

CHAPTER 15

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**REGIONAL POLICY AND  
AGGLOMERATION ECONOMIES  
IN IRELAND**

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EOIN O'LEARY

**ABSTRACT**

In this chapter O'Leary extends the definition of agglomeration beyond a focus on industry clusters, defining six kinds of potential agglomeration economies. He concludes that agglomeration economies have had a positive impact in Irish industries, though not through the channels that have up to now been considered important. For example, the advantages of urbanisation may have been underestimated by policymakers - a well functioning city, with a high degree of economic and social diversity might be a fertile seed-bed for the development of new ideas. O'Leary then considers the implications this analysis has for the role of spatial policy in promoting the competitiveness of Irish industries

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## 15.1 Introduction

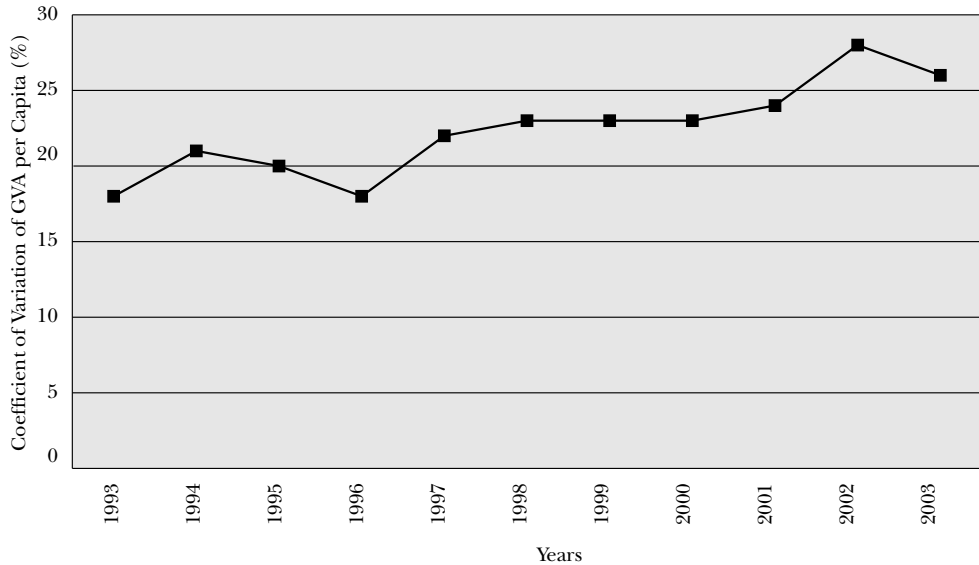
Since the emergence of regional divergence during the 1990s, regional policy is back on the Irish policy agenda. The National Spatial Strategy 2002-2020 was the first major regional policy statement by an Irish government in decades. In an analysis of the sources of regional divergence during the 'Celtic Tiger' boom, I have previously shown that strong regional living standards divergence during the period 1993 to 1999 was driven both by the emergence of the 'demographic dividend' and by regional productivity divergence, which in turn, was driven from the manufacturing sector. I went on to argue that future growth in regional and therefore national living standards hinges on continued productivity growth in internationally competitive industries based in Irish regions (O'Leary, 2002/03).

My objective in this chapter is to reflect on the role that might be played by agglomeration economies and diseconomies in the future productivity trends of Irish regions. I begin by asking what has happened to the trend in regional divergence between 1999 and 2003. This is followed by a consideration of a number of scenarios that might shape future trends in regional divergence or convergence. I then turn to the role that might be played by six kinds of agglomeration economies in driving regional productivity. The importance in the Irish context of considering the different kinds of agglomeration economies, many of which have been ignored, is discussed. The chapter ends with an outline of the implications for policymakers.

