusion

This chapter has provided an outline of restructuring process in South-East Wales through the recession-depression phases of the 1970s and 1980s. Over this period it is suggested that two overlapping trends have dominated the process of change. The first of these has been the final decline of the coal and steel sectors, while the second has been the increasing importance of TNC investments. As such, Wales has proved to be remarkably successful as a location for inward investments, having attracted a rising share, reaching 22% of all inward investment to Britain in 1988.

The composition of these inward investments largely reflects more general trends in the international investment environment, with an early dominance of United States TNCs increasingly being diminished by the presence of a remarkable concentration of direct investment from Japan, as well as increasingly from European sources. In sectoral terms, these transnational corporations have been concentrated in sectors dominant in the fourth Kondratieff wave such as electronics, chemicals, motor vehicles, food drink and tobacco etc., as well as some traditional and related sectors such as the

manufacture of metal goods. Overall the effect on employment of the arrival of these sectors has been to offset much of the decline of manufacturing in other sectors, although notably the chemical sector has experienced employment decline. In output terms, based on the limited empirical evidence available, it has been noted that many of the sectors experiencing employment growth have also experienced generally rapid output growth, frequently at a faster rate than employment growth providing some support for the 'jobless growth' hypothesis.

Chapter 3.

The Economic Development Policy Environment.

The move into depression and recession in the 1970s and 1980s has prompted a renewed interest in economic development policy initiatives. In this respect, although regional policy has continued to be the most significant area of explicit policy involvement in resource terms, new agencies such as the Welsh Development Agency have also emerged and there has been increased interest by local authorities, although the latter has been heavily constrained in this role by central government.

Of particular interest to this study concerns where policy has stood in relation to the increasingly integrated and transnational global economy and the changes associated with these in the current phase. For instance, as the fourth Wave has progressed, particular questions have been raised as to whether public subsidies should be used to preserve the old industrial structure or whether they should try to follow a more Schumpeterian inspired strategy in attempting to attract newer more innovative sectors. In addition, it is clear that policy has attempted to gain a foothold on more global processes of change through the promotion of particular nations and regions at the international scale.

This chapter critically reviews the policy inputs that have been

operating in the SE Wales study area since the early 1970s, focusing on policies likely to affect the development of the transnational sector. Given the increasingly global nature of these activities, it is necessary to consider the general policy context in terms of trade and industry policies as well as the implicit, spatially differentiated, policy effects of other forms of government activity. Overall these accounts seek briefly to establish the basic mechanisms of policy and consider the changing objectives of policies in relation to the favoured long-wave perspective.

Industry, Foreign Investment and Trade Policies: an overview.

National Governments potentially have at their disposal an extensive kit of tools with which to influence industry either within their own boundaries or outside, and to help in shaping the composition and flow of trade and investment at the international scale. These policies may take the form of trade policies and direct industry policies. They may be implemented as part of a deliberate, cohesive, all embracing economic strategy or alternatively individual policies may be implemented in a broadly reactive, ad hoc fashion with little attempt at co-ordination. At the outset it is suggested that the latter scenario has characterised policy for much of the 1970s and 1980s.

At the European and International level, the major explicit policy initiative towards the TNC has taken the form of drives to attract internationally mobile investment. The major recruiting agency in

this respect is the Invest in Britain Bureau (IBB). The IBB emerged in 1977 from the then existing activities of the the Department of Trade and Industry and the Foreign Office. The IBBs primary task is to increase awareness of Britain as a potential investment location through seminars and presentations usually within British Embassies, High Commissions or Consulates. However, the IBBs role remains at the level of recruitment and it is not involved in negotiations concerning financial packages or in detailed site selection processes. Although, in the UK it works closely with the Welsh Office and Welsh Development Agencies as well as the other Development Agencies such as those in Scotland and Northern Ireland.

This role is implicitly supported by the openness and encouragement to inward investors contained in much UK competition and trade policy. In theory, at least, the UK has a number of mechanisms which it might use to regulate transnational activities; most particularly through the anti-trust legislation implemented through the Department of Trade and Industry (DTI) and the Monopolies and Mergers Commission (MMC). However, as Utton (1982) has noted, the scope of this legislation has proved to be highly conservative in practice, with the emphasis on the largest takeovers, involving what are seen as excesses of market power and relating these to narrow efficiency criteria. Equally, the Inland Revenue and other institutional barriers, have been identified as relatively liberal. In European terms Britain has the lowest corporate tax rate. Moreover, a growing number

of analysts have suggested that Britain, along with Ireland, offers the most liberal inward investment in the European Community (EC). For instance, a recent study for Shell (UK) concludes that Britain and Ireland have the least restrictions and and most welcoming conditions for inward investment in Europe. While a recent study for the DTi notes that 75% of EC takeovers occur in Britain and concludes that this reflects the openness of UK capital markets (Coopers and Lybrand 1989 quoted in Sunday Times 3-12-89). Moreover, at the broader political level, as both Dicken (1986) and Cowling (1986) have noted, all UK Governments, irrespective of political persuasion, have apparently held the same view of the 'national' interest in voting within the United Nations agencies in favour of exempting the transnational from close regulation. By comparison, many other European countries, such as France, have generally resisted inward investments particularly from outside the EC, in favour of indigenous or state developments in high technology sectors.

Trade Policies may also have an effect in terms of the discontinuity in world markets which they create. In particular, the formation of the European Community and the imposition of common external tariffs and quotas can be seen as restricting the ability of producers external to the EC to supply member countries. In this respect, a number of analysts have suggested that this discontinuity has been a major policy incentive for foreign direct investment within the EC (Young 1984)

Explicit Spatial Development Policies.

Explicit development Policies are those policies which are directly intended to encourage or restrain spatial economic development. Wales has had a long history of government aid under successive regional and urban programmes and is under the influence of a specialist development agency, various local authority initiatives, as well as being eligible for some European Community funding.

Overall explicit policies have increasingly had to operate in a highly competitive environment and in this respect the stress has been upon providing a package of benefits so that there has been a high degree of overlap between the individual policy agencies, with the Welsh Development Agency taking a coordinating role. Responsibility for most direct financial assistance still rests with central government, through regional policy. Local Authorities still to some extent have a controlling interest in physical location through development plans and the granting of planning permission; albeit both powers are subject to the Secretary of State's interventions. Within the policy agencies themselves, there would appear to be a growing consensus that policy effort should increasingly be directed toward the attraction of newer more innovative sectors and the creation of a more diversified industrial structure. A perspective not too disimilar to that suggested by a Schumpeterian interpretation of long waves.

National Regional Policy

National Regional Policy has its origins in the 1930s depression, although has undergone major changes in scope and direction and has been applied at different strengths in different periods by a mixture of incentives and controls on industry. Its post-war origins can be found in the influential 1940 Barlow Report and in Beverage's 1944 White Paper on Employment. Its original principle aim was to provide the framework for the balanced redistribution of industry from donor 'core' regions to recipient 'peripheral' regions through a mixture of controls and incentives. In theoretical terms, this policy model has been seen as drawn from classic theories of the economic base and the need to sustain inter-regional trade, as well as justified in efficiency terms by the economic waste of unemployment.

The whole of the SE Wales study area has been eligible for regional policy assistance in the post war period, although the level, spatial extent and distribution of aid has altered since the early 1970s. The principle act governing regional policy over the study period was the 1972 Industrial Development Act which established a system of financial incentives as the main policy instruments and exempted firms locating or expanding in the study area from the need to obtain an industrial development certificate (IDC). Within this system, the main emphasis was placed upon a system of automatic payments known as regional development grants or RDGs, as well as a more selective form of assistance known as regional selective assistance

or RSA. RDGs took approximately 75% of all expenditure and were a grant on all new plant and machinery over £1000 or buildings over £5000, available at a rate of 20-22% according to status. RSA was normally available on a discretionary basis in addition to RDG, towards the cost of new investment in four major areas, which included interest relief and removal grants, various schemes to assist service industries, training grants of up to 40% of the cost of training and project grants for firms wanting to expand. Criteria for RSA allocation were that the project should enhance economic efficiency, should generate new employment and that most of the costs of the project should be borne by the private sector.

With primary emphasis on automatic payments on capital expenditure, including replacement investment, the most conspicuous feature of regional policy, picked up by its critics, has been the weakness of its job creation obligations. The primary effect, particularly in the 1970s, was seen as boosting capital investment, often in traditional sectors undergoing rationalisation or attempts at modernisation (Martin 1987). However, by the 1980s this role was changing and policy was recast with greater selectivity, apparently greater employment obligations and a movement away from the 'management of contraction' towards the 'encouragement of innovation and growth' (NEDC 1983). In practice, this meant that regional policy took on a new role of attempting to attract inward investment in newer sectors often at an international scale.

However, the 'cost' of this greater selectivity has been overall cuts in the level of expenditure. Between 1979/80 and 1982/83 for instance, total Regional Policy in Wales was cut from £609m to £376m. In SE Wales these 1979 revisions saw a cut in in the level of RDGs to 15% in the TTWAs of Cardiff, Bridgend and Newport. These cuts were subsequently followed up by further revisions and a redrawing of boundaries in 1984 and 1988. Some of the major features of these later reforms are outlined below.

The 1984 Reforms.

Following the Publication of the 1983 White Paper 'Regional Industrial Development, while regional selective assistance was retained, the system of regional development grants (RDGs) was reformed. The old scheme of automatic incentives was replaced by new more discretionary criteria. Under the new RDG scheme, grants were paid on projects which 'materially' changed the nature of the product (or process) made (or used) by the firm. In addition, certain service industries including business services, advertising, software development and administrative headquarters were now eligible for assistance. A new level of grant aid was also set for approved projects at 15% of capital expenditure, or £3,000 per new job created whichever was the larger. These reforms also included some redrawing of boundaries. In SE Wales, the TTWAs of Bridgend, Cardiff and Newport were downgraded to 'intermediate area' status and as a

result were no longer eligible for RDGs.

The 1988 Reforms.

Further changes took place to Regional Policy following the 1988 White Paper an Regional Aid. This instigated the effective abolition of regional development grants. In the future all financial aid would be channelled through selective grants, allowing the government greater discretion over cash for job creation schemes. The white paper also suggested that preferential treatment may be given to overseas investors seeking to establish plants in Britain.

In part these changes can be understood in terms of the arrival of a government in 1979 committed to the reducing in size of the public sector, including direct subsidies to industry. Indeed as Martin (1986) has suggested, the fact that Regional Policy has survived at all can be partly attributed to the increasing scale of 'refunds' on Regional Policy expenditure from the European Regional Development Fund (ERDF) and the moves to harmonise regional policy across the European Community.

However, the way in which reforms and cuts have been introduced also suggests an overall industrial strategy based upon aiding industrial innovation and newer industrial traditions. Following Johnes (1989) analysis of Welsh Regional Policy expenditure and an examination of published payments, it is clear that in the 1970s and early 1980s

many multiple payments via RDGs went to state-owned enterprises in the form of the British Steel Corporation and the National Coal Board. Other main beneficiaries at this time included the Ford Motor Company which received almost half the cost of its Bridgend engine plant (Cowling 1986). However, by the mid 1980s, the move to a more discretionary system of payments and the introduction of new eligibility criteria has lead to a shift in the pattern of assistance. Some empirical evidence on the sectoral distribution of regional selective assistance is provided in figure 3.1 between the financial years 1979-80 to 1985-86.

Figure 3.1 Regional Selective Assistance by sector: Britain and Wales 1979-1986

	Great Britain				Wales			
	1979-80		1985-6		1979-80		1985-6	
1968 SIC.	£000s	%	£000s	%	£s	%	£s	%
Agriculture	28	0.02	85	0.07	0	0.00	0	0.00
Mining	228	0.17	288	0.25	0	0.00	25,000	0.07
Food etc.	4104	3.11	12491	0.11	248500	3.27	3669500	9.60
Hydrocarbons	17	0.01	650	0.57	0	0.00	1750000	4.58
Chemicals	6279	4.76	2849	2.50	1234250	16.24	1266600	3.31
Metals	2298	1.74	2293	2.01	129500	1.70	631	1.65
Mechanical Eng.	2009	1.52	13455	11.82	357770	4.71	2393000	6.26
Instrument Eng	1700	1.29	2755	2.42	219000	2.88	309,000	0.81
Electrical Eng	22263	16.86	36314	31.89	1670570	21.98	12494500	32.68
Shipbuilding	5629	4.26	953	0.84	0	0.00	0	0.00
Vehicles	72168	54.65	4209	3.70	393050	5.17	610000	1.60
Metal Goods	4397	3.33	4737	4.16	1428900	18.80	1435000	3.75
Textiles	-64	-0.05	7208	6.33	31750	0.42	328000	0.86
Clothing	122	0.09	170	0.15	0	0.00	0	0.00
Leather etc.	2292	1.74	4035	3.54	159000	2.09	1598240	4.18
Refractories	2024	1.53	1841	1.62	685130	9.01	40000	0.10
Timber etc.	2171	1.64	2594	2.28	84520	1.11	50000	0.13
Paper etc.	3418	2.59	7926	9.24	198700	2.61	425000	11.12
Other Manuf.	4081	3.09	6287	5.52	528400	6.95	5406000	14.14
Construction	-253	-0.19	1982	1.74	70400	0.93	20,000	0.05
Utilities	0	0.00	0	0.00	0	0.00	0	0.00
Services	-2861	-2.17	752	0.66	161550	2.13	2057000	5.37

Source: Johnes 1989

Notes: GB figures are *payments* to industry calculated from table 11 of Appendix 6 of the Annual Report of the Industrial Development Act 1982. The data for Wales are *offers* of assistance of £5,000 or more. (with the exception of of quarter 2 1979, when the data refers to offers of £10,000 or more) The data is collected from the journal British Business (ceased publication 1989) . No other data on Regional Selective Assistance is published . The industries defined here are the first 21 orders of the 1968 SIC. Services refers to orders XXII-XXVII. No further reliable disaggregation (eg by sub-region) is available. Regional Selective assisitance as defined here includes *inter alia* excahnge risk cover investemnt incentives and guarantees and (in exceptional cases) loans: negative payments are thus possible.

From these figures it is clear that there have been substantial shifts in the distribution of RSA over this period. Nationally, there has been a massive switch out of the vehicles industry and into the electronics, textiles, paper publishing and mechanical engineering industries. Whilst turning to the to the figures for Wales, the electronics industry again dominates with almost one third of all RSA expenditure in Wales going to this sector. Paper, Printing and Publishing has also received substantial increases in support. The major losers have been the chemical industry, miscellaneous metal goods and refractories. In part it is suggested that this changing pattern of RSA expenditure broadly reflects the pattern of inward investment and employment change outlined in the previous chapter. In this respect, it is suggested that TNCs have been well placed to benefit from the new eligibility criteria.

In part the experience of regional selective assistance, would seem to suggest that the eligibility criteria may be subject to highly ambiguous interpretations. As Johnes (1989) has noted; the requirement that the project should enhance economic efficiency and be viable is in direct conflict with the 'proof of need' criteria. Projects which are 'efficient and viable' should clearly not require subsidy. In effect, the existence of such ambiguities enhances the abilities of administrators to make arbitrary judgments, as they clearly have in favouring particular sectors such as electronics. Although given that there are some in built checks, including various

industrial development boards and regional boards (including one within the Welsh Office) to consider RSA applications,the pattern of payments can also be seen as part of a conscious industrial strategy. A frequent view expressed by policy-makers is that precedent is the clearest indication of the likelihood of grants being awarded. Under such a system, even the wording of a particular application may well be important. Such a system would seem to benefit those groups with the greatest experience of gaining awards. In addition, the larger projects seem likely to be able to exercise a strong political lobby, particularly where large numbers of jobs are at stake. All these factors seem to point to the strength of the TNC rather than the smaller enterprise. It also suggests the importance of knowledge of the workings of the RSA system - a factor that may strengthen the role of bodies such as the WDA and Local authorities.

The Welsh Development Agency.

