



Cost competitive places: the winners and losers in the global flows of foreign direct investment

Title	Cost competitive places: the winners and losers in the global flows of foreign direct investment
Author(s)	Collins, Patrick;Grimes, Seamus
Publication Date	2010-02
Publisher	CISC



NUI Galway
OÉ Gaillimh

Centre for Innovation and Structural Change Working Paper Series

Cost competitive places: the winners and losers in the global flows of foreign direct investment

**CISC Working Paper No. 33
February 2010**

Patrick Collins*
Centre for Innovation and Structural Change
J.E. Cairnes School of Business and Economics
National University of Ireland, Galway
P.Collins@nuigalway.ie

Seamus Grimes
Professor of Human Geography
Centre for Innovation and Structural Change
National University of Ireland, Galway
Seamus.grimes@nuigalway

* Corresponding author



‘Multidisciplinary insights into innovative change’

The Centre for Innovation and Structural Change (CISC) is a national inter-disciplinary research institute, based at National University of Ireland, Galway, focused on building an internationally-recognised programme of research and education on innovation processes and policies that are fundamental to the development of a knowledge-based economy. CISC is one of the four major research institutes within NUI, Galway and it is aligned to the Applied Social Science and Public Policy thematic research priority. Established in 2002, CISC was initially awarded competitive funding under the third Irish Government’s Programme for Research in Third Level Institutions (PRTL 3). Since then CISC has been awarded significant additional competitive funding both nationally and internationally and has developed a distinguished record in scholarship and research innovation and structural change.

The core focus of CISC is providing multidisciplinary insights into innovative change. CISC is an umbrella research institute, offering a common ground where researchers from different disciplines and backgrounds can meet and debate, where they can consider processes and issues from different perspectives. Innovation happens at cross-over points whereby CISC provides a forum for the formal and informal interactions necessary to enable an interdisciplinary community of researchers to flourish. The exchange of ideas and the challenging of knowledge generate an intellectual energy and a spirit of enquiry. This collaborative environment fosters new approaches and the synergy generated aligns best practice in innovation research with current policy, business and management practice thinking. These new approaches and insights are disseminated and shared with a wide variety of national and international stakeholders.

Research at CISC can be divided into five key research areas, with some research initiatives spanning more than one area. The core research areas are:

- **Innovation Systems**
- **Industry Clustering**
- **Internationally traded services**
- **Inter-organisational systems**
- **High Performance Work Systems**

For further information on CISC please see our website: www.nuigalway.ie/cisc

Contact: Angela Sice
Development Office
Tel: +353 91 492817
Email: angela.sice@nuigalway.ie

Dr. James Cunningham
Director
Tel: +353 91 493472
Email: james.cunningham@nuigalway.ie



Cost competitive places: the winners and losers in the global flows of foreign direct investment

ABSTRACT

In the early days of 2009 the city of Limerick in the mid-west region of Ireland was dealt a massive blow by the PC manufacturer Dell. After months, if not years of speculation, the company had finally decided to move all its European manufacturing from Limerick to Lodz in Poland. Amongst the many reasons cited, from the global economic downturn to a shifting market, cost competitiveness became the clear determining factor. The media coverage was extensive with the headline ‘Dell Closes’ bandied about in national and regional press. Though of little consolation to the 1,900 left without a job, the fact remains that Dell has not closed its Limerick operation, where it will continue to employ upwards of 1,000 in sales support and research and development. We use the Dell story as an exemplar of the Irish Foreign Direct Investment (FDI) story. Comparing it to other restructurings by foreign-owned technology companies both in Ireland and beyond we will attempt to uncover the complexity of shifting competitiveness and competencies among branches of global operations. While the case of Dell, among others, may serve to support the political economy view of large multinational corporations, we see the picture as being more complex and in this paper look at a mixture of globalist and localist viewpoints in attempting to uncover the shifting spatial dynamics of cost competitiveness.

Keywords: Territorial Competitiveness; Affiliate Evolution; Europe; Ireland ; Dell

Introduction

The opening months of 2009 were cast as the most economically depressed in nearly 70 years. The fall of financial institutions acted as markers of a deepening crisis as a credit crunch evolved into global economic recession. The world economy was beginning to shrink, as was the confidence once placed in the market based solutions that brought economic reform to the global stage. This paper examines the impact of the downturn in Ireland on the performance of some of the country's foreign-owned technology companies. By setting the analysis within the context of shifting networks of global production and their relationship to place, the relative competitive advantage of particular locations comes to the fore. The Irish experience during the economic downturn acts as a case study of the dynamic nature of places and the competitive advantage they offer to multinational corporations.

It should have come as little surprise that an economy as small and as open as that of the Republic of Ireland would be expected to be hit hard by a global recession. Coupled with domestic factors (notably the hyper-inflation of the property/construction market over the economic boom years) the Irish economy, with its ruined banks and escalating debt to GDP ratio, was brought to international attention. Having been held as one of the major economic success stories at the end of the 20th century, speculation was now rife about the country's liquidity status.

The global fall off in demand brings with it many obvious ramifications for business such as plant closures and corporate bankruptcies. Yet, important lessons can be learned from this new period of depressed economic activity. The changing market realities bring with them a new understanding of place based competitiveness. This paper sets out to explore the changing activities of multinationals operating out of Ireland and use their movements as a barometer of Ireland's competitiveness in an international context. One simple statistic signifies the complexity of the picture, in a six month time period the Irish technology sector lost nearly 10,000 jobs, over 8,000 of which were offshored to different territories.

The concept of territorial competitiveness has come to the fore in theory and policy circles over the last ten years. The two main reasons for that are increasing

international mobility of capital and more open markets, which according to Turok (2004) is globalisation for short. This paper looks at the internationalisation process by bringing two strands of theory together. Theorists like Camagni (2002), Cooke and Morgan (1998) and Storper (1997) highlight the distinct facets of the local. Here, factor endowments such as quality of labour and local systems of governance are seen as pillars of competitiveness and key attractors to firms investing in the region. The second strand looks at the application of a relational concept of space and place in the Global Production Networks (GPN) literature (Dicken and Malmberg, 2001), in which GPNs are seen as dynamic topologies of practice that link different places and territories (cf. Amin, 2002; Hess, 2004). Bringing the two together enables us to chart the attributes of place and how they slot into the organization's dynamic networks of production. Looking at the Irish case will highlight both the changing nature of the Irish economy as a competitive business location, and the evolving nature of the companies that operate there.

Following a review of the literature the third section deals with global and European restructuring trends. We then focus on the Irish technology industry during the period from August 2008 to February 2009. In what proved to be a tumultuous six months we chart the inflow and outflow of foreign direct investments. A case study of Dell's Irish manufacturing facility sheds further light on these processes and the changing nature of Ireland's competitiveness.

The rationale for focusing on Dell's Limerick operation as a case study is twofold: the scale and nature of the operation. The loss of nearly 2,000 jobs in one announcement had serious ramifications not just for the company and those employed in it, but for the ecosystem of sub-suppliers that had grown up around it. The nature of the operation too is of interest. For many the manufacturing facility in Limerick was one of the remaining vestiges of Irish economic growth past. Van Egeraat and Jacobson and others had pointed out that similar types of operations had begun leaving Ireland as many as 15 years ago (Van Egeraat and Jacobson, 2004) as the country began to focus on services over manufacturing. Dell Limerick reflects that while also reflecting the larger movements of a global corporation. The opening up of the Eastern European market and shifting global dynamics (the rise of the China and India) are as much part of the Dell case study as the costs of running an operation in Limerick.