## 15.2 Regional Divergence Post 'Celtic Tiger'

The early years of the new millennium marked a slowdown in the 'Celtic-Tiger' growth rates of the 1990s. It is therefore interesting to check what effect this slowdown had on the rate of Irish regional divergence. Figure 15.1 shows the trend in the degree of regional divergence in the official measure of living standards from 1991 to 2003 (the most recent year for which we have official regional data). The regions considered are seven Regional Authority Areas with Dublin and the Mid-East regions amalgamated.<sup>1</sup> It should be noted that this measure, Gross Value Added (GVA) per capita, is far from ideal owing to the significant levels of profit repatriations from Ireland. Divergence is measured as the trend in the coefficient of variation in GVA per capita.

The results show that the divergent trend strengthened after 1999. According to O'Leary (2002/03) the rate of GVA per capita divergence during the 'Celtic Tiger' period, 1993 to 1999, was + 4.4 per cent per annum. Between 1999 and 2003, the results reveal a trend of + 3.5 per cent per annum. Strong regional divergence should be a cause for concern for policymakers. In the present context, the question arises as to whether regional productivity differences have continued to be a source of this strengthening divergence.

**Figure 15.1:** Dispersion of Regional GVA per Capita, 1993-2003.

**Source:** O'Leary (2002/03) and Central Statistics Office (2006).

O'Leary (2002/03) showed that productivity divergence was a major source of the strong living standards divergence between Irish regions from 1993 to 1999. The rate of labour productivity divergence during this period was + 3.6 per cent per annum. Table 15.1 shows the relative levels of labour productivity in 1999 and 2003. These results indicate that between these years the rate of productivity divergence strengthened considerably to + 7.5 per cent per annum. It is noticeable that the Border, Midlands and West (BMW) regions have failed to catch up on the national average. However, the main feature is the very strong performance of the South-West, which increased its lead to nearly 30 percentage points on Dublin/Mid-East. This result is undoubtedly affected by the practice of transfer pricing, particularly by the pharmaceutical industry based in the Cork area. O'Leary (2003a) attempted to adjust Irish regional productivity estimates for transfer pricing and showed relatively minor alterations to the overall divergent trend between 1979 and 1996. However, the method used is fairly crude and the results are probably time dependent. In order to clarify the extent of Irish productivity divergence post 'Celtic-Tiger' more work needs to be conducted to improve the accuracy of Irish regional output estimates.

However, notwithstanding these measurement issues, it appears that productivity divergence remains one of the main sources of the increasing divergence of living standards after the 'Celtic Tiger'. Before considering the role that might be played by agglomeration economies and diseconomies, the discussion now turns to possible future scenarios of Irish trends in regional divergence or convergence.

**Table 15.1:** Relative Levels of GVA per Worker and Coefficient of Variation among Irish Regions (%): 1999 and 2003

Regions	1999	2003
Border	82	82
Midlands	70	67
West	77	71
Dublin/Mid-East	112	108
Mid-West	89	89
South-East	87	88
South-West	118	137
Coefficient of Variation	20	26

**Source:** Central Statistics Office (2006).

## 15.3 Scenarios for Future Regional Divergence/Convergence Trends

O'Leary (2003b) proposed two scenarios in order to consider whether the increasing trend in Irish regional divergence is likely to continue over the next decade or so. The first, a regional convergence scenario, involves a productivity slowdown in relatively rich regions such as Dublin/Mid-East and the South-West with relatively poor regions, such as the Border and the Midlands being successful at exploiting their catch-up potential. The second, a regional divergence scenario, assumes the rich regions will grow richer with the poor regions stagnating. These scenarios are presented in Table 15.2.

The first scenario may appeal to the neo-classical convergence mechanism which assumes diminishing marginal returns to capital accumulation or to technological catch-up. Convergence, despite implicit assumptions to the contrary from Honohan and Walsh (2002) in their commentary on the causes of the 'Celtic Tiger' boom, cannot be regarded as automatic, even if the national policy obstacles to it are removed. The second scenario invokes the theory of cumulative causation and the more recent 'new growth' literature, which envisages that rich regions may have advantages over poor regions as a result of increasing returns to such factors as education, 'learning by doing' or research and development.