The Welsh Development Agency (WDA) was established by the Labour government in 1976 under the Welsh Development Agency Act 1975. Since its inception the agency has charged with the central task of encouraging the regeneration of the Welsh Economy by promoting international competitiveness, maintaining and safeguarding employment and to help improve the Welsh environment. The means of achieving these aims were through the provision of loans and equity capital, buliding advance factories and undertaking derelict land conversions. The principle innovation over traditional economic

development measures was that the agency could use its own resources to make loans to, or purchase equity in, private companies and it could set up new companies which were subsequently expected to be sold to the private sector or have shares floated on the stock market. The agency was however, not charged with performing a economic planning function for Wales. In resource terms the agencies budget has grown from around £30m in 1976/77 to £115m in 1988/9 of which approximately 60% comes from direct government grants. By 1988/89 the WDA had capital assets of £280m.

As a public body, the WDA is directly accountable to the Secretary of State for Wales, although it is directly governed by a board of eleven directors mostly drawn from modern industry. For instance, the current chairman is a director of Apricot Computers, while a further six board members represent large business interests. The remaining three members include a divisional officer of the Iron and Steel Trades Confederation (ISTC), a representative from the Cardiff bay Development Corporation and a director of the Welsh Civic Trust. The relative dominance of business interests is reflected in the fact that the WDA became a corporate member of the Confederation of British Industry within three years of its establishment.

In practice the strategy of the WDA has largely reflected its dominance of business interests. As Cooke (1987) has suggested, the WDA has moved somewhat from being a 'state enterprise' form of

agency towards a more strongly entrepreneurial style of activity. Following the long wave analysis adopted here, the WDA approach might have been drawn from a Schumpeterian theory of economic development, with particular stress placed upon the attraction of inward investments in high technology growth sectors such as electronics. In this respect, the WDA claims considerable success in the remarkable success Wales has had in attracting investments in this sector.

In terms of an inward investment role, the WDA took over the inward investment functions of the Welsh Office Industry Department and the Development Corporation for Wales and consolidated these into a new division 'Winvest' or Welsh Inward Investment. More recently this division has been renamed Welsh Development International. This division has taken on a role similar to 'Locate in Scotland' in providing a one stop shop for inward investors and by marketing Wales through a number of Overseas offices in N. America, Japan and Europe. In terms of the benefits offered to inward investors, the WDA in the early 1980s concentrated up to 75% of its expenditure on the building of advance factories, and a further 15% of expenditure to derelict land conversion. Notably its equity investment function has on average accounted for less that 10% of its overall expenditure. The emphasis on factory building meant that the WDA in the early 1980s has been described as the largest general property developer in Western Europe at this time. (Eirug 1983)

However, by the mid 1980s the WDA moved away from building standardised advance factories towards the provision of a smaller number of 'bespoke' premises for known high-technology companies. This move was also accompanied by the formation of a new division in May 1984 in the form of 'Wintech' or Welsh Investment in Technology. Wintech's role was to work to raise the technological profile of Wales through the marketing of technology support programmes and to foster much closer liaison between existing firms and the Welsh higher education system. In part, the formation of Wintech was an admission that existing industry had been neglected in comparison with the enormous efforts devoted to attracting inward investments. This need was identified with regard to the fact that for every 100 jobs that had existed in the manufacturing sector in 1981, 93 were in enterprises that existed before 1975 (Deloitte Haskins and Sells, 1984).

These measures have also been accompanied by a vigorous inward investment marketing strategy; aimed primarily at eradicating the countries strong associations with coal and steel and the attendant image to external investors in the form of industrial dereliction and hard fought restrictive work practices. Instead, the main emphasis has been to project Wales as a rural idyll with good communications and a flexible labour force; advertising brochures for instance, remind potential investors that it is no longer compulsory to be unionised in

Wales. Notably the agency also promotes existing firms as ideal candidates for joint ventures or eventual takeovers; the perceived benefits of which are seen to be the introduction of new workpractices, the transfer of new technologies and new investment (WDA 1988a).

Overall it is clear that the marketing strategy has had to become more aggressive as competition for mobile investment at the international scale has intensified. In particular the WDA faces direct competition from the Scottish and Irish Development Agencies as well as European Agencies eg DATAR in France. Each of these agencies maintains separate representatives in overseas locations and pursues similar strategies. To strengthen its role, the WDA has increasingly sought to become an umbrella agency for the other development initiatives. Given the moves towards a higher degree of administrative discretion in regional policy allocations for instance, it is clear that the WDA has been able to exercise considerable influence over payments to firms. Recent initiatives have also attempted to take the agency into new investment areas. The most interesting example in this respect has been the promotion of the study area as a financial services location. This campaign has focused on both locally orientated financial services and attracting relocating headquarters and back office functions. Given the changes in Regional Policy, clearly the agency has greater scope for marketing funding packages in this sector.

The Local Authority Role.

At the outset the ability of Local Authorities (LAs) in the study area to intervene in economic development is dependent upon relatively few powers granted by the central state and parliament. In this respect, very recent legislation in the form of the Local Government and Housing Bill (1990) and the White Paper *'Employment for the 1990s'* would appear to have weakened this role. In spite of this, it is clear that LAs have increasingly pursued economic development strategies and in this respect strategies have developed through traditional activities such as promotion as well as through land assembly and the land-use planning function. That said, the importance of LAs in the in the economic development process should not be underestimated.

In terms of promotion and financial assistance, the major responsibility occurs at the County level arising primarily from an informal agreement in nearly every case between the County and Districts, whereby the the former is responsible for inward investment and the latter for indigenous enterprises particularly small businesses. Overall the LA position can be seen as broadly supporting the WDA and Regional Policy strategies towards inward investment. In this respect LAs have also tended to encourage inward investment from newer sectors. In political terms, this is seen to reflect a realisation that that the decline of traditional industries

has been terminal and that Wales' industrial future, if it has one, lies in finding new industrial traditions. (policy survey evidence)

The strategies adopted by local authorities have been broadly reactive and have not followed the more interventionist strategies adopted pursued by councils such as Sheffield or the former Greater London Council (GLC). Although that said, South Glamorgan County Council has played a pioneering role in getting enabling powers to give financial assistance to firms through the County of South Glamorgan Act (1976) although this provision was later superceded through section 137 of the Local Government Act (1972). In practice however, strategies have been based on promotion and in this respect competition for mobile investments between the counties is increasingly fierce. For instance, Gwent markets itself as the Western end of the M4, while South Glamorgan markets the cultural attractions of the Welsh Capital.

Increasingly more important however, is the LAs role in land reclamation and the provision of some site infrastructure. Given the region's status as a coal and steel closure area the LAs have increasingly received additional monies from the European Coal and Steel Community (ECSC) the latter also providing direct low interest loans to firms in the area through local authorities of up to 50% of capital funding. While the scale of this EC funding is extremely difficult to trace it is significant enough for a consortium of local

authorities in the study area to maintain a permanent lobbyist in Brussels.

The Land-Use Planning Function

Using their land use planning function, local authorities have generally proved to have an important role particularly in providing sites for inward investors. Typically once the WDA has obtained a lead from an incoming firm, it may seek the advice of County Planning Departments for the identification of sites etc. Later the district councils may be heavily involved in negotiations with the WDA as regards planning permission. Given that there are three county planning authorities covering part of the study area, the site selection process, even within South-East Wales, may be characterised by competition to provide the most ideal and unhindered site. In a recent case for instance both Gwent and South Glamorgan were asked by the WDA to identify sites for the Toyota plant. (which eventually located in Derby). At this stage the LAs generally have to work with highly limited information concerning the name or nature of the proposed plant operations and it is not uncommon to use code words for the project. The implication of this being that by the time the particular project reaches the public domain, probably when planning permission is being sought, there have already been considerable largely secret negotiations in which the actual site has probably been agreed by the planning authority.

In some cases where the County Councils have had a legal interest in a particular site, they has shown a willingness to speed up the planning process by granting itself planning permission using powers under section 5 of the Town and Country Planning General Regulations (1976) of the Town and Country Planning Act (1971) (see for instance Bosch case study next chapter). In part, such expedited development control procedures may be viewed as in line with much central government thinking. For instance Circular 16/84 from the Department of the Environment (1984) suggests that "High Technology Industries are essential to the country's future prosperity' and has urged local planning authorities to cater for their needs. While other documents have followed a similar vein (DOE 1983)

The ability of the LA to respond to such requests depends upon an efficient planning framework, and the availability of a number of large industrial sites. The importance attached to having large industrial sites available seems to be reflected by the reaction of South Glamorgan to having the industrial land allocation in its replacement structure plan cut by around 320 acres by the Secretary of State; a decision was described by the South Glamorgan planning officer as making it impossible for the county to respond to inward investment and as having significant costs in terms of jobs. (South Wales Echo 1988).

Other Agencies.

The Training Agency.(TA)

For much of the study period the training agency was known as the Manpower Services Commission (MSC). Established in 1974, the MSC represented an awareness by government that increasingly structural problems were emerging in the supply of labour (e.g skill mismatches) that could not be overcome by the private sector alone. The MSC was formed to implement central government policies in relation to the labour market. The main objectives of the MSC/TA is to safeguard the provision of skilled manpower to industry, to offer a range of employment facilities for employers and job seekers, particularly those having difficulty in obtaining work or training.

Since the early 1980s spending by the MSC/ has remained constant, with the substantial increases in expenditure in two major areas, namely the Youth Training Scheme and the Community Programme (Robinson et al. 1986) Most recently following the Local Government and Housing Bill (1990) the major innovation will be the creation of Training and Enterprise Councils (TECs) to provide training facilities at a local level. Specifically, TECs are to be locally based bodies with a significant degree of discretion over various training schemes as well as over financial expenditure. Their creation has to some extent been given a guarded welcome in being able to meet local training needs. However, they have also been criticised for the emphasis of industrial interests in their management.

The Role of the European Community.

Powers, Funding and Distribution.

The European Community increasingly has a role to play in funding economic development projects in South Wales through the European Regional Development fund (ERDF), the European Social Fund (ESF) and through its position as a former coal and steel area can receive grants and loans through the European Coal and Steel Community (ECSC). While it is difficult to trace the destination of many of the funds. Recent evidence (British Business 1986) tends to suggest that much of the ERDF and ESF funds are used to reimburse the UK national government for its expenditure on various programmes such as infrastructure, investment and training; including refunds to DTi/Welsh Office Regional Policy expenditure and to the Manpower Services Commission/Employment Training.

Of these funds, probably the most important in terms of direct influence on TNCs and uniqueness to South-East Wales is the ECSC source. South Wales has received the majority of these funds coming to the U.K. ECSC funds are provided under Article 56 of the ECSC treaty, as part of a policy of employment creation and revitalisation in areas affected by the contraction in coal and steel employment (European Community, 1987). Loans may be provided for the establishment of factories and the redevelopment of industrial sites; particularly those formerly occupied by ECSC industries. The criteria for granting low interest loans is broadly similar to that used for

regional selective assistance. Appraisal of the economic aspects of the project will take account of the contribution of the investment to the development of the region, it financial viability, its level of technology, market prospects and the situation in the sector concerned. Jobs provided by the schemes must be suitable for ex-steelworkers and the amount of the loan may not exceed 50% of the fixed investment (excluding working capital).

The allocation of ECSC funds is delegated to a number of intermediaries including a range of clearing banks, and 3i group PLC. In addition as noted above both the WDA and the LAs can act as intermediaries.

Figure 3.2 Summary. The Explicit Economic Development Policy Framework.

Measure and Agency	Policy Related Element
Central Government.	
Regional Development Grants	Until 1984 - Automatic grant for new or replacement investment.After 1984-Grant on Projects which create or safeguard employment.
Regional Selective Assistance	Negotiable grant for commercially viable investment projects creating or safeguarding employment
Welsh Development Agency	
Promotion	In particular targeting of high technology sectors on an international scale
Advance Factory Building	Provision of 'general' and 'bespoke' premises for inward investors
Site Assembly/ Land Reclamation	Acquisition, servicing and reclamation of land. Some managed industrial estates
Finance Provision	Equity shares in Welsh Companies
Local Authorities	
Promotion and Financial Assistance	Promotion of areas as investment locations Limited grants to TNC plants.
Land Use Planning	Identifying Industrial sites and the granting of Planning Permissions
Key worker Housing	Provision and assistance with housing for key personnel
Training	Local Authority Technical Colleges
The Training Agency	
Government training Schemes	YTS etc. also Training and Enterprise Councils after 1990
European Community	
European Coal and Steel Community Loans	Low-cost loans to projects providing jobs for ex miners and steelworkers.
European Regional Development Fund	Refunds on regional policy expenditures

Implicit Spatial Economic Development Policies

Implicit economic development policies are those policy initiatives which, although not having an explicit intention in terms of spatial economic development, can be seen as having an implicit development effects. In South-East Wales it is suggested that such effects can be identified positively in terms of the transport infrastructure and negatively in terms of the effects of other government expenditure notably defence expenditure.

Improvements in transport infrastructure have greatly improved the accessibility of the study area, particularly with the opening of the Severn Bridge in 1966, as well as the extension of the M4 and the introduction of high speed rail links in the mid 1970s. As used in the WDA's marketing strategy, these factors clearly contribute to a unique accessibility in assisted area terms to the South East, Heathrow and London.

In terms of other government expenditure programmes, the most significant expenditure in view of attempts to create a 'high technology sector' would seem to be defence expenditure, particularly as a growing number of analysts have pointed to the defence-technology nexus in the UK (Hall et al. 1987). In this respect however, Wales has received very little expenditure, particularly in comparison with other UK regions. For instance, from Short's (1981) analysis of defence procurement

expenditure between 1974 and 1978, Wales received £112m, considerably less than the £3674m received by the South-East, or even the £889m received by the South West over this period. Following from this Wales' benefits from regional policy can be seen to be more than outweighed by deficiencies in other government expenditure programmes.

Conclusion: The Economic Development Policy Response.

This chapter has provided an outline of the explicit and implicit economic development policies towards the TNC. In this respect, the chapter has noted the likely impacts of factors such as trade and competition policy, as well as infrastructure and the general effects of government expenditure programmes in addition to the more explicit policy initiatives. The chapter has noted how explicit policy efforts have increasingly been placed in an international role, with an emphasis on the attraction of inward investments in new and higher technology sectors, especially electronics. In theoretical terms, this emphasis might be 'read off' from a Schumpeterian theory of economic development.

Mostly the strategies adopted might be described as being aimed at 're-industrialisation' with a continuation of the historical emphasis on manufacturing sectors as the 'economic base' of a local economy. However, there is some evidence to suggest that policy is increasingly beginning to target inward investments in the producer services sector;

an area in which, as suggested in chapter 2, Wales has been deficient in comparison to national trends in this sector.

As a strategy towards economic regeneration, it is suggested that the benefits may be indirect in the sense that the aim of policy has been towards targeting growth sectors, rather than consciously identifying the needs of particular groups in the local population and attempting to provide direct employment for them.

Finally, while the chapter has not sought to identify policy outcomes as such, it seems necessary to make the comment that as explicit and local policy efforts have largely been constrained by national legislation, the particular benefits offered may be directly replicated in other localities, particularly in Scotland with the presence of the Scottish Development Agency (SDA). In this respect, it is suggested that policy cannot in itself account wholly for the relative success that has been identified in Wales with regard to inward investment projects. Rather economic policy success seems more likely to be found in the way in which policy interacts with other implicit location factors. This issue forms the basis of the remaining chapters of this study.

Chapter 4
Policy Assessment.

Having identified the key features of the recession-depression phase of the fourth Kondratieff wave in relation to economic change and state policy response, this chapter attempts to explore policy output in relation to two key concerns. Firstly, the chapter seeks to evaluate how economic development policy has been able to exert some influence on TNC decision-making. Secondly, the chapter attempts to explore some of the impact issues that TNCs have posed for the local economy.

