



Local or National Competitive Advantage? The Tensions in Cluster Development Policy

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Abstract

The following paper explores the tensions in cluster development policy arising from the combination of different economic spaces on which cluster policies can be targeted and the different levels of governance which produce them. In seeking to enhance industrial competitiveness at different spatial scales, the contrasting strategies of national and regional/local authorities towards cluster development have led to a sharpening of the differences between different governance levels. The policy tensions highlight potential conflicts between policies pursuing national and local competitive advantages. To explore these conflicts, a series of case studies is presented to investigate how cluster concepts have influenced policy-making in eight Western European countries. The paper concludes that cluster policy has largely arisen from spatial rather than industrial policy traditions, and far from exacerbating tensions between different policy areas and governance structures, it has often provided a useful means of resolving them.

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LOCAL OR NATIONAL COMPETITIVE ADVANTAGE? THE TENSIONS IN CLUSTER DEVELOPMENT POLICY

Introduction

The apparent paradox inherent in the simultaneous globalization and localization of economic activity has generated considerable academic interest in recent years. While globalization in many industries has led to companies being configured on an international scale - with investment decisions taken globally and supply chains restructured across continents - geographical proximity remains a critical feature of industrial development. Indeed, localization has arguably become more significant in some sectors, particularly those where high transaction costs can be reduced through suppliers and large companies developing geographically-close links and where externalities of co-location are substantial. The interaction of the two sets of processes has resulted in fundamental changes in the relative significance of the factors influencing industrial location and the scale at which they are assessed by businesses. On the one hand, with greater globalization, the spatial scale at which some factors are considered in location decisions has widened, including not just the easily-quantified inputs into production (such as labour, capital, property and product/service supplies), but increasingly the tacit knowledge underpinning a location's attractiveness - a process identified by Maskell and Malmberg (1999) as the 'ubiquitification' of location factors. At the same time, a greater emphasis has been placed on the ability and speed with which groups of companies and sectors can acquire and make productive use of technical knowledge. In consequence, a tension is evident in industrial location between the innovation effects of agglomeration and the tendency of the resulting competitive advantage to dissolve as those effects become less local over time.

The recent emergence of the 'cluster' concept represents one of the most common policy approaches to addressing the tensions between globalization and localization. Originally articulated in the work of Porter, Enright and others - though building on longer traditions encompassing the work of Marshall, 'growth pole' writings (especially Perroux) and the 'innovative milieu' research by the GREMI group - the factors influencing the propensity of industries to cluster in certain locations have been extensively examined over the past decade. The so-called 'Porter diamond' - the dynamic interaction of supply and demand factors within an industry, its structure and the strategies of its constituent companies, and the industry's links with supporting industries - suggested that competitiveness derives not simply from individual firms, but from relationships between these firms (Porter, 1990). More generally, such clusters have been interpreted as self-reinforcing networks of not just firms, but a range of other organizations - including research institutes, universities, financial bodies and public sector agencies - all of which are characterized by high levels of both competition and collaboration. While the concept has been most publicly evident in a handful of case studies - such as the industrial districts in northern Italy and Silicon Valley in California - it has been used widely to understand the sources of competitiveness in a variety of industrial groups and economic territories.

Interest in the ‘cluster’ concept has increased dramatically among economic development policy-makers, evidenced by the surge in policy-related conferences in the issue, specialist consultancies and the number of cluster development strategies being developed (Raines, 2000). However, the spatial scale at which cluster policies have been targeted has varied. Clusters have been analyzed in territories diverse in size, ranging from the national sector groups which are the focus of industrial policy in the Netherlands to the micro *systèmes productifs localisés* within French localities. As clusters develop in environments whose overall features provide incentives for firms to act as competitive industrial networks, a cluster’s spatial scale is ultimately defined by the nature of these features. They can be limited to the national level (in terms of the macroeconomic, cultural and legal framework encouraging industrial competitiveness) or the sub-national (in terms of the externalities and ‘untraded interdependencies’ deriving from geographical proximity (Storper, 1997)). As a result, there is no self-evident locus for policy intervention, and indeed, cluster development actions may be required at different levels.

This uncertainty can result in national and regional policy-makers pursuing parallel cluster development policies, creating the potential for a series of tensions within the policy process. The tensions derive from the relationship between governance and economic boundaries as well as between different, often overlapping administrative spaces. As Bennett (1997) - amongst others - has noted, the boundaries of a governance unit are not necessarily coterminous with the boundaries of the economic activity which it is meant to influence: extended trade, investment and labour market links can often undermine the economic rationale of administrative territories (equally at macro/national, mesa/regional and micro/local levels), and consequently, policy effectiveness. Further, uncoordinated policies between different governance levels sharing (at least part of) the same economic space can lead to a lack of policy coherence and multiplying conflicts. The tensions can exist between national and local levels of governance: an example in cluster policy is circumstances where regional agencies decide to target policy resources at one industry group while national authorities favour other groups within the region, or perhaps competing industry groups in other regions. Similar tensions can emerge between competing localities developing cluster policies for the same industrial sectors, whose effects may counteract each other if the wider economic environment is unlikely to support the competitive development of both sector groups.