It might appear as if the second scenario describes the evolution of Irish regional disparities over the past decade. However, more research needs to be undertaken in order to determine whether 'rich' regions have benefited from increasing returns. In addition, research is required to examine the extent to which 'poor' regions have failed to exploit their growth potential. There is a significant research agenda here that generally remains unexplored. This is partly due to the absence of detailed regional data from official sources. This research is important for understanding the probability that either scenario, or indeed a combination of them, might transpire in future.

**Table 15.2:** Regional Growth Scenarios

	<b>'Rich' Regions</b>	<b>'Poor' Regions</b>
<b>Scenario 1:</b> Regional Convergence	Experiencing Productivity Slowdown	Exploiting Catch-Up Potential
<b>Scenario 2:</b> Regional Divergence	Benefiting from Increasing Returns	Falling Behind

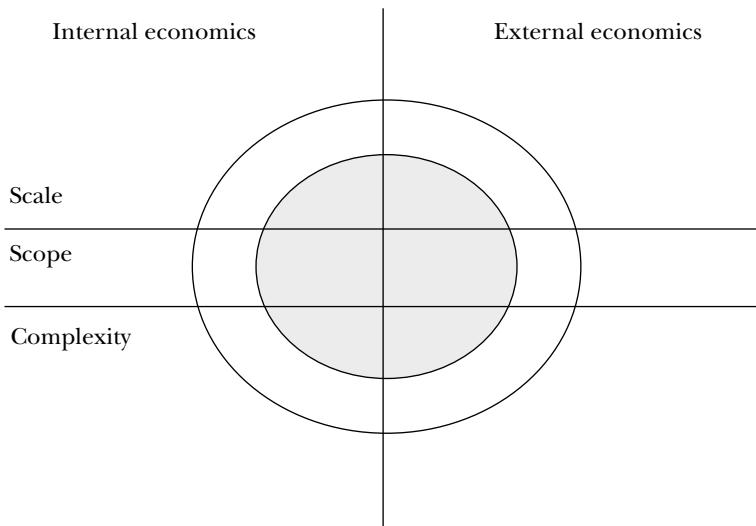
**Source:** Based on O'Leary (2003b).

Of particular interest in this chapter, is the geographical dimension to our understanding of the future drivers of productivity growth in Irish regions. O'Leary (2003b) suggested that under scenario 1, the Williamson (1965) hypothesis may be invoked as this suggests that as countries catch-up regional disparities may initially increase, due to the emergence of growth poles, but may subsequently lessen as urban diseconomies emerge. For scenario 2, agglomeration economies in rich urban centres may be the cause of increasing returns facing these regions. In order to further explore the issues involved here, the next section considers the nature of agglomeration economies and diseconomies.

## 15.4 Defining Agglomeration Economies and Diseconomies

This section draws heavily from an important article on the subject by John Parr (2002).<sup>2</sup> Parr argues that, despite the burgeoning interest in the subject of agglomeration economies, "a certain vagueness continues to surround [it]" (2002: 151). An agglomeration economy may be defined as an increase in the productivity or a decrease in the unit cost of a business, consequent on the concentration of economic activity at a given location. Parr defines agglomeration economies as particular kinds of internal and external economies of scale, scope and complexity. Figure 15.2 depicts agglomeration economies as a subset of these economies (see shaded areas).

**Figure 15.2:** Agglomeration Economies (Shaded Areas) in the Context of Internal and External Economies of the Business



**Source:** Parr, (2002: 159).

Following Parr (2002), we can define each of the six kinds of agglomeration economies.

1. *Internal economies of scale* refer to productivity gains in the business as a result of increases in its production of a given product. This may involve mergers or acquisitions (i.e. horizontal integration). It is an agglomeration economy if it results in the concentration of production at a given location;
2. *Internal economies of scope* relate to the scope or diversity of production by a business. This results where the production by a given business of two or more different products occurs at a lower cost than would be the case in separate businesses. The efficiency gain results from a shared input in the business. It is an agglomeration economy where this shared input is restricted to a specific location;
3. *Internal economies of complexity* might apply where a business's production involves several technologically separable stages. They occur where the undertaking of various stages of production of a product by a single business result in higher productivity than if the stages were carried out in separate businesses. This vertically integrated business experiences an internal agglomeration economy where the stages are co-located;
4. *External economies of localisation* refer to the common location of a number of independent businesses in the same industry. They are best thought of as economies of scale in that they arise due the common location of like businesses. Originally identified by Marshall (1892) who pointed to the three classic sources of localisation economies as being the availability of (i) a skilled labour pool; (ii) a range of auxiliary trades and specialized services; and (iii) knowledge spillovers. Porter's discussion of clusters most closely resembles this form of agglomeration economy, although he puts more emphasis on businesses competing with each other (1990 and 1998);