The precise nature of these kind of policy effects are extremely difficult to unravel. As suggested in the research design, this is partly because of the 'counterfactual problem' of establishing a realistic alternative of 'no policy' against which to measure impact. However, the problem is also multi-dimensional in the sense that for assessment purposes, one set of factors relates to the the location decision process, while another relates to the function and organisation of the particular plant and how these are likely to impact on the local economy. The approach adopted here is to consider the value of policy in relation to other location determinants and the issues raised by the theoretical perspectives towards TNCs developed in chapter 1. For example, in analysing the location decision, some consideration is given to the role of international trade relationships and other implicit

economic development policies. While investigations concerning impacts are largely informed by theory. Following Schumpeter's creative destruction thesis for instance, it is noted that production reorganisation, rationalisation and the resulting spatial change are an inevitable aspect of the evolution of the transnational corporation, with the actual form that these changes may take depending on forces both internal and external to the TNC organisation, so an important question here concerns what role Wales has played in this reorganisation process. Schumpeter's perspective also stresses the importance of new technology systems in economic development. Moreover, how the TNC seeks to organise the spatial pattern of production may determine both location decision and impacts. Hymer (1975) for instance, attempted to link the internal spatial division of the TNC to an inter-regional or international division of labour. Similarly Frobel et al. (1980) have seen the emerging pattern of development as part of an overall 'new international division of labour'. However, more recently, a growing number of analysts (Cooke 1988, Lipietz and Leborgne 1988, Milne 1990) have suggested the essentially 'fordist' division of labour implicit in these models has been superseded by so called 'postfordist' or 'flexible' production methods. As noted in chapter 1, this approach has been strongly associated with hypotheses concerning the spatial reconcentration of production, sub-contractors and suppliers which would appear to have different impact and location implications than the Hymer model.

The chapter proceeds by firstly exploring the relationships between state policy and the resulting spatial outcomes in South Wales based on the survey evidence. This is followed by some general discussion of impact effects and the identification of some particular issues which are examined further in a detailed investigation of the electronics industry in chapter 6.

The Location Process: the survey evidence.

Plant function.

The starting point in exploring the location process is to understand how plants in South Wales may be observed to fit into the overall spatial division of labour. In this respect, it is clear that South Wales role is primarily of production activities, with some 81% of survey respondents describing their role as fulfilling routine production tasks, and 79% of firms suggesting that their activities include routine data processing functions. In this respect, South Wales may be forming a 'C'-type role in the Hymer (1975) model as part of the economic periphery specialising in routine production. Furthermore, while some 54% of firms do claim to contain some research and development (R&D) functions, this is rarely related to any fundamental innovations. In the foreign electronics sector for instance, research activities are mainly concerned with adapting products for the British or European market. Moreover, closer investigation reveals that whereas many of the plants do have research or divisional management functions in Britain these

are often put together with office functions in the core South East region. The Ford Motor Company for instance, manages its South Wales plant from Dagenham; Amersham International has research and head office functions in Buckinghamshire, TSB headquarters are in Hampshire and nearly all the Japanese plants have European headquarters in the South East. Thus following the logic of the Hymer model, there is some evidence to support the proposition that the SE may form a headquarters or divisional management type role. While the survey clearly did not cover the reasons for why these functions locate in the South East, it now seems generally agreed that factors such as the availability of high calibre staff and access to political elites as well as access to Heathrow and London have proved to be significant (Hall et al. 1987).

However, while all the this provides some further evidence on the firms and their role, it does not explain how the actual firms came into being and what factors influenced their location decision. Here the chapter turns to the results of the survey in relation to the location decision.

The scale of location choice

Some researchers have suggested that industrial search is conducted at different geographical scales, beginning say with a particular trading block, then a particular nation, followed by a regional search and culminating with a comparison of specific sites. (Walker and Calzonetti

1990). Broadly speaking it is suggested that the results of the survey would tend to confirm this view.

Collectively, survey evidence tends to suggest that the upper end of this search process, and the decision to engage in transnational production may reflect the need for convenient access to the European Community (EC) markets. For instance, over 90% of all survey respondents confined their location search to within the European Community (EC) boundaries, while within this some 54% of plant executives suggested that the final location-investment decision was made within the UK.

As such the survey evidence reveals that access to European Community (EC) markets has been the single most important factor in determining Japanese and American inward direct investments. While for EC based TNCs, the EC has provided a rationale for keeping production operations within Europe. As noted by several Japanese plant executives, expansion of production behind European tariff walls has increasingly been the only possible strategy for extending market power and share. In addition, Japanese respondents also noted that the rising value of the yen through most of the 1970s and the early 1980s (making Japanese home produced exports more expensive abroad) made overseas production strategies particularly attractive. Earlier examples of similar incentives can also be deduced in relation to the American experience in the mid and late 1960s, with the strength of the dollar at

this time.

The role of the nation state.

In the British context, a significant number of firms also noted the liberal and welcoming attitude towards inward investment afforded by various state policies and agencies. Furthermore, a number of firms in the survey placed great stress on the absence of entry barriers to the UK economy. In contrast, a large number of firms, particularly in the face-to-face survey, showed a clear awareness of the hostile attitude of some European countries, particularly France, towards inward investment. As evidence to support the attitude of other EC countries, reference was also made to the rather frequent mainly Anglo-French disputes over the free trade status of exports from Japanese based plants in the UK; most recently France has attempted to include these as part of its external EC-Japanese quota. (Financial Times 24.4.90, Dicken 1986)

Many firms also put particular stress on the high level political contacts with such figures as the Welsh Secretary ('the Peter Walker factor') the Prime Minister and even members of the Royal family. Here firms also showed a conscious realisation that their plans could be blocked by the UK government and thus many put great stress on winning friends in high places. Frequently, central government direction was also cited as a reason for making a final location decision. In particular, respondents suggested that they had been

'encouraged' to locate in areas of high unemployment. A subsidiary factor also noted, mainly by Japanese and American Firms, was the desirability of locating in an English speaking country.

The role of economic development initiatives

Given the importance of external trade factors, the role of explicit economic development initiatives might seem to be downplayed. However, that said, it is clear from the survey evidence that agencies such as the WDA have been important in increasing the awareness of the advantages of locating in Wales and that policy measures, as well as a number of other location factors, are regarded highly in the final choice of location with the UK and Europe. In addition, it is also noted that the evolving configuration of industrial activity is affected by the decisions made by public authorities about the development of infrastructure such as the motorway M4, the presence of a high speed rail link as well as the relative location to Heathrow in comparison with other development areas.

Some evidence to suggest how policy measures have affected location is provided again by the survey responses. Here plant executives were asked to rate the influence of a number likely policy and non policy location factors on the final decision to locate and invest in Wales on a five point scale from 'none' to extremely', as well as being asked to suggest any others. The results of this analysis are shown below.

rationalisation and that respondents are unlikely to suggest that factors such as financial incentives have been unimportant. With these qualifications in mind, some interpretation of these results is provided below. Here the results of the questionnaire survey have been combined with further amplifying details of the location decision as supplied by the face-to-face survey and from other similar policy studies as cited in the text. The principal aim being to identify the most significant location factors unique to South-East Wales.

Regional Development Grants and Regional Selective Assistance.

Regional development grants and regional selective assistance emerge very clearly as the most highly rated location factor with some 46% of firms rating them as 'very' or 'extremely' important. While recognising the qualifications noted in relation to this factor above, it is suggested that this rating does provide some indication of the significance of this area of policy. This is particularly so given the findings of other recent studies into the effectiveness of grants. For instance a study by Begg and McDowall (1987) noted how the certainty of payment associated with regional development grants made them an integral part of investment appraisals and thus conclude that in many cases RDGs were important in the viability of some schemes. Equally Massey (1984) has noted the importance of RDGs and the campaign waged against the cuts in RDG expenditure, by the Confederation of British Industry in the early 1980s.

As might be expected other forms of financial incentives, such as from EC sources are less highly related. This result is suggested to reflect the lower level of resources associated with these incentives than RDG, as well as uncertainty concerning eligibility.

Transport and Infrastructure.

Transport and infrastructure also emerges as a significant influence given that some 46% of respondents rate this factor as 'very' or 'extremely' influence. The actual importance of this factor seems to be largely permissive, without an adequate level of infrastructure clearly much of the development would not take place. Evidence tends to suggest that firms value the M4 and high speed rail links, particularly for their ability to give rapid access to the South-East, where a number of TNCs also have divisional headquarters, as well as affording good access to Heathrow, London and the Channel ports. As such South Wales is the closest area having assisted area status to the core South-East region, thus providing an advantage largely unique to South Wales.

The influence of this western transport corridor economic development has itself been noted by a number of analysts in the past, notably Hall et al (1987) in relation to Berkshire, as well as Basset et al. (1989) in relation to Swindon. Here it seems worth reiterating the point made in the previous chapter, and in these studies, that the fact that infrastructure has proved to be important to economic

development is largely incidental to any particular development strategy, rather it rests upon what Hall et al (1987) describe as heavy uncoordinated investment proceeding through a process of 'disjointed incrementalism'.

'Labour' as a location factor.

Much has been made of the significance of labour factors, particularly in terms of cost. The arrival of a TNC plant has frequently been seen as part of the arrival of a 'new international division of labour' in which the decentralisation strategies of the TNC, in the face of intense competition and a squeeze on profits, have been tied to the need to source reserves of cheap labour to undertake routine production tasks. This point has frequently been supported by empirical studies. (Frobel et al 1980). This factor has also led a number of analysts to stress the phenomena of 'runaway industry' poised to relocate to a low wage, third world economy. In the Welsh context, it has also been noted in chapter 2 of this study that Wales offers the lowest regional wage rates of any British region. (Regional Trends 1988)

However, to the extent to which these labour costs have proved to be a pervasive factor does not seem to be reflected by the survey responses. In the survey 46% of firms rated labour costs as 'moderately' important and only 4% as 'extremely' important. Here the interpretation would seem to be that it is not simply that models of

location as outlined above have been inaccurate, rather that they have been partial in the sense of failing to take into account other considerations which may well restrict many TNC investments to so-called 'high wage' economies; such as the ability to supply particular markets areas such as the EC. In contrast to the Hymer model, these market considerations would appear to be sufficient to keep most TNCs within the established developed economies rather than the low wage economies of South Korea etc. Moreover, given the context of recession and widespread unemployment, the availability of reserves of labour has not proved to be a particular problem in many locations. In addition as will be outlined in later sections, the introduction of new process technologies can be strongly associated with rising capital intensities, thereby reducing the overall significance of labour costs in production.

Finally, with regard to labour related factors, it is notable that respondents rated training and education as a strong location factor. Based on other survey findings the training and education factors referred to are primarily the local authority technical colleges which are used by over 70% of firms. In addition survey comments also suggest that 'flexibility' or 'adaptability' is a highly regarded characteristic.

Site and Premises provision and the role of land-use planning.

So what of the advance provision of sites and industrial premises? Here it is suggested that the overall responses in the survey reflect the degree of selectivity attached to this factor. Respondents rating the provision of sites and premise highly are likely to be those who have actually benefited from this provision rather than those who have not. This point seems certainly to be reflected by the extremes of opinion contained in the survey responses as shown in figure 4.1 previously.

However, within this finding, it seems useful to examine more closely the actual site requirements of inward investing plants in the study area. Typically the incoming plant to South Wales will tend to locate its production in single storey production 'sheds' with particular component buildings specialising as the product range expands or production processes become more specialised. The introduction of newer process technologies also typically means that employment densities have been falling . This point seems to be reflected by other studies. For instance Fothergill et al. (1986) note that nationally employment densities have been falling by some 3% a year between 1964 and 1982; from 36 to 21.4 workers per thousand square metres.

Given these changes a frequent comment made by respondents was of the desirability of having plenty of flat land and room to expand. These requirements have almost invariably been met by greenfield sites.

Given infrastructure considerations, the chosen site will almost invariably be located close to the M4, indeed another frequent comment was that near M4 sites were the most sought after. However, notably many of the chosen sites have not been on land designated within the very recently revised structure or local plans. According to local planning officers contacted for this survey, TNCs often aided by the WDA have identified sites relatively unknown to local planning departments and more often than not, subsequently gained planning permission on them. One district planning officer suggested that the Financial Times provided the best information source concerning potential investors! The problem here is that plan designations of industrial sites have either tended to be too small and thus not allowing room for expansion, or have followed the laudable goal of reusing older sites in locations that have proved unpopular with inward investors.

Some analysts, especially Cooke (1984) and Morgan (1986), have suggested that the actual choice of site will reflect the desire to 'escape' more militant labour in the coalfield areas to the north and that plants have tended to favour the more politically conservative coastal plain area to the south of the study area. Actual evidence however, to support this view does seem difficult to find. Certainly another reason for choosing the southern area, as far as this is the case, would seem be the presence of large sites of flat land, notably in scarce supply in the coalfield areas of South and Mid Glamorgan.

Issues arising and interpretation.

The key question here concerns why Wales has thus been so successful in attracting inward investment and what role policy has played within this. As was noted in the previous chapter policy agencies claim considerable success. Following the empirical evidence presented above however, it is suggested that policies' role in terms of the location decision has to be qualified with regard to the context that a number of contingent implicit and explicit policy measures have operated together in South Wales favour. In summary, the decision making process would seem to be hierarchical. TNCs, particularly from outside Europe, have chosen Europe because because of convenient access to the tariff free markets of the European Community and the restrictions that this places on the markets open to production external to the EC. Within Europe, Britain has proved to be particularly attractive because of the generally liberal attitude of governments to inward investments and the absence of formal or informal entry barriers. Within Britain, South Wales has proved to be an ideal site for inward investment both because of necessary factors such as the various forms of financial assistance and because of of the relatively unique accessibility that it has offered particularly in terms of the M4 high speed rail links and access to Heathrow. As was suggested in the previous chapter while infrastructure may have been used as a major distinguishing feature of marketing efforts, its origins cannot be traced to any explicit economic development strategy.

Figure 4.2 Summary of prime reasons for Welsh location of TNCs (in declining order of importance)

Location in the UK.

Importance of location close to market
Strategic Gateway to EEC markets
Significance of UK Market
Experience of previous overseas investors particularly Japan
Stable and supportive political climate
Lower wage costs
English Language

Location in Wales.

Government Financial assistance; Regional Development Grants.
Transport and Infrastructure
Cost of Labour
Quality of Labour in particular training facilities and flexibility aspects

Location within Region.

Availability of suitable sites, expedited site assembly process
Room for expansion
Communications Network
Availability of adaptable labour force

The Case of Bosch

As a final comment on the TNC locational influences, it seems particularly salient to examine the factors behind the decision in Summer 1989 by Robert Bosch of West Germany to locate a new plant at Miskin, west of Cardiff to produce alternators for the car industry. This case study is thought to include some typical features of the location process. This study also goes some way to reveal the importance of essentially secret negotiations between policy makers and TNCs.

For Bosch, the decision to establish a new plant was part of an overall strategy to introduce new 'flexible' production methods. The main feature of which was to increase productivity based on 'just-in-time' stock control and a more responsive service to its clients. In this respect Bosch initially shortlisted locations in Spain where it already had a number of plants and Britain where it had none. Both locations were close to a client in the form of the Ford Motor Company and offered the availability of 'flexible' relatively low cost labour reserves. However, the fact that Bosch eventually chose Cardiff is, according to Bosch's technical director, Dr Olbertz, attributed to the "enormous co-operation in the paperwork from a number of bodies especially from Welsh Development International" (quoted in Financial Times 10.10.89 p11).