Using the case study of Dell Ireland, we trace Ireland's movement from cost competitiveness to cost centre. This is reflective of both a national evolution as well as subsidiary evolution as explicated by Collins and Grimes (2008).

A note on methods is necessary at the outset. Secondary research work based on UNCTAD and World Bank reports and various competitive indices informs the global and European context. For a more detailed exposition of the European case we have relied on the European Restructuring Monitor. The ERM is a database consisting of major restructurings announced by firms based in Europe. It takes account of all job announcements and lay offs greater than 100 employees across all member states (<http://www.eurofound.europa.eu/emcc/about.htm>). The Irish case study is built on research interviews with representatives from major multinational corporations (MNCs) operating out of Ireland as well as other key stakeholders in policy making and supporting institutions. The data presented for the time period of August 2008 to February 2009 was compiled by the authors. Media searches, company websites and government announcements were combined to gain a true reflection of job gains and losses over the period of time concerned. Information such as job type, location and history of operation provides additional background and context. Finally, the Dell case study relies on interviews with company representatives as well as supporting institutions alongside media and company reports.

Territories and firms in global networks of production

In looking at multinational firms allocating resources across space (from low end production plants to high end research and development units) we take the fact that territories compete for these remits as read. In this sense we can understand territorial competitiveness as explicated by Micheal Storper as: “the ability of an economy to attract and maintain firms with stable or rising market shares in an activity while maintaining or increasing standards of living for those who participate in it” (1997: 20). In what follows we will look firstly at territory, then at the changing nature of global firms before coming back to what we see as territorial competitiveness. What will become clear is the dynamic nature of both territories and firms.

Economic geography has been concerned with territories and their heterogeneous nature. More recently, this has been innately linked with the attractiveness and ‘stickiness’ of territories for firms. The advantages of being in the right type of local milieu in general and the benefits of spatial proximity between actors involved in business interaction have been held to explain differences in the innovative performance of firms and industries (Feldman and Florida, 1994; Cooke, 1995; Saxenian, 1994; Morgan, 1997; Asheim, 1997), the existence of industry agglomeration (Lung et al., 1996; Malmberg et al., 1996) as well as the durability of patterns of regional specialization (Malmberg and Maskell, 1997; Maskell and Malmberg, 1999).

Territories vary in scale, scope and make-up. To borrow from Camagni (2002) territory is:

- A system of localised technological externalities— i.e. an ensemble of material and immaterial factors which, thanks to proximity and the resulting reduction in transaction costs involved, can also become pecuniary externalities;
- A system of economic and social relations, which make up the *relational capital* (Camagni, 1999) or the *social capital* (Putnam, 1993; World Bank, 2001) of a certain geographical space; and
- A system of local *governance*, which brings together a collectivity, an ensemble of private actors and a system of local public administrations.

Camagni’s definition itself borrows from earlier conceptions of how best to define territory in the economic sense. Micheal Porter (1998) saw the competitive advantage of places as dependent on their factor endowments (Porter’s diamond). This work highlighted the role of clusters in the economic success of regions. Beyond land, labour, natural resources, Porter’s work, echoing that of Alfred Marshall, referred to the ‘something in the air’ of productive industrial locales. Social capital, social networks and social embeddedness were seen as key. This in turn, speaks to Storper’s notion of ‘untraded interdependencies’ (1995). Here the formation and evolution of ‘soft’ externalities is seen as crucial for the dynamic competitiveness of territories. The flows of tacit knowledge, technological spillovers, networks of trust and co-operation, alongside norms and conventions provide distinct territories with their own

competitive advantages. Thirdly, Cooke and Morgan (1998) in their use of case studies across Europe highlight the importance of supporting institutions in promoting these softer factors. The role of both private and public institutions in their governance and promotion of place will be explored here alongside the other facets of territory in relation to the Irish experience.

The case outlined below reflects that of a high cost economy suffering from what Maskell and Malmberg (1999) term ubiquitification. Ireland, as with many other higher cost regions has lost investments that are easily replicable in lower cost locations. Enabled by globalization and the codification of knowledge the process of ubiquitification helps to explain much of the restructurings that are the focus of the following sections. This process, however, is not mono-directional, and there remains a stickiness to certain places. Through this we recognize that attractiveness and local competitiveness depend on factors, which are not only found in physical externalities, accessibility or environmental quality, but also in relational capital and the learning capacity expressed by the territory (Camagni, 2002).

The Multinational in Place

Global firms, international in scope, stretch across diverse territories and are subject to a multitude of constraints. For some, the concept of global value chains provides a pragmatic framework for the analysis of evolving industries and their geographic location (Sturgeon, 2008; Dean et al, 2007) According to Sturgeon (2008) value chain analysis highlights three features of any industry: “(1) the geography and character of linkages between work tasks, or stages, in the chain of value-added activities, (2) how power is distributed and exerted among firms and other actors in the chain and (3) the role that institutions (e.g. rule making bodies, industry norms and standards) play in structuring business relationships and industrial location.” (pg 239). All three help explain how firms and territories evolve and how the ongoing transformation of global organisations feeds into the evolution and shifting competitiveness of territories.

For others the term Global Production Networks better describes the complexities of the global economy and they use it as an interpretive framework for analysing the

global economy and its impact on territorial development. Coe et al (2008) see production networks as more valuable than value chains because the term 'network' better reflects the fundamental structural and relational nature of how production, distribution and consumption of goods and services are organised. Like firms, production networks are inherently dynamic. It is this dynamism that provides an interesting insight for us into the changing competitiveness of place, evidenced by investment and divestment decisions by firms across their networks of production.

Divestment business strategies of MNCs are a relatively understudied area (see Benito, 2005 and Horner and Aoyama, 2009 for an Irish case study). The divestment propensities of foreign subsidiaries depend on the type of strategy pursued by the corporation. According to industrial organisation literature, the most apparent incentive to divest is low profit which can be due to high costs, or permanent decreases in demand (Siegfried and Evans, 1994). Impediments to exit include inter-relatedness between units (Clark and Wrigley, 1997) and other less linear organisational strategies pursued by corporations. A decisive determinant here is the extent to which significant competitive advantages can be gained from integrating activity (economies of scale and scope) as well as how resource conditions in specific locations require local adaptation and responsiveness (see Bartlett and Ghosal, 1990).

The move away from conventional internalisation theory of MNCs over the past two decades is well reflected in the literature. Theorists such as Dunning (1993), Florida (1997) and Rugman and Verbeke (2001) provide evidence of subsidiaries reaping the benefits of 'host' countries' knowledge systems in their performance of unique value-creating activities with the corporation. These practices reflect a broader organisational shift on behalf of MNCs in their move away from the hierarchical and centralised structures that dominated in the 1960s and 1970s. The importance of the local in the global and network over hierarchy is reflected in the many weaknesses identified in conventional internalisation theory. Chief among these is the lack of attention paid to the adaptation and codification problems involved in the diffusion of innovations within corporations. Capability creation was largely ignored, as was the role played by managers and general entrepreneurship in affiliate operations (see O'Riain, 2004; Rugman, 2000).