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5. *External economies of urbanisation* relates to the common location of businesses belonging to different and unrelated industries. Sources of urbanisation economies include the availability of a range of public utilities and services, transportation and communications infrastructures, the existence of a variety of business services and the plentiful supply of labour of different kinds. These economies, which are often associated with Jacobs (1960), are best regarded as a function of the scope or diversity of production that might prevail in an urban setting. Productivity in individual businesses is increased as a result of the presence of public and private services and infrastructures that could only be available in cities where sufficient demand exists; and
  6. *External activity-complex economies* result from the common location of a particular set of businesses that exist in a production chain. This might refer to backward or forward linkages from a business to independent business(s). This is an agglomeration economy if the business enjoys productivity gains by being co-located with suppliers or buyers. It differs from a localisation economy in that only a single business is involved.

For each of the six kinds of agglomeration economies considered above it is possible to think of agglomeration diseconomies. Thus, the potential exists for internal diseconomies of scale, scope or complexity where for example technological and/or management difficulties within the business result in lower productivity at a specific location. Similarly, external diseconomies may occur. For example, urban diseconomies associated with factors such as congestion or pollution might outweigh any of the positive effects of an urban location. The key point is that agglomeration economies and diseconomies may co-exist so that the key objective facing a business is to maximise the former and minimise the latter.

In outlining Parr's classification of agglomeration economies this section has begun to highlight some important issues for Irish policymakers. The next section continues by assessing the relevance of Parr's classification to Ireland's internationally competitive industry.

## 15.5 Agglomeration and the Irish Economy

This section first provides a brief overview of Irish internationally competitive industry. It then considers the extent to which Parr's classification may be important for our understanding of the importance of spatial issues for the competitiveness of these industries.

A list of Ireland's internationally competitive industries might include industries such as pharmaceuticals, electronics, medical devices, financial services, software and perhaps food.<sup>3</sup> These industries are dominated by foreign-owned multi-national businesses using Ireland as an export-platform. Although there may be a number of individual businesses in a sector, broadly defined, these businesses are seldom in direct competition with each other. The small size of the domestic market ensures that indigenous businesses have to export at an early stage in their evolution in order to become competitive.

In assessing the relevance of Parr's classification to these industries, four points are made. The first is to note the possibility that agglomeration economies of scale are not necessarily external to the business. It is possible that internal economies of scale are evident in many of the very large foreign-owned businesses in sectors such as pharmaceuticals and electronics. Thus for example, due to increased division of labour, the Pfizer plant in Cork may benefit from productivity gains associated with increased production of its key ingredient of 'Viagra'.

Possibilities also exist for internal economies of scope, where for example the Pfizer plant might use immobile machinery to produce other drugs.

It is equally plausible to think of these businesses benefiting from internal economies of complexity, where various stages of production, which might otherwise be located in other plants in the corporation, are present in the Irish plant. Thus, the Dell computer plant in Limerick might benefit as a result of the manufacturing and distribution stages of its computer operation being located there.<sup>4</sup> The key issue is that in both cases the benefits arise from within the business and are not attributable to the particular aspects of the external environment that are usually associated with agglomeration economies. This has important implications for policymakers which will be discussed later.