The form that this co-operation took provides good reasons for its final location decision and includes factors such as site availability, grant availability and expedited development control procedures. In particular, having been approached by Bosch, the WDA identified the Miskin site already in the WDA's ownership, as a potential location for the development which offered the advantages of being located in a favoured rural location and in being the only piece of land having full development area status south of the M4. The WDA could thus guarantee the full rate of Regional Selective Assistance as well as a location away from the more militant labour supplies in the former coalfield areas to the North. However, the only stumbling block for this proposal concerned the granting of planning permission on the site. Of the total 194 acre site, only some 94 acres had planning permission which had been granted on appeal. Approaches had been made to the Vale of Glamorgan District Council, however, it was indicated informally that planning permission would not be forthcoming on the remaining part of the site. In response, the WDA sought assistance from the County Council. The result of this assistance was that a deal was struck so that ownership of the site would pass into the hands of the County Council, and thus planning permission could be granted to the County under regulation 5 of the Town and Country Planning General Regulation 1977 (Town and Country Planning Act 1971). This regulation gives a local authority powers to grant itself permission for a particular development by a third party on land upon which it has a legal interest at the time planning permission is being sought. This

decision duly followed. This effectively bypassed the normal development control procedure (i.e via the district as the normal development control authority) and considerably expedited the planning process. Notably this decision was also a departure from the recently replaced Structure Plan and in this respect the County note that this procedure was used with the full support of the Welsh Secretary of State. As a further benefit, the fact that ownership was vested with the county enabled the County to seek European Community Assistance for the project. Following these procedures, the site was sold on to Bosch at what is regarded by planning officers as a below market price; although the County refused to make details of this sale available to me.

However, clearly within this process, Bosch were able to gain considerable benefits. Notably, the fact that Bosch wanted such a large site reflects its desire to be able to expand production in the future; the first phase of the development covering the period until 1995 will only use 29 acres of the total site. In this respect, if Bosch should subsequently decide to pull out from Wales, or not to use the whole site they would have the option of selling the whole, or part of a rather unique site. In addition, Bosch have apparently gained considerably from financial incentives.

Impact Effects

Up to this point an attempt has been made to examine the location decision-making process. However, even if policy has been relatively successful in attracting investments, this does not necessarily mean that TNCs can be said to offer long term benefits to the South Wales economy. Moreover, given the essentially regional competition for mobile investment projects a suspicion arises that TNCs have been able to exhort considerable benefits from policy agencies, over and above that might be available to an indigenous firm. In particular, by creating a relative degree of indifference to a number of locations, as in the Bosch case above, TNCs have probably been able to exercise a high degree of leverage, given their ability to provide large numbers of jobs.

Information on the actual and future impact effects is far from complete, not least because there is nothing definite about future TNC strategies. However, the following paragraphs are used to highlight some of the major issues; including the mode of entry, the level of technology, trade and linkage effects, retention and stability of TNCs and the impact of new technologies. Finally, some consideration is given to the present and future patterns of employment likely to be provided by the TNC sector.

The Mode of Entry.

How the TNC is established - by setting up a completely new facility, by acquiring an existing enterprise or by forming a joint venture with an existing local firm - is a most important consideration. A completely new plant adds initially to the stock of existing productive capacity while an acquisition or joint venture may have no effects or even lead to the rationalisation of a particular sector. In this respect survey evidence suggests that while 80% of TNC plants fall into the completely new category, some 20% have occurred through acquisition. Moreover, as has been noted in chapter 3, the WDA increasingly promotes joint ventures with equity participation.

From an impact perspective, it is suggested that there is every reason to look closely at the behaviour of acquisition or joint venture entrants, as no employment gain as such is likely to be involved at the time of setting up, indeed rationalisation is perhaps more plausible. For instance, following a study of Scottish TNC investments, Hood and Young (1983) identified lower levels of technology and integration among acquisitions, a greater UK orientation of sales than among TNCs formed as greenfield ventures and, despite stronger input linkages with the local economy, a poorer net export position.

In the South Wales context, one likely course of events can be observed with reference to the particular case of the GEC - Hitachi joint venture from 1979 and the eventual takeover in 1984. Here on entering

into a joint venture from 1979, Hitachi faced what was seen as an 'unwieldy' operation which included 2600 employees represented by seven unions in four factories producing over 60 products. Here the immediate reaction was to rationalise production by sub-contracting much of the manufacturing operation and cutting the overall labour force to 280 as well as operating from a single factory with a single union; the Electrical, Electronic and Telecommunications Union (EETPU). While this example may seem particularly extreme it is largely in line with with other recent empirical evidence on the effect of takeovers on regional development (Love 1989)

Trade and Linkage Effects.

The role of South-East Wales as trading platform does not seem to be in doubt. Specifically, in the survey some 84% of respondents suggest that they use the South Wales location as a base for international exporting. While in chapter 2 this study has noted the high export ratios associated in particular with the electronics industry, and the rationale of plants to supply the European markets has been noted. Thus more important here is TNCs integration into the local economy.

In terms of examining linkage relationships, there is clearly no way of specifying precisely the nature of plant-supplier relationships without undertaking a complex local input-output analysis. However, it is possible to speculate about these relationships, based upon some survey evidence and the structure of the local economy concerning the

existence of likely suppliers. With regard to linkages, it is suggested that the richest pattern of linkages can be associated with the introduction of newer process technologies, such as just-in-time (JIT) supplier and subcontracting relationships and the extent to which these may lead to a spatial reconcentration of production. This theoretical view of the TNC is certainly largely in contrast to the traditional view in which TNCs retain existing spatially extensive back linkages to other parts of the corporation. Sayer (1985) for instance, quotes several cases to suggest that sub-contractors and suppliers are forced by the JIT system to locate close to large plants.

In the South Wales case, there is some evidence to support this view particularly for the electronics and motor vehicles sub-sectors. Bosch and Lucas for instance supply Ford as do some of the metal manufacturers (Cowling 1986). Equally, a number of electronics plants in the survey noted that they were able to source some components locally, a point also reflected by the growing concentration of components suppliers in the study area.

However, as to the significance of these observations for the observed pattern of change in the study area it seems important to bear in mind two points made by Morris (1988). The first of these is that many of the new firms superimpose themselves upon existing patterns of sub-contractors who may be relatively immobile, and secondly it is suggested that the space economies in Britain and indeed Western

Europe is small enough for sub-contractors to remain in there present locations and operate a just-in-time system. Meyer (1986) for instance, has noted that a 48 hour JIT supply can be maintained within a 5 hour truck drive (Meyer 1986). Certainly if this this is the case, then it would tend to support the importance of transport costs a factor which may also be important in explaining the importance placed upon transport and infrastructure as noted above in relation to the location decision.

Some case study evidence also tends to support this view, for instance, AB Electronics primarily operates by undertaking subcontracting work for IBM in Portsmouth and the West Midlands car industry. In this respect, while it values its South Wales location, particularly for the economic development policy benefits it has received; most notably a £4.5m loan from the European Coal and Steel Community, it feels that its South Wales location is particularly adequate to maintain a very close supply relationship with these firms.

Another aspect of plant linkages concerns the relationship of plants to the service sector. As was suggested in chapter 2, the region has not participated fully in the national expansion of private producer services. In this respect, the growth of external control, both as a result of acquisition and new productive plant, and the function can be implicated as causing a deficiency of local demand for business

services; demand which is probably realised locally to corporate or divisional headquarters.

The Level of Technology.

Simply by locating its operations outside the home economy, the TNC engages in the geographical transfer of product and process technology. A point stressed particularly by the policy agencies in relation to the Japanese and American TNCs. However, of concern here is the overall level of this technology. Are for instance the locating plants producing products at the end of product cycles for mass consumption markets? How does the fact that many of the plants are concentrated in high technology sectors e.g can electronics lead to a beneficial pattern of technology transfer?

With regard to existing literature, the extent of technology transfer from parent to subsidiary is only poorly understood. Because of this great emphasis is placed on autonomous technology creation at subsidiary level. Evidence as presented above suggests that limited R&D among plants in South Wales and, even where present, little of the R&D undertaken could be regarded as contributing anything to fundamental product and process innovation. However, it is clear that a number of plants have been at the leading edge of production process innovations, particularly those introducing what has been termed flexible production methods. While a more detailed examination of these processes is made in relation to the electronics industry in the

next chapter it is clear that these kind of innovations have been more widespread, particularly with regard to the Motor vehicle industry and its associated component suppliers, as noted above in the Bosch case.

Most significantly, the Ford Motor Company has increasingly sought to introduce flexible process innovations as part of its overall 'After Japan' or 'AJ' strategy. In this respect, The South Wales engine plant at Bridgend and the spark plug plant at Treforest were at the forefront of this strategy; based primarily on new 'green' technology engines in response to market demands and in response to the need to develop just-in-time production relationships with its other European plants. At the Bridgend plant for instance Ford had been engaging in a £750m investment strategy to replace its older labour intensive engine plant with a new capital intensive 'flexible' plant capable of introducing product innovations such as catalytic converters. However, at the time of writing (April 1990) it has just been announced that much of this development is to be switched to Ford's Cologne Plant. Significantly, amongst the reasons given for this decision was the need to maintain 'just-in-time' supplies in hours rather than days and the South Wales plant was felt to be too risky in terms of delays caused by labour shortages as well as port delays.

<u>The Retention and Stability of TNCs.</u>

Analysis of the existing stock of TNCs with regard to assessing factors which are significant in the maintenance and development of a

Welsh presence is extremely complex. At one level the overall competitiveness of the global corporation will clearly impact upon the Welsh subsidiary : rapid growth in the output of a subsidiary is a reflection of the success of the parent in technical innovation, marketing and so on. Equally however, the performance of the Welsh plant plays an important part in such decisions and this may relate to a number of factors such as productivity, labour relations etc.

In these respects, the answer until recently would tend to be largely positive. The emphasis on process innovations associated with new technologies and increases in the capital to labour ratio would tend to point to the consolidation of plant operations and can be associated with a long term commitment to the South Wales economy. The exception to this would however, seem to be the case of the Ford Motor Company's recent decision to switch a planned long term investment as described above has been made. Optimistically this might however be seen as an exception rather than a rule.

However, the important question here surrounds the long term future of process technologies. Following a Schumpeterian logic for instance, a strategy based on cost reduction through process changes may fail dramatically in the face of a fundamental and successful product innovation, as their is little value in producing an obsolete product. In this respect, it is suggested that the extent that TNCs may be able to offer a long term future will depend on whether they are able to

introduce new product technologies, a question that is very difficult to answer.

The New Spatial Division of Labour

Finally of course the major impact criterion is jobs and the quality of those jobs. In theoretical terms, following the work of Braverman (1974) it has become conventional wisdom that branch plant type activity can be associated with a net de-skilling effect. More recently analysts such as Cooke (1987) have noted how the introduction of flexible technologies can be associated with an increasing labour market dualism between a core sector of highly skilled technical and professional workers and a low skill frequently feminised, part-time and non-unionised operator grade. In South Wales, for instance, Morgan (1986) has suggested that many of the new jobs have not been taken by ex-miners or ex-steelworkers but by their wives, daughters and sons or those thought to "have least to unlearn as regards traditional workpractices." (Morgan 1986 P.342)

In this respect, the findings from this study tends to indicate that the overall composition of jobs created by TNCs largely reflects the concentration of plant functions in manufacturing and assembly type operations. Evidence from the plant survey for instance, tends to suggest than on average, unskilled and semi-skilled employment accounts for some 43% and 34% of total plant employment respectively, while a further 23% are engaged in research, technical

and managerial type employment. As regards theoretical predictions concerning the so called feminisation of labour, evidence on the structure of plant employment change by gender and part-time employment change can be examined with regard to census of employment data as presented in figure 4.2.

While these figures would tend to lend some support to the feminisation thesis, it seems notable from figure 4.3 that much of the employment growth has been in full-time, rather than part-time employment.

Specifically, all but two sectors have experienced a decline in part-time employment, while female employment has grown in a number of sectors such as the manufacture of metal goods, electrical engineering, textiles, paper printing publishing and food, drink and tobacco.

Figure 4.3 Employment Change in TNC dominated sectors SE Wales.

SIC 1980 Category	%Change in total employ 1981-87	%Change in male employ 1981-87	%Change in female employ 1981-87	%Change in Female part-time employ 1981-87.
Metal Manufacture	-28.7	-26.3	-56.2	-36.7
Manufacture Metal Goods	25.6	19	51.8	-51.7
Mechanical Engineering	-26.4	-24.1	-36.5	-21.7
Electrical Engineering	6.6	3.7	11.2	-39.1
Motor Vehicles	-21.4	-18.1	-41.0	-72
Chemicals	-22.4	-27.3	-9.6	2.5
Instrument Engineering	3.9	5.6	-1.2	-57.3
Textiles	2.7	-10	47.1	**
Paper Printing Publishing	1.9	0.1	6.6	24.7
Food Drink and Tobacco	3.7	0.4	7.1	-27.5

Source: Census of Employment, National Online Manpower Information Service (NOMIS) based on Author's aggregation of study area.

In terms of relationships between the new jobs created and the regions traditional 'labourist' culture, it seems frequently to be the case that compromises have been reached. In the Japanese case for instance, the approach has been to enter into a single union deal in nearly every case. This solution seem partly attributable to the unions early negotiations with trade unions by the WDA although as noted above the more general

effects of recession and and job loss have had a major disciplining effect. Generally, industrial relations in the new plants have not been regarded as a problem. The WDA has for instance commissioned surveys into industrial relations which have reached positive conclusions from the point of view of both labour and TNCs (Arthur D. Little Ltd. 1987). From a union point of view, both unions contacted were actually favourable to inward investment although comments were made to the effect that plants often favoured younger workers, and that voluntary severance was increasingly offered to older employees who attempted to introduce old work practices. In the case of Japanese firms, particular comment was made concerning the level of commitment that was expected . For example one area official commented;

> "Unfortunately in the early days of Japanese companies becoming operational their philosophy that the private life of an individual is secondary to the working life has caused some clashes, and it is not unknown to witness Japanese members of staff working weekends and 12-14 hours a day on a regular basis. This total commitment they invariably believe should apply to other employees and once again it takes time and effort in persuading them to understand the British view of domestic life" (Union Official 2.2.90)

However, the fact that unions have been involved at all seems to be an advance over the Scottish case and in particular, American multi-nationals which have brought with them an aggressive anti-unionism. (Young 1984)

Conclusion: Policy Assessment.

This chapter has provided an assessment of policy outcomes in terms of how policy has affected the overall process of economic development associated with the TNCs in the study area. In theoretical terms it had been suggested that policy has been one of a number of contingencies operating upon the more widespread process of restructuring operating internationally and accelerated during during the recessionary period.

The extent that explicit economic development policies have been successful seems largely to have been contingent upon a number of implicit policy factors most notably trade relationships and national attitudes to international production as well as more local factors such as transport and infrastructure and the ability to find suitable sites. The fact that these factors have worked in SE Wales favour would seem slightly accidental, rather than as part of any consistent or coordinated economic development strategy. In this respect, it is virtually impossible to specify any direct explicit policy outcomes and in this respect the chapter would tend to cast doubt on many of the analyses which have attempted to do so e.g Rhodes et al (1986).

Two possible implications appear to follow from this analysis. The first is that policy agencies should pay more attention to the role of implicit economic development factors as part of a more coordinated

overall policy approach. Secondly, it seems clear that in public policy terms, economic development policy could potentially extend way beyond the current remit of the Welsh Development Agency or regional policy.

Overall however, the kinds of inward investment and the impacts which these investments may have, seems largely dependent on the function Wales has come to play in the overall spatial division of labour. Broadly speaking this spatial division of labour is characterised by the fact that while areas such as the South east may have a complete complement of functions in this hierarchy (most notably those of control, corporate and divisional headquarter and R & D facilities as they may exist) areas such as Wales are conspicuous for the predominance of production plants. In this respect, the extent to which areas are able to attract or influence TNCs behaviour clearly depends on their potential role within the spatial division of labour which in turn may be dependent upon a range of factors such as labour force skills, accessibility etc. In this respect, when policy agencies such as the WDA boast large pools of flexible semi-skilled labour seems destined to attract branch plants as its outcomes.

However, while there may be some validity to the Hymer (1975) model in terms of Wales taking on a production role, many of the other theoretical propositions which have been put forward from this model and the new international division of labour thesis seem difficult to

sustain. For instance, following the importance of convenient access to the EC market, the suggested position of industry poised to 'runaway' to a low cost, third world location seems greatly exaggerated. Rather, the observation would seem to be that there is no single international division of labour; rather individual labour hierarchies would seem to be nested within a number of neighbouring regions or countries which together form a single market.

Chapter 5.

The SE Wales Electronics Industry.