The complex organisational changes including outsourcing and offshoring associated with deverticalisation have resulted in a changing geography of production networks and supply chain activities. In his 2003 paper, Zanfei cites the examples of decentralisation of R&D, while Andersson (2003) showed how internationalisation of R&D was complementary to, rather than a substitute for, R&D in the home country. For others like Phelps and Raines (2003), the process of organisational change needs to be approached more carefully. They cite the corrosive effects of a neoliberal economic environment and the denudation of economic coherence and the distinctiveness of place. Cautious of the notion that MNCs are no longer vertically organised they in line with Lovering (1999), see the danger of attracting of inward investment as reducing development to a form of FDI beauty contest with diminishing returns.

Recent work has begun to focus on issues of subsidiary evolution and the importance of entrepreneurship within host country operations (Dunning, 1995; Birkinshaw, 1997; Birkinshaw and Hood, 1998; Taggart, 1998; Rugman, 2000; Sturgeon, 2003; O’Riain, 2004; Zanfei, 2005). This work recognises the increasing complexity brought about by technical determinants (such as decreasing product life-cycle) and demand diversity which has left many corporations forced to change the structure of their value added activities. Through the latter we again see the appreciation of the local in the global, with consumer behaviour and demand differentiation being grounded in the local. Becatti and Rullani (1993) note the symbiosis between contextualising knowledge/technology through interaction with the local and de-contextualising local knowledge to the benefit of the wider corporation.

For Ernst (2008) the ability to leverage the benefits from global integration is dependent on the host economies putting in place vigorous policies to reduce the potentially high costs that may result from ‘brain drain’ as MNCs crowd out the local market for skills. Using a broader definition of innovation, Ernst talks of the potential local benefits of innovation offshoring as firms and industries upgrade. We would see this broader focus on innovation as crucial to understanding restructuring of firms and territories. Essential in this is pushing beyond the national border and recognising the importance of imported technology and the tacit knowledge required to absorb it (see Nelson, 1990; Ernst, 2008).

Specialisation then is crucial for any subsidiary seeking to evolve within its corporate network. Specialisation also involves positive restructuring as outlined above. Table 1 attempts to show how this reflects differences in product and production characteristics. These in turn are subject to the complexity of technology and the demand for the product (see Ernst, 2008). Also differences in product and production processes result in different market structures that abide by different spatial locations and ultimately have differing potentials for restructuring as seen below.

Insert Table 1 here.

The above has established that subsidiaries of MNCs are subject to pull and push organisational changes. In order to find oneself at the positive end of corporate restructuring two things are primary: first that the traits of the surrounding region match corporate needs (workforce, labour quality, business environment, access to market etc) and second, the subsidiary operation demonstrates the ability to diversify and specialise (integrated in the global network of production, innovative traits, nodal significance). As we will see below, the ability to meet the needs of positive subsidiary evolution does not exclude any operation from negative restructuring in terms of job loss (see Dell case study). We use the aggregation of positive and negative corporate adjustments reflecting the evolution of the Irish foreign-owned tech sector to gauge the changing competitiveness of place.

Global restructuring and the changing competitiveness of place

The recent economic crisis has brought with it a significant realignment of how we view competitiveness (O'Leary, 2009). Competitiveness is in a constant state of flux regardless of economic buoyancy or depression. Global flows of foreign direct investment in absolute terms are a good reflection of the state of the global economy. Breaking these figures down and viewing them relatively (between different countries/regions) provides a basic metric for competitiveness regardless of the absolute figure.

For the most recent year available, the World Investment Report (UNCTAD, 2008) showed that absolute FDI surpassed the previous peak of 2000 to reach \$1,833 billion in 2007. The production of goods and services by nearly 80,000 MNCs and their 800,000 foreign affiliates accounted for an FDI stock in excess of \$15 trillion in the same year¹. The geography of these flows is particularly relevant here. In the main, two related events are occurring: inflows to developed countries have peaked, and inflows and outflows from developing countries are on the rise (see table 2). In particular we see a noteworthy rise among countries in South-East Asia².

Insert Table 2 here.

While inflows show signs of stagnating in developed regions, outflows continued to rise. Bringing the level of analysis down to the supranational region we will see similar trends on a smaller scale. Europe is home to both developed and developing economies and their associated disparities. Divergence in living standards is a reliable metric for noting the heterogeneous nature of the region; GDP per capita in Latvia of €8,234 stands at one third of that enjoyed in Ireland in 2007.

The movement of different types of jobs will be used here as an indicator of the changing nature of territorial competition. Economies evolve and move from low specialisation to high specialisation operations. This will be made clear in the following section which focuses explicitly on Ireland. Here, for the purposes of context we wish to trace recent evolutions of jobs and firms among the older and newer countries of Europe. Here ‘Old’ Europe applies to the original EU 15 states, while ‘new’ Europe refers to states that joined the union after 2004³.

¹ As a result of the current economic crisis, national regulatory changes that favour FDI are likely to be challenged. Over the past few months more and more governments have rolled back on globalisation through policies of nationalisation and protectionism.

² China and Hong Kong (China) remain the top two destinations within the region attracting \$59 and \$83 billion respectively (equating to a doubling and tripling of inward FDI over the previous four years).

³ On May 1st 2004 Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia, Malta and Cyprus joined the EU. On January 1st 2007 they were joined by Bulgaria and Romania.

Analyzing job movements on a sectoral level gives a clearer picture of the evolution of the developed and transitioning economies. From the table below we see how the EU 15 (plus Norway) are advancing towards the services based economy with the greatest increase in jobs experienced in the ‘other business activities’ sector (NACE 72). Aside from Construction, the top five growth sectors in the in Western Europe can all be classified as tertiary activities. The counter point to this are the top five sectors that experienced the highest job losses over the same period of time. These range from manufacturing of low specialization products to agriculture. The presence of Insurance and Pension funding, NACE category 66 is interesting and could be seen as reflective of the offshoring of back office support activities in the sector.

The change over the same period of time for the 10 CEEC countries is indicative of economies in transition. On the whole, the largest growth was in the Construction sector. This was followed at some distance by ‘other business activities’, demonstrative of their own drive towards the services economy. The growth in the manufacture of motor vehicles and retails sectors also points to economies with increasing living standards, while the presence of financial intermediation as one of the top growth sectors can reflect the region’s destination of support services. Restructuring of state industries and the move away from agriculture is evident in the sectoral division of jobs lost in the region. Broad trends are indicative of a high specialisation focus in old Europe and a low specialization focus in new Europe.

Insert Table 3 here.