Second, in relation to external economies of localisation it is worthwhile to consider the extent to which the three classic sources identified by Marshall might be present in Irish industries. In relation to labour, there is little doubt but that the availability of a young skilled labour force has made an important contribution to the 'Celtic Tiger' phenomenon. However, 'skilled' here typically refers to workers with formal educational qualifications. In order to qualify as a 'skilled labour pool' the skills would, to a significant extent, need to be specific to the particular industry concerned. While the foundations for such skills may be acquired in formal education it is likely that experience acquired 'on-the-job' is the key. Such skills may be said to be in the local/regional economy, and therefore available as an external economy, if there is significant churning in the labour market as workers move between businesses or found new businesses in the same industry.

Thus, the key question for localisation analysis is to determine the extent to which this occurs in Irish industry. In the case of the Irish Pharmaceutical industry for example, Van Egeraat's (2006) evidence suggests that skills that are available externally have been acquired in third level institutions and not 'on-the-job'. On the other hand, in the Dublin software industry, where businesses are smaller and are increasingly founded as entrepreneurial spin-offs from existing businesses, skills might be more transferable (Crone, 2004).

Regarding the presence of forward and backward linkages, compared to the features of a classic localisation economy, it is likely that fewer possibilities exist for linkages with foreign-owned businesses in Ireland. This is because as subsidiaries these businesses are typically part of vertically integrated corporations who often source suppliers in the home country and distributors on mainland Europe. Gallagher, Doyle and O'Leary (2002) conclude, from a survey of the literature, that there is limited evidence of linkages in Irish internationally competitive industry. This is supported by the findings of Barry, Gorg and Strobl (2003) for Irish manufacturing.

Turning to the notion of knowledge spillovers, which is the third source of external economies of localisation. Since knowledge spills-over from workers and via external linkages it is likely that, given the preceding argument, fewer possibilities might exist here. In this regard a survey on innovation in Irish based high-technology sectors has shown that although strong interaction with suppliers and customers takes place, it does so over four hours average driving time (Jordan and O'Leary, 2005). This might suggest that in the Irish case geographical proximity may not be crucial for innovation and competitiveness of these businesses. However, as with the other two sources of localisation, more research needs to be conducted in order to more fully determine the extent of localisation economies in Irish industry.

Third, urbanisation economies have tended to be overlooked in much of the Irish discussion about agglomeration. This may be explained by the discussion failing to make a distinction between localisation and urbanisation economies. A notable exception is the detailed study by Van Egeraat of the Irish pharmaceutical industry who concludes by stating that "to the extent



that agglomeration economies have influenced the location of the drug-substance industry, these have been, and to a large extent still are, mainly urbanisation economies” (2006: 21). This industry is concentrated in the urban centres of Dublin and Cork. The benefits associated with these locations are the availability of labour supply with third level qualifications and the quality of life available in these population centres.<sup>5</sup> Clearly a significant and important research agenda might be followed in order to understand the relative importance of these kinds of external agglomeration economies in other Irish industries.

In addition, the presence of urbanisation diseconomies and their effect on these industries should be investigated. For example, the effects of rising land values and congestion in Dublin might mitigate the agglomeration economies to be achieved by industries located there. This is what is envisaged in the Williamson (1965) hypothesis mentioned under scenario 1 above.

Finally, the possible existence of *activity complex economies* should be considered in the Irish case. This might refer to businesses supplying inputs to or distributing the output of a given business. This may be relevant for some of the foreign-owned assembly plants based here. A case in point might be the Intel plant in Kildare, which was accompanied by its independent suppliers when they first located there (O’Sullivan, 2000: 281). This form of agglomeration may arise as a result of large vertically integrated businesses out-sourcing key inputs or services to independent operations. If benefits accrue to these businesses being local, then an agglomeration economy is present.

Before considering the implication of the above discussion for policymakers, it is worth investigating further causes of the concentration of foreign-owned industry in Irish towns and cities. One possibility is the so-called demonstration or reputation effects, associated with Krugman (1997), which results in businesses mimicking each others location decisions. Barry, Gorg and Strobl (2003) have shown that these effects, which in their purest form are not agglomeration economies, may also be important determinants of US business’s entry into Ireland. Other possibilities include factors unrelated to geography, such as Ireland’s cost competitiveness relative to other countries and government policies. It is therefore important to establish not only the relative importance of each type of agglomeration economy, but also the importance of these other factors which may have played a key role.