The focus of this chapter is on the experience of the growing South Wales electronics industry. As chapter 4 has suggested, South Wales has proved particularly successful in attracting a number of investments in the electronics industry. In policy terms, it is also clear that electronics has become the foremost target of both national and regional economic development initiatives.

The importance of this sector as examined here, primarily relates to its role as one of the classic industries of the fourth wave, its role in future job creation and the labour organisation associated with it. As such, there has been considerable debate within long waves as to the significance of advanced technologies for economic development and job creation. In the current period of rapid restructuring, for instance, does electronics contradict the prevailing trends and lead to job creation? One contrary view expressed by Freeman et al (1982) has been that new technologies only contribute to major new jobs through product innovation in Kondratieff upswings, whereas in the recession-depression phase (i.e the 1970s and 1980s) the drive to maintain profitability leads to rapid process innovations, associated with increases in the capital to labour ratio and leading to the phenomena of 'jobless growth'.

A number of other long wave analysts have also argued that the 'jobless growth' scenario may also involve a profound social recomposition of the labour force along both occupational, skill and gender lines. For instance, Morgan and Sayer (1983) have suggested that there has been a broad polarisation of skill between high grade occupations (managers, scientists, technologists etc.) and a lower operator grade dominated by female employment and associated in particular with flexible production methods. Moreover, Massey (1984) has noted how this labour market dualism may be embodied in the overall spatial division of labour. For instance she notes:

> "the enormous contrasts which it encompasses from the jet-setting micro-chip scientist/inventor/entrepreneur, male and flying Ambassador class, to the young assembler of semi-conductors, female..... and likely to lose her job in a couple of years if anyway the company has not moved on by then, as her eyesight fails .....It is a social contrast with definite spatial co-ordinates, it doesn't just stretch it is deliberately spaced, from California to the Masan Free Production Zone, South Korea" (Massey 1984 p.137)

In these respects, the extent to which the the SE Wales electronics sector follows such a pattern, has significance for the future development of the region and for economic development polices, which have frequently regarded electronics along with other high technology sectors and the 'touchstone' of economic success (Dicken 1986). This chapter examines the electronics sector, the reasons for its location and its likely impacts based upon a close analysis of overall employment change and some detailed case study material of two Japanese plants.

Character and Structure of the Industry

The character of the industry is such that, although sharing similar technology, the products of the sector differ considerably. In this respect, there has been considerable debate as to how the sector can be defined. Broadly speaking, definitions tend to equate certain sub-sectors of electronics with 'new information technology' (Hall and Preston 1987). Whereas, for other purposes the sector has been defined as part of a 'high technology' definition (Hall et al. 1987). However, following Dicken (1986) it is possible to identify three distinct sub-sectors of electronics; a core components sector, a electronic equipment sub-sector and consumer electronics. In statistical terms, the building blocks for such a definition are the standard industrial classification SIC (1980) as presented in figure 5.1 and the resulting distribution of employment between these sub-sectors is presented in figure 5.2; by gender, female part-time employment and in comparison to the overall British picture in these electronics sub-sectors. Collectively, the electronics sector accounts for some 21,500 jobs in South East Wales or some 15% of total manufacturing employment.

Overall, it is suggested that these figures broadly reflect the increasing concentration of electronics in South Wales arising primarily from the new inward investments as outlined in chapter 2. More specifically, while the national picture of employment change

has been one of decline in the components and equipment sector and modest growth in the consumer electronics sector, largely in contrast the South Wales electronic sector has experienced growth in the components and equipment sector and a small decline in the consumer electronics sector reflecting the increasing number of plants locating in SE Wales. The small decline in the consumer electronics can almost wholly be explained in terms of the decline of two long established plants; GEC's Television plant (losing over 2500 jobs associated with the takeover by Hitachi) and job losses resulting from the reorganisation of the Hoover plant at Merthyr Tydfil.

Figure 5.1 The Definition of Electronics and its sub-sectors.

ELECTRONIC COMPONENTS
3443 Radio and Electronic Capital Goods
3444 Components other than active components
3453 Active Components and Electronics sub-assemblies

ELECTRONIC EQUIPMENT
3302 Electronic data processing equipment
3420 Basic Electrical Equipment
3432 Batteries and accumulators
3433 Alarms and signalling equipment
3434 Electrical equipment for motor vehicles
3435 Electrical equipment for industrial use not elsewhere specified
3441 Telegraph and telephone apparatus and equipment
3442 Electrical instruments and control systems
3443 Radio and electronic capital goods

CONSUMER ELECTRONICS
3452 Gramophone records and prerecorded tapes
3454 Electronic consumer goods not elsewhere specified
3460 Domestic type electric appliances
3470 Electric Lamps and other electric lighting equipment

Figure 5.2
Electronics Employment Change 1981-87 South East Wales and Britain

	SOUTH-EAST WALES	GREAT BRITAIN	
Sub-sector	% Manuf. (1987)	% Change 1981-87	% Change 1981-87
Total Employment			
Electronic components	26.3	+67.8	-20.2
Electronic equipment	45.3	+9.5	-15.
Consumer electronics	28.4	-2	+11.1
Male Employment			
Electronic components	12.7	+95.8	-18.0
Electronic equipment	24.3	+1.1	-17.0
Consumer electronics	18.3	-8.0	+14.3
Female Employment			
Electronic components	13.6	+48.1	-24.5
Electronic equipment	21	+21.3	-14.0
Consumer electronics	10.1	+10.9	+6.1
Female Part-time			
Electronic components	1.6	+29.5	-52.0
Electronic equipment	1	-45.6	-32.3
Consumer electronics	0.6	-39.2	+10.4

Source: Census of Employment (NOMIS)

While much has been made of the growth of female, particularly part-time labour (Morgan 1986) which is often taken to be an index of job creation in the lowest 'operative' grades (Cooke 1986), the evidence here is largely inconclusive. While it is true to say that all the sub-sectors of the SE Wales electronics sector do employ a marginally higher proportion of females than nationally and female

full time employment has increased, it is also clear that male employment has been holding its own, or even increasing its overall representation, particularly in the components sector. Notably there have also been declines in part time employment in the SE Wales equipment and consumer electronics sectors. Thus overall, it is suggested that in the period 1981-87 South Wales has experienced modest growth in both male and female employment in the electronics sector.

Having identified the overall employment change, the question then concerns how this employment growth has been related to output and technical change at the plant level. Clearly these kinds of question require detailed analysis and in this respect the chapter turns to some specific case study material. Here the focus is on the experience of two long established Japanese plants; Sony and National Panasonic (Matsushita Electric Co) This focus is justified for a number of reasons. Firstly, because it is arguably the most advanced sub-sector in terms of process innovations. Secondly, because of the clear demonstration effect this sector is having on the rest of the South Wales electronics sector; both Sony and Panasonic have received a considerable number of visits from other parts of the electronics sector who seek to implement Japanese production methods (Survey evidence).In turn it has also been suggested that the electronics industry has been inspiring an imitative effect particularly in terms of its industrial relations practices. (Morgan 1986) Thirdly, because

it is the existence of a Japanese dominated sector which distinguishes South Wales from other well documented localities such as Scotland (Young 1984). Finally the sector is interesting in ideological terms for the management-labour practices it has implemented and for the exaggerated suspicion that this sector has received, largely in contrast to the experiences of the European or US sector.

The Case of Sony and Panasonic.

Overall the most remarkable feature of the Japanese corporation has been the speed of its growth and its ability to gain market power on an international scale through superior products, technology and productivity. The founder of Sony, for instance, began by making recording tape in a frying pan in the late 1940s, yet by the 1980s stood at the command of a corporation which turns over $7 billion a year. In this respect, the relatively late arrival on the trans-national scene in the 1970s seems fully explicable.

In location terms, the actual experience of Sony and Panasonic is remarkably similar. Sony arrived in the UK in 1973 and commenced production of Colour TVs (CTVs) in 1974, Panasonic arrived in 1975 and commenced production of CTVs in 1976. Both plants developed UK corporate headquarters in the South East; Sony at Staines (with a distribution centre in Thatcham, Berkshire) and Panasonic at

Bracknell, Berkshire. The actual decision to locate in the UK can be seen as part of the hierarchical location decision-making structure outlined in the previous chapter. The fact that Colour TVs were based on an established technology allowed production to be decentralised to other than parent locations. Sony for instance, took the decision to locate in Europe for market reasons, and in particular the need to locate behind tariff walls, while the second decision to locate in the UK was taken on the basis that the UK was the largest market for colour TVs in Europe at this time. It also favoured the UK because of a high degree of political stability, the encouragement it received from central government and because it was English speaking. For instance, the UK managing director of Sony reasoned that if it was hard to find Japanese who spoke English, it was all but impossible to find anyone who spoke rudimentary German. (A. Tokida quoted in Economist 2.2.85). Panasonic's decision making followed a similar pattern, although the fact that their rival Sony had been successfully established in the UK was also a major factor.

Having taken a decision to locate in the UK, the choice of location was determined by a number of factors. In both cases the plants' function was the assembly of Japanese made kits of components, and in this respect both firms were keen to choose locations with suitable labour and where financial grants and incentives were available. A number of assisted areas were considered (At this time both Cardiff and Bridgend had full development area status and were thus eligible for

the full rate of assistance.) In this respect, the actual choice of Wales is attributed to the excellent transport links with their South East headquarters and Heathrow, and it status as the closest development area to the core South-East area. Both firms also suggest that South Wales was particularly promoted by central government because of the proposed rundown of the state-owned sector in coal and steel in the region. In this respect, as new entrants, both firms were keen to 'win friends in high places' and gain political support. Both firms also stated a range of 'psychic' factors prominent amongst these were local sporting and cultural facilities.

Site Requirements.

As noted in the previous chapter site requirements for incoming TNC are often particularly important and in this respect it seems useful to examine the particular case of Panasonic.

On arrival in the UK, Panasonic chose a location in premises on the Pentwyn Industrial Estate north-east of Cardiff; close to the M4 and to a suburb which it was believed would provide a ready supply of willing labour. With rapid expansion by the early 1980s, Panasonic had reason to more than double the size of their floorspace. Typically, this was achieved by adding further 'sheds' to specialise in particular parts of the production process / products. Here Panasonic reasoned that even with expansion, it was important to keep component parts at a manageable and 'human' scale. However, rapid expansion had

meant that, by the late 1980s, all available land at the Pentwyn site had been used. In this respect, the response has been for the WDA to assist in the relocation of neighbouring plants (a soft drinks bottling plant) on the industrial estate in order to secure further premises. Notably Panasonic were concerned to ensure that expansion of the site could take place before investment in new production technology was contemplated.

The Production Process

Since establishment in South Wales the actual character of both plants has changed considerably. In both cases, though particularly for Sony, these changes can be characterised by an increase in local content, increases in the amount of capital employed (capital deepening), some product innovation associated with the development of complementary products such as video recorders (VCRs) and teletext and generally expansions in output not matched in magnitude by increases in employment. In this respect both plants have followed Freeman et al's (1982) scenario of 'jobless growth' in the second half of the long wave.

More specifically in the Sony case, a higher degree of local content began with the production of printed circuit boards (PCBs) and other key components in 1975 and the development of full Cathode Ray Tube (CRT) manufacture in 1980. This latter development involving considerable capital investment and only feasible as production had

considerably expanded, and still required 24 hour operation to be cost effective. In comparative terms, with the withdrawal of full CRT production by the last indigenous UK producer, Thorn EMI in 1986 (Milne 1990) this gives Sony CTVs the highest UK content of any produced in the UK. In the case of Panasonic, local content development by value stands at around 70%. Both Sony and Panasonic are in the process of introducing surface mounting (SM) technology, currently the most advanced technology in the industry, which allows the automated assembly of irregular shaped components.

With the higher degree of local content, both plants have seen their output increase rapidly through the 1980s. By 1981 Sony had reached the half-million mark in CTV production and the millionth mark by 1983. Sony's introduction of full CRT facilities has also meant that over a million CRTs were produced between 1982 and 1985. Both have used their South Wales plants as an exporting base, with around 65% of output exported in both cases. Sony also became the first Japanese firm to win the Queens Award for Export Achievement. In employment terms, the general increase in the capital to labour ratio has meant that employment has increased at a slower rate. From an initial employment level of around 500 in both cases employment now stands at 1250 (Panasonic) and 1500 (Sony).

The form that the production process takes can be broadly be labelled 'flexible' although the label 'postfordist' is strictly inaccurate given

that Japanese Industry never went through a 'fordist' production stage (Florida and Kenney 1990). The form that this flexibility takes can be divided into a number of areas including recruitment practices; management and worker work practices; technology employed; and sub-contracting and sourcing arrangements. The major features of which are outlined below.

Flexible Recruitment Practices. At both plants these include the use of temporary workers to reflect the seasonal demand for consumer electronics. Typically, the total labour force is increased by 10-20% between August and Christmas. Temporary workers are given contracts of employment for their period of work and receive the same pay rates as permanent staff. Permanent workers have often been drawn from these groups should permanent vacancies arise. New workers at both plants are typically given a three month probationary period with particular attention being paid to punctuality,commitment and attitude. Neither Sony or Panasonic employ part-time workers. No members of staff have ever been made redundant at either plant.

Work Practices and Management-Labour relations Once employed, workers are expected to adopt flexible work practices. At Panasonic this extends across products and between tasks. For instance, workers might be expected to move from colour TV to audio production when demand for colour TVs slackens, or for instance,

assembly workers might be expected to undertake routine maintenance as well as covering for missing operatives. In terms of Union involvement, both firms, along with the majority of Japanese firms in S. Wales have insisted on single union agreements; thereby breaking down demarcations associated with craft trade unionism. Significantly, the fact that such practices have successfully been introduced, and both firms actually compliment their workforce on their 'flexibility,' seems anachronistic given the highly unionist legacy and hard fought job demarcations outlined by a number of analysts (Cooke 1987) In this respect, it seems possible to identify a number of ways in which these traditional work practices have been replaced without much struggle.

In particular both plants have followed the classic scenario of employing 'green' labour, particularly in the form of encouraging female applicants. However, while representatives of both plants acknowledge that women have taken to the new work practices with 'less prejudice' and seem more suited to the work than their male counterparts, it is suggested that female employment arises from a self-selection process. In particular, since both men and women are paid the same pay rates, this has tended to attract women into the industry because it offers higher pay rates than 'traditional' areas of 'female employment' such as retail or clerical work. The suburban location of the plants also makes them more accessible to this group. Male work has tended to be concentrated in traditional 'male' areas of

work such as packing and delivery. Overall both plants employ around 65% female labour.

In contrast to the female labour strategy, representatives of the plant prefer to point to the introduction of 'consensus management' practices. By this is meant the squeezing of the status hierarchy and is reflected by practices such as all employees other than the Managing Director wearing the same uniform, sharing the same car parking facilities and receiving, in many cases, the same perks such as private medical insurance. It is also reflected in the establishment of worker-management meetings, meetings concerned with quality and production improvements and the predominance of internal promotion. Notably absent is the early morning exercises and work based social life which forms the popular image of Japanese work practices. The effect of these initiatives it is argued is to improve the overall morale of employees, and to establish a loyalty to the overall company. In some respects the claims to worker participation are to be regarded with some suspicion. As with all participation exercises the co-option of employees into decision making structures enable management schemes to be introduced to a more quiescent workforce and the cumbersome nature of genuinely participative exercises would seem to conflict with the flexibility which both Sony and Panasonic claim to have achieved. In addition as a trade union representative in the survey noted, the effect of these participation exercises can be seen as part of an attempt to make bargaining via

trade unions seem increasingly irrelevant to individual workers.

Technology employed. As outlined in an earlier section the form that process innovations have taken can be largely associated with capital deepening. In this respect investment can be argued to be relatively long term. In Panasonic's case, even based on the initial investment as an assembly plant, it was 7 years before the plant was able to break even. More recently, plant representatives suggest that investment requires a longer payment period. In this respect, the decision to invest in South Wales tends to be a relatively long term one. It also requires that the technology employed is flexible enough to allow short production runs to meet changing market demands. In the case of Sony and Panasonic this increasingly requires that capital goods must incorporate the latest process technologies and in turn it requires designers to develop products which incorporate common components. This requires heavy investment in research and development. As a result of the considerable costs involved this has lead to a number of joint arrangements with other firms; Panasonic for instance, has a joint research programme with the Dutch based corporation Phillips-Mullard.