The ERM reports on any significant jobs gains and losses across Europe. This provides a rich dataset on the types of jobs that move into, out of, or across the continent. Figure 1 below shows the number of cases of restructuring (gains and loss announcements) for 2007. In absolute terms the most dominant form of restructuring was business expansion (55%). Expansions were concentrated in ‘new’ member states reflecting the increased level of foreign investment and indigenous business development over the past decade (UNCTAD, 2008). According to the ERM, 80% of all restructuring cases in Bulgaria, Poland and Slovakia were business expansion. The term ‘internal restructuring’ for the most part involved job losses and these were most prevalent in old Europe. For example, over 30% of cases in Belgium, Finland,

Germany, Italy, the Netherlands and Sweden involved internal restructuring. A higher incidence of cases involving offshoring or delocalisation, relocation, and mergers and acquisitions was also evident in the EU15 Member States. For instance, over 15% of Dutch cases in 2007 involved offshoring, as did over 10% of cases in Finland, Ireland, Italy and Spain (EFILWC, 2008; 68).

Insert Figure 1 here.

While the regional data provides context, the next section will attempt to provide greater clarity on restructuring flows and competitiveness by focusing on Ireland and one case study of a recent shock to its stature. While much of the restructuring referred to in relation to Ireland may be negative in terms of jobs lost, the reality is that it mimics the trends already described for a developed nation.

A Competitive Ireland in the Global Economy?

For more than 50 years Ireland has been honing an industrial policy with a significant focus on attracting inward investment (particularly from the US), primarily focused on high technology sectors including ICT and pharmaceutical/health sciences. Indeed, owing to the relative length of the exogenous focus by Irish policy makers, the country has been noted by many as a ‘first mover’ in the attraction of FDI (Gal, 2008). Through a targeted industrial policy, including low corporation tax, and aided by industrial development agencies, the Irish state was instrumental in creating a very hospitable climate for foreign investment. O’Riain (2004) sees the agencies of the state as central in the attraction of FDI and the creation of Ireland as an entrepot region. The role of the Industrial Development Agency (IDA) in the creation of a pro-business environment is heralded by many actors in the Irish FDI scene as integral.

The IDA identified the electronics sector early on, and as a result it focused explicitly on attracting industries associated with what some may perceive as more complex activities than traditional manufacturing. That said, the initial focus was on traditional manufacturing be it in a non-traditional industrial sector. Being sensitive to the evolution of particular sectors, the IDA ensured that it was in a position to help Irish-based subsidiaries to go through a series of evolutionary stages, keeping pace with

developments within their sectors. Evolving itself to becoming the Industrial Development Agency (as opposed to Authority), it placed greater emphasis on developing MNC subsidiaries and worked closely with their management to support efforts to win mandates in higher-value added activities such as advanced manufacturing, R&D, supply chain management and shared services (Begley et al, 2005). The Irish case study reveals that the need to maintain place competitiveness with the global restructuring of firms was an on-going challenge.

The openness and responsiveness of key players in Ireland has aided the dynamism of the Irish FDI case. The shift in focus towards the evolution of Irish based affiliates has brought with it a redefinition of embeddedness in Ireland. The conscious effort put forth by Ireland's development agents in recognition of the importance of performance of an affiliate in relation to its corporation has been key. What has made the Irish system most noteworthy is the ability of those inside and outside MNCs to concern themselves both with the local and the global, the emphasis being on developing a local node in a global network.

The small and open nature of the Irish economy made the exogenous development model an obvious choice. Many have argued that the pursuit of such a model has been integral to the economic success enjoyed there over the previous two decades⁴ (IDA, 2008; Enterprise Strategy Group, 2004 and Barry, 2004). The risks involved in the pursuit of such a model have become clear in the last year. Open economies are subject to the vagaries of the global economy. The following section will show how the current economic crisis has had a significant impact on the competitive position of Ireland. The enforced restructuring of the credit crunch (and analogous fall off in demand) have seen many foreign (and Irish-owned) operations take corrective measures. In some cases this has involved the restructuring of Irish affiliates, in others, closure.

⁴ While others have made the case that the focus on endogenous development has been to the detriment of indigenous industry (O'Hearn, 2002; Allen 2004 and Kirby, 2008)

August to February 2008: A grim six months

Such was the scale of the international crisis in the latter half of 2008 that one might be forgiven for thinking that Ireland and the Irish State was an innocent casualty of global misappropriation. The truth makes difficult reading for Irish policy makers. An over-inflated property market, alongside the lack of restraint in the financial sector (notably the supply of 100%+ mortgages to developers) was something of a ticking time bomb in retrospect. The economy-wide effects of both these factors can be seen most clearly through both wage and cost inflation. Ireland's most recent property bubble can be dated back to 2000, since then (with the exception of 2004/5) Ireland has shown a consistent decline across many different competitiveness rankings (National Competitiveness Council, 2008). Here, following on from previous work, we wish to concentrate on the ramifications on Ireland's foreign-owned technology industry and analyse how the recent spate of restructuring has affected Ireland's competitive positioning.

Ireland's technology sector was hailed as one of the cornerstones of the country's economic success towards the beginning of this century. Most recent figures put employment in the sector at 100,000 with a turnover of over €60 billion (IDA Ireland, 2009). The sector is easily divisible by two; foreign-owned and Irish-owned companies. The latter is demarcated by small operations, averaging 10 employees per firm, while the average employee for the former lies around 175 per firm. The sector accounts for 16% of the total value added for industry and services. In the past 10 years it has evolved from a sector that was focused on manufacturing to one now dedicated to services (ICT Ireland, 2007). Research and Development figures bare this out, over half the expenditure on business R&D is by companies in the technology sector (with the IDA investing €470 million in technology projects in 2006) (IDA Ireland, 2008). The maturation of the sector in Ireland is borne out by productivity figures, with the major companies in the sector revealing slippage in recent years. These trends, which will be examined below in some detail also reveal the impact of the recent turmoil on the sector.

The following figures are based on media announcements and company reports for the period of August 2008 to February 2009. While these figures are subject to re-

interpretation, they can serve as a proxy of the relative performance of the sector and also give some indication of Ireland's changing competitiveness for these activities. Figure 2 shows the magnitude of restructuring of the Irish technology sector over a relatively short period of time. For context, the figure (just fewer than 10,000 jobs) constitutes nearly 10% of the total employed in the sector.

Insert Figure 2 here.

The above does not constitute the absolute numbers of jobs lost in the Irish economy over the period of time, just those in the technology sector. Over the corresponding period, unemployment figures for the State rose from the relative stagnant rate around 5% to over 9% (CSO, 2009). At first glance, the above chart is significant not just at the rate of attrition (higher than the average of any other sector in the economy) but for the rate of attrition of a particular sector. The technology sector has been high on the government agenda in Ireland for the last 20 years, so the rate of decline here is of major concern to policy makers (DETE, 2008).

The relatively linear rate of increase in the above graph is broken by three leaps identified as significant announcements of job losses of over 1,000 employees. Restructuring at the Irish affiliates of Seagate, SR Technics and Dell have and will have major impacts on their respective regions. Below, we focus on the Dell restructuring as a particular case study in the changing competitiveness of place.

Insert Figure 3 here.

When we look at the types of jobs being lost⁵, some interesting patterns emerge. Job loss is very much weighted towards the lower value added activities, with 67% of all job losses being in basic manufacturing. 18% of jobs lost are identified as a mixture in low end and high end services (2nd and 4th quartiles). The category labelled 'All'

⁵ Making use of media reports and research interviews the types of jobs lost/gained were established. Owing to the diversity of the sector generic categories were devised. This involved splitting the job range into quartiles according to the perceived value added. The first quartile refers to manufacturing, the second to lower end services, such as back office support. The third quartile refers to higher end services such as treasury function, marketing, high end user support etc, the fourth is accounted for by jobs associated with research and development.

represents full divestment where an affiliate has closed. While the incidence of job loss is high full divestment accounts of only 4% of all jobs lost.