## 15.6 Implications for Irish Policymakers

This section begins by showing how Irish regional and enterprise policies are not integrated. It then proceeds to show what policymakers can learn by assessing the relevance of Parr’s classification to Ireland’s internationally competitive industry.

As a response to Ireland’s increasing regional divergence the National Spatial Strategy (2002) was formulated. This proposed an urban hierarchy model, consisting of eight gateways and nine hubs. I have argued that this strategy is more concerned with distribution rather than the mainstream policy goals of growth and competitiveness (O’Leary, 2003b). While I support the urban-hierarchy approach followed in the National Spatial Strategy (2002), too many gateways and hubs were identified. The size of the country will probably only sustain five or six urban centres. However, there is little appetite in Irish regions for developing distinctive policies on economic development. The Regional Planning Guidelines, which gave effect to the National Spatial Strategy in Ireland’s regions, were remarkably similar in identifying the same kinds of industries in high-technology knowledge-based sectors.

When it comes to enterprise policy it seems as if little importance is attached to spatial issues. This can be seen for example in the Enterprise Strategy Group report which only once refers to the necessity of implementing the National Spatial Strategy and this is in the context of addressing the infrastructural deficits. Crucially the strategy is not seen as one of the five key sources of future competitive advantage (ESG, 2004: 97-8). It is noteworthy however that despite this, enterprise policymakers have for nearly two decades attached importance to the notion of clusters and networks, which are often thought of as being effected by geography.

The Culliton Report (1992) was the first to stress the importance of local or regional clusters around internationally competitive businesses for improved national competitiveness, and in particular for embedding foreign-owned industry. These prescriptions were strongly influenced by the work of Porter (1990 and 1998). More recently, Forfás recommended that the Government focus on inter-firm networks as a key building block in the development of the innovation capacity of Irish industry (ESG, 2004: 7). The Enterprise Strategy Group also advocated networks involving industry, academic and public sector co-operation to drive the development of knowledge and expertise (ESG, 2004: 53).

It is worthwhile to consider why enterprise policymakers pay scant attention to spatial strategy within the country while at the same time advocating the importance of clusters and networks for future Irish growth and competitiveness. It may be that agglomeration economies are held to have been relatively unimportant to the success of Irish-based industry. Instead, the main causes have been attributed to stable macro-economic policies, low corporation tax and favourable demographics (see for example Kennedy, 2000-01).

The discussion in the last section has highlighted that agglomeration economies are not just limited to localisation economies, as is often implied in the enterprise policy discussions on the issue. A consideration of Parr's classification reveals five other sources of agglomeration, some of which may be crucially important as we face future challenges, such as increasing the innovation performance of Irish-based industry.

In relation to skilled labour, there is a continuing emphasis in policy circles on the importance of formal educational qualifications. For example, the recently launched *New Strategy for Science, Technology and Innovation to 2013* (2006) envisages a doubling of the number of PhD's. From a business perspective the key issue is that educational qualifications, even at PhD level, only provide the basis for the key skills, crucial to the competitiveness of the business, that are necessarily acquired on-the-job. There is no certainty that businesses would have a preference for entrants with higher qualifications such as PhD's. Instead they may prefer to train employees on-the-job. This implies that the benefits attributable to these skills are internal to the business. However, the above discussion implies that these are internal agglomeration economies. So in addition to supporting the development of external agglomeration economies arising from formal educational qualifications, policymakers should also focus on the support of in-employment training. This might better equip the key workers in these businesses to contribute to their enhanced competitiveness in their Irish location. If so, the 'New Strategy' should be re-appraised.

There are examples of Irish subsidiaries of foreign-owned enterprises where local management pursues strategies of developing multiple capabilities in their workforce. The purpose is to enable the subsidiary to be a location for more than just basic assembly for the corporation, thus more deeply embedding it in its Irish location.<sup>6</sup> This is an example of an internal economy of complexity which is also worthy of policy support. Unfortunately, due to the restricted nature of existing enterprise policy instruments, which are based predominantly on 'clusters' or 'networks', these opportunities may be missed.