Sub-Contracting and Sourcing arrangements. At both Panasonic and Sony production subcontracting is an important feature. Given the need to have production methods that are rapidly adaptable to changes

in demand and to the introduction of new models, flexibility has been enhanced by concentrating on core manufacturing activities and subcontracting or sourcing components which are likely to change rapidly. In Panasonic's case, the plastic moulding of cases has been subcontracted to allow for essentially style based changes to CTVs. A further feature of this sourcing subcontracting relationship is the increasing use of just-in-time (JIT) inventory control. Panasonic for instance, works on a three day supply of bulk items such as packaging and plastic mouldings, but has to still retain a three month supply of smaller components, although it is looking to introduce JIT methods to these inputs in the near future. The ability to introduce such production methods depends largely upon a close relationship between the sub-contractor/supplier and Sony or Panasonic. The form that this relationship takes is a two way affair with both firms placing great emphasis on checking the overall competence of the supplier, and will include an audit of the suppliers financial resources, calibre of personnel and quality control procedures. Sub-contracting also characterises much of the on-site activities of both Sony and Panasonic; production is increasingly undertaken by separate branches of the same company operating on the same site. This is to avoid the problems associated with large single factories producing a variety of different products and services. Representatives from Sony for instance, suggest that the form of the subcontracting relationship means that it is increasingly necessary to have subcontractors and other suppliers 'close at hand' and in this respect they point to the

increase in component manufacturers in South Wales over the last few years; which seems largely to be reflected by the employment changes in the last few years (figure 5.2).

Implications for Future Economic Development

The Role of Technology.

In terms of the impact of new technologies, and the importance of new technologies for economic development, the results would at least seem to offer some optimism. This is because the distinctive feature of the Japanese plant has been that process innovations have been accompanied by some product innovation. As Sayer and Morgan (1983) have suggested the Japanese sector have introduced a form of product innovation in the form of a much higher quality product. Moreover, as Morris (1990) has noted in the case of Colour TVs, the Japanese product contains less that a quarter of the components contained in the British equivalent; a factor which in itself has led to the rapid obsolescence of the British product and why Sony is now the main UK producer.

Spatial Organisation

Spatial patterns of TNC organisation, particularly in the electronics sector have generally been associated with dispersion although there has been considerable debate over the causes (Fothergill and Gudgin 1982, Massey 1984, Hymer 1975). However many of the above trends outlined for the electronics industry would tend to point to the

spatial reconcentration of production plants, suppliers and subcontractors arising from process innovations in production especially involving close sub-contracting and just-in-time techniques. Indeed these relationships have been suggested to lead to a spatial reconcentration of production in particular area arising from industrial agglomeration.(Morris 1988, Lipietz and Leborgne 1988, Milne 1990). A number of other researchers have also pointed to the examples of industrial agglomerations in Japan (Ikeda 1979 quoted in Morris 1990) In the Welsh case as has been suggested there have been a growing number of components plants emerging over the last few years and the existence of a number of similar firms was suggested in the survey to be a major location factor.

However, this argument rests on the degree of localisation that is involved. Given the overall function of most plants for middle to end of product cycle production it seem clear that information contact does not to be as rich as has been attributed to more innovative locations such as Silicon Valley. Moreover, the more general pattern of sourcing and subcontracting derived from the survey tends to suggest that other parts of the UK or even Europe can be regarded as local.

Conclusion: Future Employment Impacts

In part the overall picture of employment growth provides some support for the 'jobless growth' scenario. Whilst this growth industry seems poised for further output expansion, this currently promises little net employment growth. Indeed it is probable that much of the employment growth which has occurred can be attributed to the arrival of new projects rather than growth in existing concerns . Within this overall position it is suggested that occupations above and including technicians seem likely to increase largely at the expense of semi-skilled employees; Sony for instance took on 175 graduates in South Wales in 1989 but its overall workforce remained static. Somewhat paradoxically however, it is suggested that these changes may have positive effects in terms of raising the technological profile, creating stability and raising productive capacity, but limited effects in terms of indigenous job creation.

A glimmer of hope in job creation terms can be found in the fact that some further job benefits may follow from the secondary or spin off benefits into the economy. This seems likely to occur in two ways. In the first case having developed something of a 'critical mass' in electronics (particularly Japanese) The area seems well placed attract further similar investments on the basis of the demonstrable success of existing plants. A factor which is increasingly being used by the WDA as a marketing tool. Secondly, although it seems too soon to make any definite predictions, there may be some potential

benefits associated with the localisation of suppliers associated with just-in-time suppliers and subcontractors. Although clearly there is no guarantee that these benefits will be realised.

As regards the qualitative aspects of future employment, it does seem particularly difficult to make any firm predictions. Although incidentally it is suggested that attempting to relate empirical evidence of the labour process to many of the theoretical approaches in this case is highly problematic. For instance, to the extent that pattern of work may follow the 'de-skilling' stereotype which dominates much of the literature from Braverman (1974) onwards, is far from clear. As Sayer and Morgan (1983) have noted, it is largely unclear as to whether 'deskilling' refers to the overall labour process or to the tasks of the individual workers. This dilemma is particularly acute at the Sony and Panasonic, where the recruitment of increasing numbers of higher skilled workers and the marginalisation of an operator grade represents 're-skilling' (at the overall labour process level) or 'de-skilling' for the individual operator grade, or both!

Chapter 6
Conclusions and Speculations.

This final chapter draws out some of the main conclusions and implications of the analysis as a whole. The aim though is not just to provide a comprehensive overview but also to suggest some implications and to examine future policy scenarios.

This study has primarily been an exercise in policy evaluation seeking to explore how policy has been able to influence the location and investment behaviour of the TNC as a means of promoting economic development. The study has examined the specific case of South-East Wales as a 'strong case' owing to its relative success in attracting inward direct investments.

The study has used Kondratieff long waves to provide the necessary link between the observed pattern of change in South Wales and a 'global' historical process. The major strength of this perspective is the capacity to merge a range of approaches which focus on particular elements of the economic development process, such as technical change, changes in the production and labour process and to show how they relate to one another within a unified historical framework. For instance, following Schumpeter's creative destruction thesis; production reorganisation, rationalisation and the resulting spatial

change are an inevitable aspect of the evolution of the TNC. The actual form that these changes may take depends upon forces both external and internal to the TNC organisation and in this respect it has also been noted that change may be intensified in the recession-depression phases of the long wave corresponding to the study period here.

In empirical terms the study has sought to explore the overall pattern of economic change, the policy response and the effect of that policy in terms of securing the effective regeneration of the SE Wales study area. Following these investigations, it seems clear that SE Wales has been remarkably successful in the attraction of transnational investment and that state policy has had a significant role in shaping the final location decision-making. The composition of this transnational investment largely reflects the highly concentrated sectors dominant in the fourth Kondratieff wave and benefiting from the 1960s boom (chemicals, motor vehicles, instrument and electrical engineering). Equally the source of this investment has reflected global trends in the foreign direct investment environment, with an early dominance of United States investment giving way increasingly to European and Japanese sources; the latter particularly dominant in SE Wales.

The function of plants locating in South Wales can be said to reflect the fact that Wales forms a production role in the overall spatial division of labour. The simple but fundamental point to be made from

this is that Wales like many other similar regions has not proved able to attract higher level functions. Indeed within the UK, it would seem that the spatial division of labour is characterised by the fact that only the South-East has managed to attract a full or near full complement of all functions in the hierarchy; most notably those of control and conception in the shape of corporate and divisional headquarters and R & D activities, while the remainder of the country is probably characterised by production or low level research type activities.

Employment Consequences.

In terms of employment, it is suggested that TNCs have contributed to some positive employment growth, although the overall effect of inward investment has largely been to offset rather than halt the more general process of manufacturing job-loss. Following the analysis conducted in chapter 2 for instance, it has been noted that over the period 1981-87, the South Wales manufacturing sector has generally performed better to the tune of 17,000 jobs than might be expected given the structural characteristics of the South Wales economy and the national context of manufacturing job-loss as derived from shift-share analysis.

The contribution of TNCs to employment structure and quality can be viewed as directly reflecting the concentration of plants in assembly and manufacturing type operations and a general absence of much

fundamental research and development activities. As Morgan (1986) and Cooke (1987) have suggested, the connections between the employment created by incoming TNCs and traditional sectors such as coal or steel is that it is not ex-miners or ex-steelworkers who find employment but their wives daughters and sons. Moreover, it seems not to be the case that there is skills mismatch, so much as these latter groups have proved more willing to accept the 'flexible' work practices adopted by incoming TNCs.

In terms of skill structures, it is suggested that the effects of plant consolidation subsequent to location may lead to an increasing polarisation of skills. In the electronics industry for instance, capital investment in automated production processes is creating an increasing division between a core managerial/research/technical and a low skill operator grade frequently supplemented by temporary labour.

This study has noted that there are limited moves towards firms engaging in flexible strategies, including the use of flexible workforces - both numerically and functionally - greater use of subcontracting, and the introduction of new flexible technologies. This evidence is by no means overwhelming and is based on a few selected examples. Moreover, even within these flexible operations, there is some evidence of the maintenance of more traditional supply relationships within the whole corporation. In this respect the study

tends to agree with Sayer (1989) that the actual experience of plant organisation cannot easily be conceptualised by simple polemical contrasts such as between 'fordism' and 'postfordism' and that there is no simple evolution from one to the other.

The role of technology.

Following the central, though not determining role, place to technological innovation by long wave theorists in future economic development and the increasing emphasis put on the attraction of newer technology inward investments by all the policy agencies, this study has been concerned to examine the implications of new technology for local economic development.

The primary effect in technological terms of the new plants, particularly in the electronics sector, has been to introduce established product technologies and new process technologies; this has been particularly so in the electronics industry. However, while the study has noted the relative resistance of this sector to the general effects of recession in the South Wales context, this result needs to be qualified with regard to the phenomena of 'jobless growth' that can be observed within the sector. In particular, the combination of component standardisation, growing capital intensity and scale economies has been that the employment generated per unit of investment or output has fallen. Moreover, the compensation effects in terms of *spin-off* effects into the local economy do not seem

guaranteed. In this respect the process of economic regeneration and specifically long term job growth seems to be highly dependent upon the attraction of further investment projects rather than employment growth in existing ones.

The Value of Economic Development Policy.

This study has been primarily concerned with identifying the net effects of policy effort and to explore the overall processes which determine location. Following from this it is suggested that choices of TNC location have not generally followed the "quest for cheaper and more controllable labour pools" (Smith 1987 p237) suggested by a number of theoretical approaches. Rather it is suggested that state policies have played a significant role though not necessarily explicitly. For instance, TNC location choice has been remarkably constrained by trade polices operating particularly at EC level. At the British level it is suggested that the liberal nature of competition policy and the general lack of institutional barriers whether for 'greenfield' or 'takeover' investment has been a clear determinant of Britain taking the lions share of inward transnational investment in Europe. The need to serve particular markets also limits the potential for relocation - a factor which has been stressed by a number of theoretical approaches.

However, at the same time the fact that many of the plants coming to Europe or the UK have subsequently chosen to locate in SE Wales is

clearly no accident. However, if public policy is supposed to be based upon the on coordinated decisions coupled with an awareness of the consequences, then the particular way in which TNCs have responded to policy can be seen as largely accidental. In particular, this study has noted the importance of other policy decisions over which the explicit policy agencies have limited control; notably transport and infrastructure considerations. At the level of explicit policy, it is clear that both regional and local policy initiatives have been able to benefit from these arrangements and the infrastructure factor in particular has been effectively used by the WDA as part of its marketing strategy. That said, it is clear that explicit policy measures particularly financial grants and incentives as well as the advance provision of industrial premises have been cited as relatively important influences on the location decision.

Much explicit policy success can be attributed to an impressive array of economic development initiatives coupled with an organisational ability that has included the successful targeting of particular sectors and sources has emerged, as well as the adequacy of resources available. In organisational terms, the division of responsibility between the Welsh Office (Regional Policy) the WDA (Promotion) and the County Councils (Planning and land) which at first seems fragmented is actually characterised by a high degree of cooperation. In particular these policy agencies' ability to work together quickly to assemble a package of benefits (e.g in the Bosch

case) is a key feature of policy success. In resource terms, the adequacy of funding supports this organisational ability. The WDA for instance, began in 1976 with a budget of £20m in 1976 and by 1988 had a budget which included a £65m grant from central government and a further £30m or so from property and investment income. Equally as both a reflection and a cause of the high level of inward investment is the Regional Selective Assistance (RSA) budget. This totalled £81m in 1988 in support of projects exceeding £1bn and can be set against a total RSA budget nationally of £526.7m with Scotland taking roughly half as much of the RSA budget as Wales. (Financial Times 26.9.89) At the local authority level, although not having sufficient resources to influence the TNC sector it is suggested that a significant role exists through the land-use planning function; indeed site considerations particularly for greenfield investment seem increasingly paramount.

Policy agencies, particularly the WDA, have also demonstrated an ability to work with other organisations, notably trade unions. Particularly in the case of the WDA the ability to establish single union agreements has gone some way to overcome the problems faced by trade unions in the Scottish case, where US electronics plants have attempted to drive a non-unionised wedge through trade union practice. (Young 1984, Economist 2.2.85) However, it is also clear that the more national effects of recession has had a strong disciplining effect on this process. The creation of single unions has

also enhanced the position of elites and arguably has contributed to the imperfect pluralism already implicit in relationships between representatives of big business and government and a general neglect of citizen interests.

Future Policy Models.

Finally this chapter turns to consider how policy could deliver better results drawing upon the lessons from South Wales.

While policy efforts have had some success, it is suggested that their implementation has proceeded in a characteristically British ad-hoc fashion. The exception to this may be the Welsh Development Agency which has demonstrated some ability to develop some long term goals e.g in targeting particular sectors such as electronics over a relatively long time period. However, regional policy even with its sharper new focus, has remained steadfastly reactive and local authorities particularly in planning terms have been charged with being broadly reactive to business interests (Department of the Environment 1983, 1984). More generally, we have seen that some state benefits to inward investors have occurred almost by chance. In this respect, it is suggested that two particular policy implications follow. Firstly and most obviously, that state policies should pay more attention to economic development effects and that the solution to economic development problems are by no means restricted to the existing terms of reference of regional agencies such as the WDA or

of regional policies traditionally conceived. Secondly, if public policy is to have a proper and effective role in the economic development process then it ought to be based on an awareness of the consequences of decisions made.

Most particularly a future strategy might follow something along the lines of the Japanese technopolis programme, as described by a number of analysts (Masser 1990, Toda 1987, Glasmeier 1988). Although this particular 'policy model' may not be immediately transferable to the British context it is suggested that some of its features may provide a basis for future policy involvement.

The technopolis programme is primarily interesting because it promotes technology led economic growth to promote the expansion of peripheral regions . Overall the approach as been described as an "eclectic mixture of Silicon Valley, industrial parks, English garden cities and Japanese castle towns" (Tatsuno, 1986 p199 quoted in Masser 1990). The major features of this programme in terms of incentives are broadly similar to those already described in South Wales; modest financial incentives from central government and the establishment of a local promotion organisation. However, in order to receive designation and what distinguishes this programme from Wales, is the requirement to form an overall plan of development. This plan includes a set of main goals, provision for basic infrastructure; which includes housing and social considerations and a programme to

co-ordinate public and private sectors e.g. by using the public agency as a basis for identifying and developing local supply relationships.

Translated into the British context, it is suggested that this would represent no more than a return to long term strategic planning and a slightly more interventionist approach to maximise benefits. In this respect two possible improvements to policy delivery are suggested.