The 3% of job losses involving R&D, was accounted for in the main by the closure/relocation of Ericsson's Dublin based R&D operation (loss of 300 jobs) in February 2009. This case garnered a high level of media coverage owing to the fact that the type of jobs lost were those that had been identified as ones in which Ireland remained competitive. The government's 'Smart Economy' document, published two months previously set aside €25 million a year to match funding for corporations engaging in R&D. Ericsson have planned to move parts of the Dublin operation to China, Poland and back to their headquarters in Sweden (Collins, 2009).

The internal geography of job loss in Ireland shows how particularly damning the six months were for the Midwest region in particular. Jobs lost in the technology sector in the six months accounted for nearly 2% of the total number employed in the region. Dell's decision to cease manufacturing was an obvious contributor, as were the knock-on effects for supporting industries. Relative to any other Irish region or city, the Midwest suffered the largest job losses. This is largely due to the industrial make up of the region, one that under the auspices of its own development agency (Shannon Development) became heavily dependent on manufacturing, with an explicit focus on the technology industry.

The external geography of the restructuring of operations located in Ireland shows that Ireland's loss is Eastern Europe and Asia's gain. The movement of jobs out of Ireland in what could be described as re-offshoring in the easterly direction accounted for nearly three quarters of the jobs lost over the six month period. By far the biggest winners were the new member states of Eastern Europe gaining over half the jobs lost in Ireland, a significant proportion of which was accounted for by one Polish city, Lodz (see Dell case study below). China and Asia accounted for a quarter of jobs relocated out of Ireland, a significant number of jobs lost in Ireland returned to their respective headquarters (primarily located in the US). A relatively small percentage (12%) of jobs lost involved the cessation of activities. The fact that nearly 90% of jobs 'lost' in Irish tech sector over the six month period were reinstated in some other

location is testament to the changing geography of competitiveness in the global economy.

While the six month period showed heavy losses suffered by the Irish technology sector, the previous 20 years had seen it grow at an unprecedented rate. Also true of the last six months is the fact that Ireland has also benefited from global restructuring. Figure 4 below shows that over a sustained period of job loss, Ireland also managed to secure a number of significant investments. Among the more significant of these were GOA Software and Houghton Mifflin Harcourt Software, which resulted in 800 new jobs for the Irish tech sector.

Insert Figure 4 here.

While the rate of job creation provides some solace in its own right, the following table shows the precise nature and types of jobs being created relative to those being lost. The clear trend is that Ireland has suffered the loss of lower value added (manufacturing and lower end services) jobs while managing to create more higher-end jobs (albeit fewer of them) over the same period time, thus mimicking the trend of a developed economy as outlined earlier.

Insert Table 4 here.

Shifting competitiveness: the case of Dell Limerick

Dell is one of the world's largest manufacturers of personal computers engaged in direct-selling model. It designs, develops, manufactures, markets, and services a range of computer systems. The global corporation sees its markets divided into three regions; the Americas; Europe, Middle East and Africa (EMEA); and Asia Pacific-Japan (APJ). It is headquartered in Round Rock, Texas, and has four manufacturing facilities located on the continent with a workforce of 39,500. The EMEA region is headquartered from the UK (Bracknell) it serves its customers from two manufacturing facilities at the moment, Limerick and Lodz, Poland. The recent announcement of transferal of jobs from the former to the latter will see Lodz existing as the only manufacturing facility in the region by 2010. Dell employs 17,500

between manufacturing, contact and data centres and regional offices in the region. The APJ region is headquartered from Singapore; it houses manufacturing facilities in China, Malaysia and India and employs 32,100, bringing its global employment to 89,100. The company recorded revenues of \$45 billion in 2008 with an operating income of \$2.7 billion.

Since its inception in 1984, Dell has set itself apart from its competitors through demonstrating the superiority of organizational and marketing innovativeness over technical innovativeness in an industry whose core products have been commoditised. The model of direct selling, or 'Dellism' (Sako, 2003) is characterized by the decrease of inventory costs through optimization of the supply chain, modular production and build-to-order practices. This model, termed 'disruptive' innovation by Malecki and Morisett (2008) has seen the rethinking of the extended production cycle, including parts supplies, assembly, delivery, and customer support. Design and assembly take a back seat to marketing, logistics and the management of the supply, enabling the company to decrease inventory time and costs. According to Fields (2006) this helped Dell outstrip its competitors in terms of market share and profit by eliminating intermediaries between producer and consumer and cutting the time between production and consumption. The geography of Dell's manufacturing reveals the importance of distance and delays in their just-in-time model. The IT driven nature model is highly dependent on time and distance to the customer, therefore the geographic imperative equally matters for sub-suppliers as well and consumers. The sub-supplier eco-system that evolves around Dell affiliates becomes as important as Dell itself in terms of economic contribution to the region.

Kanellos (2006) argued that the Dell model had already reached a threshold. The nature of it alongside a maturation of the desktop market, coinciding with the global economic downturn has seen demand for Dell products decline in recent months. From a historic high of \$42 in December 2004, Dell share price decreased to \$30 in October 2007 before bottoming out at \$8.50 in 2008 (Yahoo Finance, 2009). The decline inspired a major announcement in April 2008 to restructure the company in an effort to save \$3 billion a year up to 2011. Citing competitiveness and the need to cut cost, Micheal Dell (chairman and founder) claimed that no part of his global entity would escape scrutiny. Within a week, 900 jobs were cut at the Texas manufacturing

facility; rumors regarding the unsteady future of the Limerick operation were rife (Irish Times, 2008).

Dell and its location in Limerick serves as an interesting exemplar in shifting competitiveness and FDI. In 1989, five years after the company's formation, Dell chose a site on the outskirts of Limerick city as the first affiliate to be set up outside the US. The site was chosen for many reasons; access to the European market was primary, attractive packages from the IDA and Irish government were others. The presence of a qualified and cheap English speaking workforce would have also served as another key attraction. The presence of Intel and Microsoft operating out of Ireland provided a degree of security for what was Micheal Dell's first venture outside of his home country⁶. The Limerick facility was orientated purely towards manufacturing, serving the extensive EMEA market. By 1996 a Malaysian manufacturing operation was established to serve the APJ region; workers from Limerick were heavily involved in establishing the Malaysian factory.

By 2008 the Raheen Industrial Estate operation, had a workforce of 3,100. Most important in terms of what was to come, was the fact that over 40% of the Limerick workforce was no longer employed in manufacturing. Among the other functions that Limerick had become responsible for over its 20 year history were:

Box 1 here

Four years after setting up its first manufacturing site outside of the US, Dell increased its Irish presence through the establishment of a call centre support in Cherrywood, Bray, Co. Wicklow. Its original remit was to serve the Irish and UK market in the areas of sales and technical support. Much of the original work carried out in Bray was relocated to Dell's global contact centre in Hyderabad, India. The Bray site has shown an evolutionary trajectory similar to its Limerick sister and is now home to the EMEA Enterprise Expert Centre - a knowledge base for high-level enterprise technical support for customers across EMEA. Cherrywood also houses the centralised EMEA marketing team who are responsible for online development,

⁶ Collins and Grimes (2008) point to the importance of being the first affiliate outside the home country to network anchoring.

pricing, product marketing, business analysis and the creation, design and production of EMEA-wide advertising and direct mail campaigns.