The imperative of enhancing the innovation performance of Irish industry also has implications for the way policymakers think about supporting external agglomeration economies. There is some international evidence suggesting that diversity might be more conducive to innovation than specialisation (Gordon and McCann 2005; Feldman and Audretsch, 1999). Urbanisation rather than localisation may be important. A well functioning city, with a high degree of economic and social diversity, might be a fertile seed-bed for the development of new ideas. Given that the objective of the New Strategy for Science, Technology and Innovation to 2013 is to develop Ireland as a knowledge economy with a critical mass of creative people (Florida and Tingali, 2004), it might be important for policymakers to consider whether these kinds of urbanisation economies may be developed in Irish cities. The small size of Irish urban centres implies that the level of diversity evident in some of the world's larger cities are clearly not possible here. This does not mean that there are no productivity benefits to be experienced from economic and social diversity in Irish cities. In addition there is considerable scope to bring about improvements in the more mundane aspects of urban living in Ireland, such as transport infrastructure and quality of life aspects in and around urban centres.

There is much evidence suggesting that innovative Irish businesses source ideas through interaction, especially with customers and suppliers. Our survey on innovation in Irish-based high-technology sectors has shown that although strong interaction with suppliers and customers takes place, it does so over long distances (Jordan and O'Leary, 2005). This highlights the importance for innovation of facilitating international interactions by Irish-based business. Thus, once again policies to improve transport and communications infrastructures may have a crucial role to play.

## 15.7 Final Comment

The discussion has shown, given the size of the country and the dominance of internationally competitive industry by large foreign-owned multi-national businesses, that policymakers should consider other kinds of agglomeration economies, besides localisation economies, as important drivers of Irish regional productivity growth. The scale, scope and complexity of these businesses imply that internal agglomeration economies might warrant attention. In addition, urbanisation economies and external activity-complex economies may also warrant attention from policymakers. Policy failures here might result in agglomeration diseconomies with negative effects on productivity growth in Irish regions.

Successful policy therefore requires collaboration from all Government departments concerned with agglomeration issues. Given the imperative of developing these policies in Irish urban centres it might be important to address the existing over-centralisation of power in Dublin. Genuine decentralisation of governance might enable Irish cities to develop policies that allow them to better reach their growth potential. The problems of high land values and congestion in Dublin, which as a consequence is already witnessing the flight of creative people, point to the growing urgency of addressing these questions.

I have argued before that, given the emergence of a regional problem, Ireland's future growth depends more than ever before on the growth of regions outside Dublin. If all Irish regions, including Dublin, reach their full growth potential then our future prosperity will be assured.<sup>7</sup> In order to meet these challenges policymakers might have to undergo a significant change of mind-set in order to think regionally rather than nationally.

## Notes

- 1 The seven regions are: Border, Midlands, West, Dublin/Mid-East, Mid-West, South–East and South-West. The first three of these NUTS 3 regions represent Ireland's Border, Midlands, West (BMW) NUTS 2, Objective 1 region in transition.
- 2 The paper won the Moss Madden Memorial Medal in 2002 which is a prestigious award of the British and Irish Section of the Regional Science Association International.
- 3 This list, which is based on Gallagher, Doyle and O'Leary (2002) who constructed it using the 'revealed comparative advantage' method applied to 1998 data, is suggestive and not meant to be exhaustive.
- 4 If the distribution stage was situated in another facility of the Dell Corporation on mainland Europe, then the Limerick plant would be benefiting from an internal economy that is not attributable to agglomeration.
- 5 Interestingly Van Egeraat concludes that factors such as environmental and regional planning policies were more important than agglomeration economies in explaining the concentration of this industry in Dublin and Cork (2006).
- 6 For example, O'Gara (1996) describes how Pepsi-Cola developed the capability of sourcing shared services in its bottling facility in Cork.
- 7 Paradoxically, as this involves the most optimistic aspects of the two scenarios depicted in Table 15.2 above, it could correspond to continued regional divergence. However, policymakers and the public at large surely have a revealed preference for growth rather than regional balance.

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