Firstly, there should be more conscious forward planning and co-ordination between the agencies involved. In particular, at the national level a strategy of identifying particular kinds of areas for particular developments might get over the problems associated with the perceived wasteful competition between localities. In addition, given production process changes towards closer links between suppliers, producers and sub-contractors, the assisted and targetted creation of production complexes would seem to contribute to a greater degree of stability within particular sectors, and guaranteed employment benefits.

Given the present structure of agencies, it is suggested that bodies such as the WDA in association with the existing local authorities could provide an important regional function. In particular by providing broad plans for the local economy with local authorities identifying and designating realistic sites (which it seems that the current structure plans have failed to do) there would seem to be

benefits in developing a highly responsive framework and also in identifying infrastructure requirements in advance. In addition, these plans could form a stimulus to 'bottom-up' efforts in areas such as training and education thereby making the overall approach of policy more accountable as well as reinforcing the different efforts already going on at the local level. Local agencies could also be responsible for a much broader base of of sophisticated training and retraining programmes to provide for the demands of new technology.

Secondly, it is suggested that there is a potential role for increased monitoring of activity subsequent to location. This reflects the fact that there may be considerable benefits from trying to maintain and develop what has already been attracted to Wales. If monitoring is to be effective then it must involve discussions with both corporate and affiliate levels to identify changes in corporate strategy which might affect South Wales. Clearly the ability to respond to all changes seems unlikely, but it could have some importance if relocation is being contemplated. In addition, agencies might provide an increasing role as intermediary between TNCs and local suppliers for future inward investment.

The arguments raised against this form of involvement are that it could be high cost, that outsiders could have difficulty getting close to decision makers to obtain corporate strategy details and that even with information, policy makers may be impotent as regards changing

the course of events. On occasions such allegations may be true, but arguably forewarning is better than no warning. In addition it is worth thinking about the WDA attempting to expand its equity stakes (a role that as noted in chapter 3 the WDA has never fully embraced) with a view to improving its access and information. What would then be required, particularly where job losses are involved, is high level government backing.

Overall, given the increasingly dominant position of the transnational corporation in global trade and production, there is a need to embrace TNCs as part of any economic development strategy and in this respect there is a clear need to learn from existing areas of policy involvement, as in South Wales, to understand what this role might be.

Bibliography

Amin A Goddard J.B (1987) Technological Change, Industrial Restructuring and Regional Development. Allen and Unwin. London.

Amin A. Smith I (1987) The Internationalisation of Production and its implications for the UK. in A. Amin J. Goddard (1987) Ibid.

Amin A. Pywell C. (1989) Is Technology Policy enough for Local Economic Revitalisation? The Case of Tyne and Wear in the North East of England. Regional Studies. Vol 23 No 5 pp463-485

Armstrong H. Taylor J. (1985) Regional Economics and Policy. Phillip Allan Oxford

Arthur D. Little Limited (1987) A Survey of Foreign Firms in Wales, their assessment of the Welsh Workforce. Welsh Development Agency. Cardiff.

Bassett K. Boddy M. Harloe M. Lovering J. (1989) Living in fast lane: economic and social change in Swindon. in P. Cooke (Ed) (1989) ibid.

Balchin P.N., Bull G.H. (1987) Regional and Urban Economics. Harper and Row London.

Blakely E.J. (1989) Planning Local Economic Development. Theory and Practice. Sage. London

Begg I McDowall S. (1987) The Effect of Regional Investment Incentives on Company Decisions. Regional Studies. Vol 21 pp459-470.

Braverman H. (1974) Labor and Monopoly Capitalism New York monthly review press

British Business 1975-88 Department of Trade and Industry London

Castells M. (1985) High Technology Space and Society. Sage Urban Affairs reviews.

Chandler S, Lawless P, (1985) Local Authorities and the Creation of Employment. Gower London.

Cohen R.B. (1981) The new international division of labour, multi-national corporations and the urban hierarchy. In M. Dear and A.J Scott (eds) Urbanisation and Planning in Capitalist Society. Methuen London

Cooke P. (1986) Ed. Global Restructuring: Local Response. A report commissioned by the environment and planning committee of the ESRC. London.

Cooke P.N. (1987) Wales. in Damesick P. Wood P. (1987) Eds. ibid. pp191-217

Cooke P. (1988) Flexible integration , scope economies and strategic alliances: social and spatial mediations. Environment and Planning D. Vol 6 pp281-300

Cooke P. Morgan K. Jackson D. (1984) New technology and regional development in austerity Britain: the case of the semiconductor industry. Regional Studies. Vol18.4 pp277-289

Cooke P. (1989) Ed. Localities. The Changing Face of Urban Britain. Unwin Hyman London.

Cooke P N (1980) Dependency formation and Modes of Integration. The Historical and Contemporary case of Wales. UWIST papers in Planning Research. Dept of Town Planning Cardiff No 15

Cooke P N (1981) Local Class Structure in Wales. UWIST papers in Planning Research Dept of Town planning Cardiff No31

Cooke P N Rees G (1981) The Industrial restructuring of South Wales. UWIST Papers in Planning Research no 25 Cardiff

Coopers and Lybrand (1989) Takeover Barriers in the European Community. A report to the Department of Trade and Industry. London.

Cowling K. (1986) The Internationalisation of Production and Deindustrialisation in A Amin & J.B Goddard (Eds) (1986) Ibid.

Damesick P., Wood P., (1987) Eds. Regional Problems, Problem Regions and Public Policy in the UK. Oxford University Press. Oxford.

Damesick P. (1987) The Changing Economic Context for Regional Development in the United Kingdom. in Damesick P. Wood P. (1987) ibid.

Deloitte Haskins and Sells (1984) 'WINtech' an Initiative for Welsh Industry. Deloitte Haskins and Sells London.

Department of the Environment (1983) Industrial Development Consultative Document London

Department of the Environment (1984) Industrial Development Circular 16/84

Dicken P. (1986) Global Shift. Industrial Change in a turbulent World Harper and Row London

Duffy H. (1989) Welsh grants underline high level of investment. Financial Times 26.9.89

Dunning J.H (1985) International production and the Multi-National Enterprise. Allen and Unwin London

EEC (1984) 13th Report on Competition Policy. European Commission Brussels.

Eirug A (1983) The Welsh Development Agency. Geoforum 14 pp375-88

European Community (1987) Official Journal of the European Community. EC. Brussels

Florida R. Kenney M. (1990) High Technology restructuring in the USA and Japan. Environment and Planning A. Vol 22 pp233-252.

Fothergill S. Gudgin G (1982) Unequal Growth. Urban and Regional Employment Change in the UK. London Heinneman

Fothergill S. Kitson M. Monk S. (1986) Property and Industrial Development. Hutchinson. London

Freeman C. Clark J. Soete L. (1982) Unemployment and Regional Development. A Study of Long Waves and Economic Development. Francis Pinter London.

Frobel F. Heinrichs J. Kreye O. (1980) The New International Division of Labour. Cambridge University Press.

Glasmeier A.K. (1988) The Japanese Technopolis Programme: high tech development policy or industrial policy in disguise? International Journal of Urban and Regional Research 12 268-84

Glasson J. (1978) An Introduction to Regional Planning 2nd Edition. Hutchinson. London

Hall P., Breheny M., McQuaid R., Hart D.,(1987) Western Sunrise. The Genesis and Growth of Britain's Major High Tech Corridor. Allen and Unwin. London.

Hall P. Preston P. (1988) The Carrier Wave. New Information Technology the Geography of Innovation 1846-2003 Basil Blackwell Oxford.

Hayton K. (1990) The Future of Local Economic Development. Regional Studies Vol 23 pp549-564.

Henderson J. Castells M. Eds. (1987) Global Restructuring and Territorial Development. Sage London.

Henderson J. Castells M. (1987) Techno-economic restructuring, socio-political processes and global transformation: a global perspective in J. Henderson and M. Castells Eds. (1987) ibid.

Hood N. Young S. (1982) (Eds) Industry policy and the Scottish Economy. Edinburgh University Press. Edinburgh.

Hood N. Young S. (1983) Multinational Investment Strategies in the British Isles: A study of MNEs in the assisted areas and in the Republic of Ireland. HMSO. London. part 4.

Hymer S. (1975) (1972) The Multi-National Corporation and the Law of Uneven Development. in H. Radice (Ed) International Firms and Modern Imperialism pp37-62 Harmondsworth Penguin

Jenkins R. (1984) Divisions over the International Division of Labour. Capital and Class 22 28-58

Johnes G. (1989) Regional Policy and Industrial Strategy in the Welsh Economy. Policy Review Section. Regional Studies Vol 21 No6 pp555-567.

Jones S. (1988) The Relocation Decison and the Decision to invest in Wales Unpublished MBA thesis University of Wales, Cardiff.

Julius D. (1990) Global Companies and public policy: the growing challenge of foreign direct investment. Royal Institute of International Affairs/Francis Pinter London

Leborgne D. Lipietz A. (1988) New technologies, new modes of regulation: some spatial implications. Environment and Planning D. Vol 6 pp263-280.

Lipietz A. (1984) Imperialism or the Beast of the Apocalypse. Capital and Class 22 81-100

Love J.H. (1989) External Takeover, Regional Development: A survey and Critique. Regional Studies 23.5 pp417-429

Mandell E. (1980) Long Waves of Economic Development: The Marxist Interpretation. Cambridge University Press.

Markusen A. (1984) Profit Cycles, Oligopoly and Regional Development. MIT Press Cambridge Mass.

Marshall M. (1986) Long Waves of Regional Development. Macmillan London.

Martin R. Rowthorn D. (1986) The Geography of De-industrialisation Macmillan London.

Masser I. (1990) Technology and Regional Development: A Review of Japan's Technopolis Programme. Regional Studies Vol 21 No1 pp41-53.

Massey D (1984) Spatial Divisions of Labour. Social Structures and the Geography of Production. Macmillan London

Massey D (1985) Which New Technology in Castells Ed (1985) Ibid.

Massey D. Meegan R. (1982) The Anatomy of Job loss. The how why and where of employment decline. Methuen London

Mawson J (1989) The Future of Local Economic Development Policy. Regional Studies. December 1989.

Mensch G. (1979) Stalemate in technology: innovations overcome the depression. Cambridge Mass Ballinger

Meyer P. B. (1986) General Motors' Saturn Plant: a quantum leap in technology and its implications for labour and community organising. Capital and Class. Vol 30 pp73-96

Milne S. (1990) New forms of manufacturing and their spatial implications: the UK electronic and consumer goods industry. Environment and Planning A Vol 22 pp211-231

Moreton A (1988) Economic Rebirth Financial Times Survey Wales 9.6.88

Moreton A (1989) Building on a humble base. Financial Times Survey Wales 11.9.89

Moreton A (1989) Welsh Development Agency restructures to help companies Financial Times 13.9.89

Morgan K. (1986) Re-industrialisation in Peripheral Britain: State Policy, the Space Economy and Industrial Innovation, in Martin R. and Rowthorn R. (1986) ibid.

Morgan K. Sayer A. (1984) A Modern Industry in a Mature Region: the remaking of management labour relations. Working paper 39 Urban and Regional Studies. University of Sussex.

Morris J.L. (1988) New technologies, flexible workpractices and regional socio-spatial differentiation: some observations from the United Kingdom. Environment and Planning D Vol.6 pp 301-319

NEDC (1983) Industrial Policy. London. NEDO

Pred A (1977) City Systems in Advanced Economies. Hutchinson London

Rhodes J. Moore B. Tyler P. (1986) The Effects of Government Regional Policy HMSO. London

Robinson F. Wren C. & Goddard J. (1987) Economic Development Policies. An Evaluative Study of the Newcastle Metropolitan Region. Clarendon Press. Oxford ESRC Inner Cities Research Programme Series.

Rothwell R. (1982) The role of technology in industrial change: implications for Regional Policy. Regional Studies Vol 16. 3 pp361-369

Saxenian A.L (1985) Let them eat chips. Environment and Planning D Vol 3 pp121-127

Sayer A. (1989) Postfordism in Question. International Journal of Urban and Regional Research. 13.4 pp666-694

Schumpeter J. A. (1939) Business Cycles. McGraw-Hill. New York.

Schumpeter J.A. (1942) Capitalism, Socialism and Democracy. Harper New York

Short J (1981) Defence Spending in the UK regions. Regional Studies 15 101-110

Smith P.S (1987) Global Capital Restructuring and Local Political Crises in US Cities. in J Henderson and M. Castells (1987) Eds. Ibid

South Wales Echo (1988) Penalty of Success. Cardiff on the Move. South Wales Echo July 19th 1988 pp.18-19

Sterman J.D. (1985) An Integrated Theory of the Economic Long Wave. Futures. Volume 14 pp104-131

Tatsuno S (1986) The Technopolis Strategy: Japanese High Technology and the Control of the Twenty-First Century. Prentice Hall. New York

Taylor M. Thrift N (1982) Eds The Geography of Multi-Nationals Croom Helm London.

Taylor M. Thrift N (1986) Eds Multi Nationals and the Restructuring of the World Economy. Croom Helm London

United Nations (1983) Transnational Corporations in World Development, a a reexamination. United Nations. New York.

Utton M (1982) The Political Economy of Big Business. Martin Robertson Oxford

Van Duijn J J. (1983) The Long Wave in Economic Life . George Allen and Unwin London

Walker R. Calzonetti F.(1990) Searching for New Manufacturing Plant Locations: A study of Location Decisions in Central Appalachia. Regional Studies Vol 24 No 1 pp 15-30

Waterstone A. (1990) Economic Sun rises in Wales . Sunday Times 6.5.90

Willmott P. (1975) Action Research in Policy Study. Unpublished discussion paper0. London.

WDA (1977) Report and Accounts 1976/77. WDA Cardiff.

WDA (1989a) Report and Accounts 1988/89. WDA Cardiff.

WDA (1988) Wales Facts for Industry. WDA Cardiff

WDA (1989) South-East Wales as a financial services location WDA Cardiff

WDA (1988)a Joint Ventures. Routes to a Manufacturing Base in the UK. WDA. Cardiff.

Young S. (1984) The Foreign Owned Manufacturing sector in Hood N. Young S. (Eds) ibid pp93-127

Appendix 1. Sampling Frame.

Name, Sector and	Location	Country of Ownership	Parent(if known)
Electronics			
Newbridge Networks Ltd	Newport	Canada	Newbridge Networks Corp.
Acrian Ltd.	Bridgend	USA	Acrian Inc.California
Plessey Naval Systems	Newport	UK	The Plessey Co.PLC
Aiwa	Crumlin,Gwent	Japan	Aiwa Co, Tokyo
Matsushita Electric UK	Newport/Cardiff	Japan	Matsushita Electric Co
Huntleigh Technology	Cardiff	UK	Huntleigh Technology PLC
Siliconix	West Glamorgan	USA	Siliconix Inc. California
Heraeus Silica and Metals Ltd	Newport	FRG	Heraeus Quartzschemlze
Assembly and Automation Electronics	Mid Glamorgan	UK	
Harwin Components	Cardiff	UK	
Perkin Elmer	Mid Glamorgan	USA	The Perkin Elmer Corporation. Connecticut
Yuasa Battery (UK) Ltd	Ebbw Vale	Japan	Yuasa Battery Co, Osaka.
Sony (UK) Ltd.	Bridgend	Japan	Sony Corporation, Tokyo.
Mitel Telecom	Newport	Canada	Mitel Corporation
Race Electronics			
Interconnect Communications	Newport	UK	
Electrospark Ltd	Gwent	UK	
Severn Components Ltd.	Cardiff	UK	
Electrocatalytics Ltd.	Newport	USA	Electrocatalytics Inc New Jersey.