Since its location in Ireland 20 years ago, Dell has risen in prominence to become the second largest company operating out of Ireland. Figures below show the relative size of the revenues accrued by the company since 2003. It shows a turnover per employee that is not only phenomenal in terms of measuring the productivity of Irish workers, but one that has been increasing substantially over the years. That said, a note of warning needs to be heeded in interpreting the figures for turnover. The presence of double counting amongst MNCs located in Ireland (owing to its lucrative tax regime) is noted by other scholars (Collins, 2007; Barry, 2004 and O’Hearn, 2002).

Insert Table 5 here.

Measuring the relative weight of the Irish operation in terms of the above figures shows how Ireland became a very significant node in the production network of Dell. At its peak, the Irish workforce accounted for nearly 8% of the total workforce and was responsible for nearly 25% of the company’s global turnover. Moving beyond these figures, the importance of the Irish operation was noted by many Dell employees with some maintaining that the whole of the EMEA regional entity was dependent on someone in Ireland “doing something first”. The presence of Irish employees located throughout European operations and beyond is testament both to their own acumen and the open nature of the corporation.

While well connected globally its impact on the Limerick region in terms of spillovers, suppliers and supporting industries is also noteworthy. Local industry groups estimate that every Dell job supports three other jobs in the Limerick area (Duggan, 2009). In total Dell has in the region of 150 suppliers. A little over 10% of these have an Irish base in the vicinity of the Limerick plant. In addition there are major global suppliers with Irish presences, namely Intel and Microsoft. All suppliers needed to maintain hubs in the general area. Beyond product procurement, many more suppliers were dependent on the Limerick operation. In terms of integration of the two Irish operations, there has been little evidence of a connection between the Bray and Limerick plants. Such is the global focus of these that this has become a rule for many firms operating out of Ireland under the same name.

The successful evolution of Dell emulates the models outlined in previous pieces from Dunning (1993; 1995) and Birkinshaw (1997) dedicated to the development of multinational subsidiaries (see Collins and Grimes, 2008). The case is also reflective of the evolution of the Irish economy as a whole. The movement away from manufacturing is an economy wide trend and one that is a result of push and pull processes. The overall success of the economy brought with it rising costs that saw labour cost dependent operations become unsustainable. While the Irish economy evolved so too did the global economy, markets for certain products matured while others began to flourish. The decision by Dell management to open a new manufacturing facility in Lodz, Poland to serve the emerging Eastern European market could have been seen as the beginning of the end for manufacturing in Limerick.

In September 2006, Dell announced it was breaking ground on new production facility in Poland. Members of the Irish facility oversaw the establishment of the Lodz plant, and while Dell Ireland talked of ‘working together... a complimentary operation’ others remained more skeptical. The geography of the picture was quite clear, Lodz was closer to the market, Limerick was on the west coast of an island. The Polish plant would be built according to a new spec, the market for notebooks was on the increase, and Ireland’s manufacturing facilities were more tailored towards PC and server production. The global economic downturn and the restructuring of the corporation announced in 2008 hastened what was an inevitable demise of manufacturing of Dell products in Ireland.

On the 9th of January 2009, Dell announced the phased closure of their manufacturing facility in Limerick. Reasons such as company restructuring and fall off in demand were muted, but costs were cited as the primary reason (Dell, 2009)⁷. The Lodz plant was to cater for production of products for the EMEA region. 1,900 workers at Dell would lose their jobs. The facts emerged quickly amid the media furore, Dell could employ people to carry out the same job in Poland at one-third the costs of employing

⁷ Interestingly, recent reports filed with the companies registration office in Dublin show that the Limerick plant in the 12 months up to 30th of January 2009 had an operating profit of nearly \$17million (Lynch, 2009).

them in Ireland. Following trends noted here and by Barry and Van Egeraat (2006) Ireland had become uncompetitive. Attention turned from the 1,900 to the speculated further 6,900 that would lose their jobs as a result.

Figure 5 is an attempt to depict the fallout of recent Dell announcements for Limerick, its surrounding area and supporting companies. As is the nature of such recent events, a full picture is yet to be drawn. The inclusion of a previous announcement can act as some form of litmus. It is also important to note that only direct suppliers are listed, the two main companies that shut down operations in Limerick followed Dell to Poland. The case of indirect suppliers and those beyond the technology sector are yet to be fully accounted for.

Insert Figure 5 here.

While the Dell Limerick example serves as a grounded example of the shifting of competitiveness of places, it must also be borne out in the context of the larger corporation. As already mentioned the changing nature and geography of the market has been most important. From 1990 (the establishment of the Limerick operation) to 2006 (establishment of the Lodz operation) Dell's market had moved eastwards. It was logical that production while high technology bore many low specialisation characteristics would follow the customer. Add to that the intra-regional shifts that have seen markets and sites in China and India rise in Dell's global order. More of the end product contains Chinese hardware and more of the servicing of the products is carried out from India. The Asian influence is writ larger by the recent announcement that Dell has agreed to sell off its Lodz plant to Foxconn a Taiwanese electronics company (Williams, 2009). What part the consolidation of all European manufacturing in one site had on the deal is open to question. Should the takeover be sanctioned by the European Commission it would effectively see the Taiwanese company act as a contract manufacturer for Dell; the shift eastwards is further marked.

Conclusion

The Dell case acts as a microcosm of the Irish experience, which in turn acts as a mimic of the broader European case. What is obvious from the above is the dynamic nature of competitiveness. Dell Ireland, Ireland and Western Europe are no longer competitive in certain sectors/activities. While subject to restructuring in terms of jobs lost, all have benefited from different types of jobs gained. The six months of economic depression saw Ireland suffer job loss at an unprecedented rate, calling into question the country's competitive standing (O'Leary, 2009). Yet the reality is that what happened over that period of time was a speeding up of a process that has been underway in Ireland for the last 20 years. In essence what has taken place is the evolution of subsidiaries involving the loss of lower level jobs, and their replacement with jobs of higher value.

This paper has therefore shown the dynamic nature of global production networks as illustrated by Coe et al (2008). The general trend of production moving from west to east was made explicit at the global and European level. The focus on Ireland helped demonstrate that this dynamic process in part inspires and in part results in many other processes, not least the necessary movement up the value chain of operations remaining in the west. The move from manufacturing to services in countries like Ireland is a complex process and general trends are difficult to encapsulate. Yet, key to this evolution is the changing competitiveness of the territories in which the firms are situated. In all cases Camagni's (2002) three traits of territory remain crucial to explaining investment flows.

Externalities, social/relational capital and governance will add much more value to explaining the full story of global restructuring than simply cost, resource or demand based metrics. Ireland is proof that a territory can only compete on costs for so long. The inevitable indeed, hoped for result, of such competition is the rising of costs and with them living standards (See Storper's definition above). Competitiveness of place then becomes more dependent on less tangible facets. Firms chose to invest in quality of labour, knowledge, economic/business climate and supporting institutions, all

facets that Ireland through the auspices of the IDA have attempted to nurture for the past 20 years.