Eriez Magnetics (UK)Ltd	Mid Glamorgan	USA	Eriez Manufacturing Co Inc.
Monsanto PLC	Newport Gwent	USA	Monsanto Corporation Missouri
Osicom Technologies	Cardiff	USA	Osicom Technologies Inc. New Jersey
Shape Technology Ltd	Bridgend	USA	Shape Inc. Maine
STC Telecommunications	Newport	USA	Northern Telecom of Canada
Autophon Ltd.	Cardiff	Switzerland	Ascom Autophon Ltd.
Bosch	Miskin, S.Glam.	FRG	Robert Bosch GMbH Stuttgart.
Scandinavian Sound Industries	Cardiff	Denmark	Scandinavian Sound Industries
Epitaxal Products International Ltd.	Cardiff	UK	
Inmos Ltd.	Newport	Italy	SGS/Thompson
Takiron (UK)Ltd.	Newport,Gwent	Japan	Takiron Co Ltd. Osaka
Taiko Electronics (UK) Ltd	Cwmbran,Gwent	Japan	Onamba Co Ltd. Osaka
Electronic Harness(UK)Ltd	Llantrisant, Mid Glamorgan	Japan	Onamba Co Ltd. Osaka
Hitachi Consumer Products	Aberdare, Mid Glamorgan	Japan	Hitachi Ltd. Tokyo.
Parrot Corporation	Cwmbran,Gwent	Japan	
Flexon Electronics Ltd	Cardiff	USA	
Isomet Laser Systems Ltd.	Cwmbran Gwent	USA	Isomet Corporation. Sringfield,Virginia
AB Automotive Electronics.	Cardiff	UK	A B Electronics Group PLC

Chemicals and Allied Industries

Zeon Chemicals (Europe)Ltd	Barry South Glamorgan	Japan	Nippon Zeon Co Ltd Tokyo
Parke Davis & Co Ltd.	Cardiff	USA	Warner Lambert
ICI Chemicals & Polymers	Barry	UK	ICI PLC
Golden Ltd.	Mid Glam	France	L'Oreal, Paris
Amersham International	Cardiff	UK	Amersham International PLC
BP Chemicals Ltd	Cardiff	UK	BP PLC
Tubex Ltd	Cardiff	UK	
Air Products Ltd	Cardiff	USA	Air Products Pennsylvannia
Biomet	Bridgend	USA	Biomet Inc. Indiana.
Biotal	Cardiff	USA	Biotechnia Inc. Cambridge Mass.
Dow Chemical Co	Sully South Glamorgan	USA	The Dow Chemical Co Michigan
Dow Corning Ltd	Barry South Glamorgan	USA	Dow Corning Corporation Michigan
Revlon (UK) Ltd	Maesteg Mid Glamorgan	USA	Revlon Corporation
Warner Lambert (UK) Ltd	Pontypool Gwent	USA	Warner Lambert Co New Jersey
Miles Laboratories Ltd	Bridgend Mid Glamorgan	FRG	Bayer AG
Ondawel (GB) Ltd.	Pontyclun Mid Glamorgan	FRG	Wella. Darmstadt
Wulfrath Refractories (UK)	Cardiff	FRG	Dolomitwerke GmbH
Alfa-Laval Agri	Cwmbran,Gwent	Sweden	Alfa-Laval Agri Int A B Stockholm

Plasma Technik	Newport Gwent	Switzerland	Plasmatechnik AG Zurich
Cosmoco Ltd.	Pontyclun Mid Glamorgan	France	L'Oreal, Paris
Massilly UK Ltd	Rhymney Mid Glamorgan	France	Massilly SA. Lyon
Fram Europe Ltd	Llantrisant Mid Glamorgan	Italy	Fiamm Filters Spa, Manton
Heston Codan Rubber	Hengoed Mid Glamorgan	Denmark	Codan Gummi
Rockwool Ltd.	Pencoed/Bridgend Mid Glamorgan	Denmark	Rockwool International AS
Sekisui (UK)Ltd.	Merthyr Tydfil Mid Glamorgan	Japan	Sekisu Chemical Co. Osaka
BSAF Coatings & Inks	Newport, Gwent	FRG	BSAF. Munster.
Re-Chem International	Pontypool & Cwmbran, Gwent	UK	Re Chem International Ltd.
PB Gelatins (UK)Ltd	Treforest Mid Glamorgan	Belguim	Tessenderlo Chemie.

Mechanical Engineering

SGT Precision enginneering	Cardiff	UK	The Peninsula & Oriental Steam Navigation Co
Powell Duffryn Wagon Co Ltd.	Cardiff	UK	TSB Group PLC
Commercial Accoustic Products	Cardiff	UK	John Garret & Sons Ltd
Advance Machine Company	Pontyclun Mid Glamorgan	USA	Norwest Growth Fund Mineapolis
CBS Precision mouldings	Bridgend Mid Glamorgan	USA	CBS Inc. New York
FHS Automotive Parts	Caerphilly Mid Glamorgan	USA	USX.Pittsburg Pennslyvannia

Heat Transfer Ltd	Abercarn Gwent	USA	Graham Manufacturing Corp. New York
Hoffman Engineneering Ltd	Cwmbran Gwent	USA	Hoffman Engineering Co Minnesota
Otis Elevator Ltd	Cardiff	USA	United Technologies Corp. Connecticut
Gillet Exhaust Manufacturing	Tredegar Gwent	FRG	Heinrich Gillet KG. Edenkoben.
Kuhn Precision Tooling	Caerphilly Mid Glamorgan	FRG	Rainer Kuhn GmbH
Express Lift Co	Cardiff	UK	General Electric Co PLC

Instrument Enginnering

Xidex (UK)Ltd	Cardiff	USA	Anacomp Inc.
Carters J &A Ltd	Cardiff	USA	
Borg Warner Automotive	Mid Glam	USA	BTR PLC
Lucas Car Breaking Systems	Cwmbran	UK	Lucas Industries PLC
Pirelli General	Newport	UK	Pirelli UK PLC
British Airways Engine Overhaul	South Glam	UK	British Airways PLC
Align-Rite	Merthyr	USA	
Facet Industrial (UK) Ltd	Pontypridd Mid Glamorgan	USA	Facet Corporation Oklahoma
Hasbro Bradley Ltd	Newport Gwent	USA	Hasbro Inc.Rhode Island
Heat Transfer Ltd	Abercarn Gwent	USA	Graham Manufacturing Corp. New York
Hoover Ltd	Merthyr Tydfil Mid Glamorgan	USA	Maytag Corporation Iowa.

Alfred Teves Ltd	Ebbw Vale Gwent	USA	ITT Automotive, Missouri
Dambi (UK)Ltd	Ebbw Vale Gwent	Sweden	Dambi Produkter. Morarp
Saunders Valve Co	Cwmbran Gwent	Sweden	Alfa-Laval, Stockholm.
Steel Case Co	Tredegar Gwent	Sweden	Overums Bruk AB
Coopers Filters Ltd	Abergavvenny Gwent	Italy	Fiaam Filters Spa
Ferro Manufacturing Ltd	Llantrisant Mid Glamorgan	Italy	Ferrero Spa, Alba
Alfred Cook	Cardiff	UK	Williams Holdings PLC
Renold Clutches, Couplings and Wheels.	Cardiff	UK	RMC Group PLC
Wilkinson Sword Ltd	Bridgend	UK	Wilkinson Sword Group PLC

Motor Vehicles

Ford (UK) Ltd	Pontypridd &Bridgend Mid Glamorgan	USA	Ford Motor Company Michigan

Textiles

Viscosuisse Textured Yarns Ltd	Cardiff	Switzerland	Visscosuisse AG Emmenbrucke
Texture-Tex Europe Ltd	Cardiff	USA	Crown America Inc
Stewart Singlam Carpets Ltd	Glam	UK	

New Venture Carpets Ltd	Cardiff	Switzerland	Visscosuisse AG Emmenbrucke.
Gossard Ltd	Merthyr Tydfil Mid Glamorgan	UK	Courtaulds PLC

Bricks, Pottery, Glass Cement.

Redland Roof Tiles Ltd		UK	Redland PLC
Coors Ceramics		USA	Adolf Coors Co

Paper Printing Publishing

Wiggins Teape	Cardiff	UK	BAT Industries PLC
Pensord Press Ltd	Cardiff	UK	Aspen Communications PLC
Kloeckner Pentapack Ltd	Tredegar Gwent	FRG	Kloeckner Pentapack GmbH Ranstadt
3M Uk PLC	Newport	UK	3M UK PLC
British Tissues Ltd	Bridgend	Finland	Nokia OY Helsinki
Giftwrap Ltd	Ebbw Vale Gwent	Sweden	Alrik Hedlund AB Gothenburg

Other Manufacturing

BCB International Ltd	Newport	UK	Barr & Wallace Arnold Trust PLC
Englehard Ltd	Bridgend	USA	Englehard Corporation
Powersport International	Bridgend	Norway	Jonas Oglaend AS. Sandues

Black Clawson International	Newport,Gwent	USA	The Black Clawson Company
Hasbo-Bradley	Newport,Gwent	USA	Hasbro Inc. Rhode Island
Sears Manufacturing Co	Tredegar,Gwent	USA	Sears Manufacturing Co. Iowa
Stafford Miller	Cwmbran,Gwent	USA	Block Drug Co. New Jersey
Staedtler (UK)Ltd	Pontyclun Mid Glamorgan	FRG	Staedtler Mars GmbH & Co Nurnberg
Vekaplast (UK) Ltd	Ebbw Vale Gwent	FRG	Vekaplast GmbH Sendenhorst
Rockwool Ltd	Pencoed Mid Glamorgan	Denmark	Rockwool international AS
Grundy Autoproducts	Tredegar Gwent	Belgium	Bosal International
STMP (UK) Ltd.	Pontypridd Mid Glamorgan	Belgium	Solvay et CIE

Food Drink and Tobacco

Bourgoin UK Ltd	Cardiff	France	ETS Bourgoin SA Chailley
Celebrity Food Factories(UK)	Cardiff	Denmark	Verstyske Slagterner
Nijhuis	Caldicot,Gwent	Netherlands	Stork Nijuis BV. Lichtenboorde.
Memory Lane Cakes Ltd.	Cardiff	UK	Dalgety PLC
Adams Foods Ltd	Cardiff	UK	Adams Foods Ltd
Avana Group PLC	Cardiff	UK	Avana Group PLC
Callard and Bowser	Cardiff	USA	Beatrice Companies Inc

Furniture

Universal Furniture Industries Ltd	Aberdare Mid Glamorgan	USA	Universal Furniture. North Carolina.

Financial Services

TSB	Newport	UK	TSB Plc
National Provident Institution	Cardiff	UK	
Chemical Bank	Cardiff	France	Banque de Paris, Paris
Rothschilds	Cardiff	UK	Rothschilds

Metal Manufacture

Chrome Deposit Ltd	Cardiff	UK	
Color Steels Ltd	Cardiff	UK	
DBK	Cardiff	UK	
Englehard	Newport	USA	Englehard Corp PLC
Wiremesh UK	Cardiff	UK	Hall Engineering Holdings PLC
Steelfab Ltd	Cardiff	UK	BSG International PLC
Spotnails	Cardiff		
Somerset Wire	Cardiff	UK	Allied Steel and Wire PLC
Allied Steel and Wire	Cardiff	UK	Allied Steel and Wire PLC
Manchester Steel Ltd.	Cardiff	UK	Allied Steel and Wire PLC
Chronar Ltd	Cardiff	UK	
Castle Wire	Cardiff	UK	Allied Steel and Wire PLC
Britsh Alcan Rolled Products	Newport	UK	British Alcan Aluminum PLC
Aarque Systems Ltd	Cardiff	USA	The Aarque Companies USA

Appendix 2 Questionnaire.

Firms Decision Making Questionnaire, P182

CONFIDENTIAL
University College London.
M.Phil Research Project

1. **Name of firm.**

2. **How many people are employed here ?**

3. **When was this plant started here?**

4. **Could you list the main activities of this plant**

5. Below are a number of factors that may have affected your decision to locate/remain in South Wales.
How would you rate the importance of these factors in the decision to locate/remain in South Wales?
(please indicate by ticking the appropriate box in each case)

(a) Market opportunities in South Wales.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(b) Availablity of Regional Development Grants and Regional Selective Assistance
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(c) Other Grants and Incentives available in South Wales e.g from EEC and Local Authorities.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(d)Transport links.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(e) Availability of Key Worker Housing.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(f) Marketing and promotion of South Wales location by Welsh Development Agency and Local Authorities.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(g)Training and Education.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(h) Cost of Labour.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(i) Locally available investment finance.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

(j) Advance provision of industrial / office premises.
NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY ☐

CONTINUED.....

6. Please list other factors that were important in choosing/remaining in this location

8. Does this plant contain the following functions? (please tick)
- (a) Marketing ☐
- (b) Strategic Decision-Making. ☐
- (c) Research and Development ☐
- (d) Routine Production ☐
- (e) Data Processing ☐

9. For what kinds of Market are the products of this plant destined? (please tick)
- (a) Local. ☐
- (b) National. ☐
- (c) International. ☐

10. Were other UK locations considered for this plant? (please tick)
NO ☐ YES ☐
IF YES please state regions considered

11. Were overseas locations considered for this plant ? (please tick)
NO ☐ YES ☐
IF YES please state countries considered

12. Do you use any local supplies / raw materials ? Yes ☐ No ☐
IF YES please list the locally supplied materials below

13. What is your target rate of profit at this plant?

14. How does this return compare with the average for the overall company ? (please tick)
- (a) above average ☐
- (b) the same ☐
- (c) below average ☐

15. Did the establishment of this plant represent? (please tick)
- (a) an expansion of output ☐
- (b) a takeover of an existing plant ☐
- (c) a relocation of operations ☐

16. Could you please indicate the approximate proportions of the following groups in the overall workforce of this plant? (please indicate approximate percentages in each case)

(a) Unskilled ☐ % (b) skilled ☐ % (c) research, technical and managerial ☐ %

17. Do you expect to introduce any major new technology into this plant in the next 5 years?. (please tick)
YES ☐ NO ☐
IF YES please explain briefly below.

CONTINUED.....

CONSULTATION ARRANGEMENTS

18. Does your firm have any consultation arrangements with the Welsh Development Agency ? (please tick) YES ☐ NO ☐

IF YES could you please describe the benefits of these arrangements?

19. Does your firm have any consultation arrangements with Local Authorities ? (please tick) YES ☐ NO ☐

IF YES could you please describe the benefits of these arrangements?

TRAINING

20. Which, if any, of the following sources of training do you use for your staff (please tick)

(a) Your own firm ☐
(b) Glamorgan/Gwent Colleges ☐
(c) Government employment training ☐
(d) Other (please specify) ☐

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE.

CHRISTOPHER J TUNNELL
M.Phil TOWN PLANNING STUDENT
BARTLETT SCHOOL OF ARCHITECTURE AND PLANNING

UNIVERSITY COLLEGE LONDON

WATES HOUSE 22 GORDON STREET
LONDON WC1H OQB

HOME ADDRESS:

36 ALEXANDRA ROAD
HENDON
LONDON
NW4 2SA

TELEPHONE 01-203-2193

Appendix 3. Other Survey Contacts.

Policy Agency etc	Contact Name	Date
Welsh Development Agency	Michael Price Philip Morgan	August 1989 December 1989
Welsh Office	T. Hooker Stats Division	October 1989
Gwent County Council Cwmbran	Keith Price Senior Planner	January 1990
South Glamorgan County Council	Rosemary Thomas Planning Dept	January 1990
	Mr. Green Planning Dept	March 1990
Mid Glamorgan County Council	Supplied info by post	August 1989
Newport Borough Council	Supplied info by post	July 1989
Cardiff City Council	David Holtam Planning Officer	January 1990
Vale of Glamorgan BC	John Maitland Evans Chief Planner (letter)	March 1990
Cardiff Chamber of Commerce and Industry	Supplied info by post	October 1989
Iron and Steel Trades Confederation	letter	October 1989
Electrical Electronic Telecommunications and Plumming Union		November 1989

TNCs

Sony UK	Bridgend
Amersham international PLC	Forest Farm Cardiff
National Panasonic	Pentwyn Cardiff
Trustee Savings Bank	Newport
A. B Electronics	Cardiff
Hitachi Consumer Products	Aberdare Mid Glamorgan
Allied Steel and Wire	Cardiff