Accounting for job losses according to type as opposed to quantity or sector makes for a truer reflection of a territory's evolution. Benito (2005) has classified subsidiaries of MNCs along the lines of likelihood to divest. That work concludes that foreign owned subsidiaries least likely to divest are those that are integrated in the corporation's production network. To become fully integrated into the production network of any corporation involves what Dunning (1995) would refer to as subsidiary evolution. In both the Irish case and the Dell case study we have shown how evolution has been key, and while the Dell case is marked by the relocation of its manufacturing outlet, it remains true that the subsidiary itself has evolved in a way of sustaining its future viability by moving beyond the original manufacturing remit to become integral in Dell's global production network.

This work therefore attempts to highlight the dynamic notion of both firms and territories. In reference to the definition of competition put forth by Micheal Storper, we have attempted to show that the ability to 'attract and maintain firms' is a non-static goal and that the maintenance of some firms necessitates the loss of parts of those firms. In essence the move up the value chain entails loss at the lower end to gain at the higher end. This is the reality that sees places competing according to ever changing metrics, from the quantifiable (i.e. costs) to the more qualitative (i.e. social/relational capital) with the rising complexity of the global economy.

Acknowledgements

This research was made possible by funding from the Higher Education Authority of Ireland under the Programme for Research in Third Level Institutes (PRTL I 4).

References:

- Amin, A.. 2002. Spatialities of globalisation. *Environment and Planning A* 34(3): 385–399.
- Asheim, B.T. (1997) ““Learning Regions” in a Globalised World Economy: Towards a New Competitive Advantage of Industrial Districts?”, in S. Conti and M. Taylor (eds) *Interdependent and Uneven Development: Global–local Perspectives*, pp. 143–76. Aldershot: Ashgate.
- ATKearney (2007) Offshoring for Long-Term Advantage – The 2007 A.T. Kearney Global Services Location Index.
- Benito, G.R., (2005) Divestment and international business strategy. *Journal of Economic Geography*, 5 (2), 235-251
- Andersson, T (2003) “The EU in the New Economy: FDI, Tech Flows and Economic Growth” IKED working paper available at: <http://www.iked.org/pdf/ikedworkingpaper.pdf>
- Barry, F (2004) “FDI in the Host Economy: A case study of Ireland” in G.B. Naveretti and A. Venables (eds) *Multinational Firms in the World Economy*. Princeton University Press: Princeton. NJ
- Barry, F and VanEgeratt, C (2006) The Eastward shift of computer hardware production: How Ireland adjusted. NIRSA Working Paper No.27 October.
- Bartlett, C.A. and Ghoshal, S. (1990) ‘Managing Innovation in the Transnational Corporation’, in C.A. Bartlett, Y. Doz and G. Hedlund (eds) *Managing the Global Firm*, pp. 215–55. London: Routledge.
- Batatt, J., Frank, I., and Shen, X. (1996) Suppliers to Multinationals: Linkage Programmes for Strengthen Local Companies in Developing Countries, occasional paper no. 6, Foreign Investment Advisory Service, The World Bank, Washington, DC.
- Becattini, G. and Rullani, E. (1993) “Local and global merchant systems”, *Economia e politica industriale*, No. 80, pp. 25-48
- Begley, T, Delaney, E and O’Gorman, C (2005) Ireland at a Crossroads: Still a Magnet for Corporate Investment *Organizational Dynamics* 34 (3) 202 –217
- Birkinshaw, J. (1997) “Entrepreneurship in multinational corporations: the characteristics of subsidiary initiatives” *Strategic Management Journal* 18(3): 207-229
- Birkinshaw, J. and Hood, N. eds. (1998) *Multinational Corporate Evolution and Subsidiary Development*. Macmillan: London.

- Camagni, R. (1999) The city as a *milieu*: applying GREMI's approach to urban evolution, *Revue d'Economie Re'gionale et Urbaine*, 3, pp. 591– 606.
- Camagni, R., (2002) On the concept of territorial competitiveness: sound or misleading?, *Urban Studies* **39**, 2395–2411.
- Clark, G and Wrigley, N (1977) Exit, the firm and sunk costs: reconceptualizing the corporate geography of divestment and plant closure. *Progress in Human Geography* 21(3) 338-358
- Coe, N., Dicken, P and Hess, M (2008) Global Production Networks: realizing the potential. *Journal of Economic Geography* 8. 217-295.
- Cooke, P and Morgan, K (1998) *'The Associational Economy: Firms, Regions and Innovation'*, Oxford University Press.
- Collins, J (2009) 'Lost jobs exactly the kind we are pinning recovery on' *Irish Times* February 9th 2009.
- Collins, P (2007) Policy Approaches to developing the region in the Information Age: evidence from Ireland and Europe. *Irish Geography* 40(2) 146-167
- Collins, P and Grimes, S., (2008) Ireland's foreign-owned technology sector: evolving towards sustainability. *Growth and Change* 39 (3) 436–463
- Dean, J, Fung, K and Wang, Z (2007) *Measuring the Vertical Specialisation in Chinese Trade* US International Trade Commission, Office of Economics Working Paper, No. 2007-01-A
- Department of Enterprise Trade and Employment (2008) *Innovation in Ireland* DETE, June 2008. Dublin.
- Dicken, P., and A. Malmberg. 2001. Firms in territories: A relational perspective. *Economic Geography* 77(4): 342–363.
- Duggan, B (2009) '€7-an-hour pay gap cost 1,900 Dell jobs' *Irish Independent* January 9th 2009.
- Dunning, J.H. (1993) *Multinational Enterprises and the Global Economy*, Addison-Wesley, Wokingham.
- Dunning, J.H. (1995) "Re-appraising the eclectic paradigm in an age of alliance capitalism ", *Journal of International Business Studies*, Vol. 6 No. 3, pp. 461-91
- Egeraat, C. van and Jacobson, D. (2004) The Rise and Demise of the Irish and Scottish Computer Hardware Industry, *European Planning Studies*,12(6).
- Enterprise Strategy Group (2004) *Information and Communications Technology Sector Report*, Dublin.

ERM (2008) More and better jobs: Patterns of employment expansion in Europe. European Foundation for the Improvement of Living and Working Conditions. Luxembourg: Office for Official Publications of the European Communities

Ernst, D. (2008) 'Innovation offshoring and outsourcing: what are the implications for industrial policy?', *Int. J. Technological Learning, Innovation and Development*, 1 (3) 309–329.

Feldman, M.P. and Florida, R. (1994) 'The Geographic Sources of Innovation: Technological Infrastructure and Product Innovation in the United States', *Annals of the Association of American Geographers* 84: 210–29.

Fields, G (2006) Innovation, time and territory: space and business organisation of Dell Computer. *Economic Geography*, 82. 119-146.

Florida, R. (1997) The globalisation of R&D: results of a survey of foreign-affiliated R&D laboratories in the U.S.A. *Research Policy* 26(1): 85-103.

Gal, Z (2008) Future Bangalores? The increasing role of Central and Eastern Europe in service offshoring. Paper Presented to Regional Studies Workshop Outsourcing & Offshoring Business Services: Theoretical Perspectives and Global Trends, 4-5 Sept. 2008, University of West of Scotland

Hess, M. 2004. Spatial relationships? Towards a reconceptualisation of embeddedness. *Progress in Human Geography* 28(2): 165–186.

Horner, R and Aoyama, Y (2009) 'Limits to FDI-driven growth in Ireland: a newspaper content analysis for investment, upgrading and divestment', *Irish Geography*, 42: 2, 185 — 205.

ICT Ireland (2007) *Why Ireland should be your location of choice* ICT Ireland and IBEC. Dublin.

The Irish Times (2008) Top 1,000 companies, June 4th www.ireland.com

Kanellos, M. ('006) 'PC shipments up, but Dell losses ground' *ZDNet* 19 April.

Kitson, Michael, Martin, Ron and Tyler, Peter(2004) 'Regional Competitiveness: An Elusive yet Key Concept?', *Regional Studies*, 38:9, 991 — 999

Krugman, P., (1996) Making sense of the competitiveness debate, *Oxford Review of Economic Policy* 12, 17–35.

Lovering, J., (1999) "Theory led by policy: the inadequacies of 'New Regionalism'" *International Journal of Urban and Regional Research* 23: 379-95

Lung, Y., Rallet, A. and Torre, A. (1996) 'Innovative Activity and Geographical Proximity', paper for the 36th European Congress for the European Regional Science Association (August), Zürich, Switzerland.

- Lynch, S (2009) 'Dell's Limerick plant made \$16.9m operating profit in year to January' *Irish Times* p. 22. Saturday December 5th
- Malmberg, A. and Maskell, P. (1997) 'Towards an Explanation of Regional Specialization and Industry Agglomeration', *European Planning Studies* 5: 25–41.
- Malmberg, A., Sölvell, Ö. and Zander, I. (1996) 'Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness', *Geografiska Annaler Series B*, 78B: 85–97.
- Maskell, P and Malmberg, A (1999) 'The Competitiveness of Firms and Regions: 'Ubiquitification' and the Importance of localized learning' *European Urban and Regional Studies* 6(9): 9 – 25.
- Malecki, E and Moriset, B (2008) *The digital economy* Routledge. London.
- National Competitiveness Council (2008) *Annual Competitiveness Report*. Forfas and the National Competitiveness Council. Dublin.
- Nelson, R.R. (1990) 'Acquiring technological capabilities', in Soesastro, H. and Pangestu, M. (Eds): *Technological Change in the Asia-Pacific Economy*, Allen and Unwin, Sydney.
- O'Hearn, D., (2002) *The Atlantic economy: Britain, the US and Ireland* Manchester: Manchester University Press.
- O'Leary, E., (2001) Regional divergence in the Celtic Tiger : the policy dilemma. *Irish Banking Review*, 1-15.
- O'Leary, E (2009) 'Smart economy' plan gambles with taxpayers' money' *Irish Times* Comment May 25th 2009.
- O'Riain, S., (1999) *Remaking the Developmental State: The Irish Software industry in the Global Economy*. Unpublished dissertation, Department of Sociology, University of California, Berkeley.
- O'Riain, S., (2004) *The Politics of Mobility in Technology-Driven Commodity Chains: Developmental Coalitions in the Irish Software Industry*. *International Journal of Urban and Regional Research* 28(3):642-663
- Olsen, T.E. and Osmundsen, P. (2003) "Spillovers and international competition for investments" *Journal of International Economics* Vol.59: 211-238
- Phelps, N. and Raines, P., eds (2003) *The new competition for inward investment: companies, institutions and territorial development* Edward Elgar, Cheltenham
- Porter, M. E., (1998) *On Competition*. Harvard Business School Press, Boston.
- Porter, M. E., (2001b) *Cluster of Innovation: Regional Foundations of US Competitiveness*. Council on Competitiveness, Washington, DC.

- Putnam, R. (1993) *Making Democracy Work*. Princeton, NJ: Princeton University Press.
- Robert Huggins Associates (2007) *European Competitiveness Index*. Robert Huggins Associates, Pontypridd.
- Rugman, A. (2000) *The End of Globalisation* Random House Business Books: London
- Rugman, A. and Verbeke, A (2001) “Subsidiary-specific advantages in Multinational Enterprises” *Strategic Management Journal* 22(3) : 237-250
- Sako, M (2003) Nodularity and outsourcing: the nature of co-evolution of product architecture and organization in the global automotive system, in A Principe et al (eds) *The Business of Systems*, Oxford, Oxford University Press, 229-53
- Saxenian, A.L. (1994) *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* Cambridge, MA: Harvard University Press.
- Siegfried, J. J., Evans, L. B. (1994) Empirical studies of entry and exit: a survey of the evidence. *Review of Industrial Organization*, 9: 121–155.
- Storper, M. (1995) Competitiveness policy options; the technology–regions connection, *Growth and Change* Spring, 285–308.
- Storper, M. (1997) *The Regional World: Territorial Development in a Global Economy*. Guilford Press, New York.
- Sturgeon, T., (2003) What really goes on in Silicon Valley? Spatial clustering and dispersal in modular production networks” *Journal of Economic Geography* 3: 199-225
- Sturgeon, T (2008) Mapping integrative trade: conceptualising and measuring global value chains. *Int. J. Technological Learning, Innovation and Development*, 1 (3) 237–257.
- Taggart, J (1998) “Strategic shifts in MNC subsidiaries. *Strategic Management Journal* 19 (7):663-681
- Turok, I., (2004) Cities, regions and competitiveness, *Regional Studies* 38:9,1069 — 1083
- UNCTAD (2005) *World Investment Report* New York and Geneva: United Nations
- UNCTAD (2008) *World Investment Report* New York and Geneva: United Nations
- Williams, I (2009) ‘Dell hands European operations to Foxconn’ *Inquirer*, December 2nd. Available at <http://www.theinquirer.net/inquirer/news/1564423/dell-hands-european-operations-foxconn>

WORLD BANK (2001) *Understanding and measuring social capital: a synthesis of findings and recommendations from the social capital initiative*, Social Capital Initiative Working Paper No. 24, April, Washington, DC.

Zanfei, A., (2000) “Transnational firms and changing organisation of innovative activities” *Cambridge Journal of Economics* Vol.24: 515-554

Zanfei A., (2003) “Technology Gaps, Absorptive Capacity and the Impact of Inward Investments on Productivity of European firms”, *Economics of Innovation and New Technology*, 12(6)

Zanfei, A. (2005) “Globalisation at bay? Multinational growth and Technology spillover” *Critical Perspectives on International Business*, 1(1): 5 – 19

Web sources:

Central Statistics Office of Ireland www.cso.ie

Foreign Investment Advisory Service (2003) <http://www.fias.net/projects.html>

IDA: www.idaireland.com (IDA, 2008) 2008 Annual Report, available at: <http://www.idaireland.com/home/index.aspx?id=83>

National Software Directorate: www.nsd.ie

New York Times: www.nytimes.com

BBC News: www.bbc.co.uk

The Economist: www.economist.com

The Irish Times: www.ireland.com