Tensions arising between different combinations of economic space and governance level can be typified using a matrix. Several policy categories can be produced using these two key axes: the spatial scale of *competitive advantage* within industries, referring to whether cluster development is conceived of in national terms or as localized/geographically-proximate sectoral groups; and the spatial scale of *governance*, concerning the institutional level at which cluster policy is defined. Three policy types result from the analysis:

- *national advantage policy*: where policy is centralized nationally and targets industrial competitiveness at the national level (in many respects, the traditional description of industrial policy);

- *centralized cluster policy*: where improving the competitive advantage of local industry is the goal of policy, but it is centrally coordinated at the national level; and
- *decentralized cluster policy*: where sub-national governance levels are responsible for developing industrial competitive advantage within their own economic spaces.

		Spatial scale of competitive advantage	
		<i>National</i>	<i>Local</i>
Spatial scale of governance	<i>National</i>	<u>National advantage policy</u> National policy to improve national industrial competitiveness	<u>Centralized cluster policy</u> National policy to improve local industrial competitiveness
	<i>Local</i>	Local policy to improve national industrial competitiveness	<u>Decentralized cluster policy</u> Local policy to improve local industrial competitiveness

The fourth category in the matrix – local policy aimed at the national scale of competitive advantage (the dark-shaded box) – will not be examined because it has occurred so rarely.¹ However, another category which is not readily captured on the matrix will be examined: policies that focus on sub-national competitive advantage but which involve significant coordination between different governance levels, as some countries do not have clear demarcation between these levels (what might be called ‘feedback’ cluster policies, effectively in the transition between the centralized and decentralized policy models). Indeed, as cluster policy is an emergent phenomenon, the snapshot descriptions of the different policy categories will not do complete justice to the element of flux in ongoing policy developments. The recent introduction of cluster policies in Western European countries perhaps reveals more about the existing dynamics of industrial and economic development policy-making in different countries than suggests new trajectories of policy development (a point which will be considered at greater length at the end of the paper).

Using this typology, the aim of this paper is to explore the tensions in cluster policy in Western Europe. In examining how the potential policy conflicts with respect to cluster development have emerged, the paper considers these tensions from the perspective of how different governance levels have responded to the economic development challenges of the increasing globalization of economic activity by policies of localization. In seeking to develop industrial competitive advantages at different spatial scales, the strategies of national and regional/local authorities have led to a sharpening of the differences between different governance levels. Moreover,

¹ The absence of a national level to oversee national competitive advantage in this scenario suggests a highly federative model of governance, in which national economic interest is served almost wholly by policy cooperation among sub-national units. It is not a scenario that characterizes European countries, the focus of this paper.

the paper will examine how different governance levels have reached accommodations in policy responsibilities in different countries.

The paper will focus on how the cluster concept has influenced policy-making in eight Western European countries in three areas: national industrial policy, spatial policy and the boundaries between different governance levels. It is based on a research project within the European Policies Research Centre to compare cluster policy approaches in a selection of regions in Western Europe.² Case studies of policy in different countries are used extensively, but principally for indicative purposes and are thus limited to brief sketches intended to highlight new policy changes rather than provide in-depth historical analysis of policy.

The paper is structured as follows. The section after this introduction sets out the main theoretical constructs of cluster policy. This is followed by a section examining national advantage policy within Europe, with specific reference to cluster policy in Denmark and the Netherlands. The next section - on how sub-national governance has become more active in cluster policy - introduces a series of case studies on the development of local competitive advantage. The cluster policies of six countries examined are analyzed in the subsequent three sections in terms of the different approaches in the typology: centralized cluster policies (France and Norway); decentralized cluster policies (Austria and Italy); and feedback cluster policies (Sweden and the UK). Lastly, the paper concludes with an application of the case studies to the more general themes of the paper and a discussion of the impact of different spatial understandings of competitive advantage on the division of policy responsibility between different governance levels.

What is ‘cluster policy’?

Before considering how cluster policy has been designed and operated at national and sub-national levels, it is important to clarify what is meant by cluster policy – but before this can be accomplished, it is essential to discuss what policy-makers understand by ‘cluster’. This is difficult, as there is no underlying, unifying theoretical consensus on what constitutes a cluster and, more importantly, over what spatial scale it operates (Feser, 1998). Indeed, although the term ‘cluster’ has been used widely – applying to a variety of distinct industrial processes – it has often been interchangeable with other terms such as ‘industrial districts’, ‘value chains’ and ‘business networks’ (Brown, 2000). In practice, what exists in common in the literature on cluster development is a series of generally-agreed cluster characteristics. First, the cluster’s competitiveness is recognized as being more than the sum of its parts: competitive advantage arises from its network features, rather than the strength of any one part of the network. Second, these networks involve businesses (both customers and suppliers, often from different sectors) and non-business organizations with key supporting roles (such as universities, research bodies and in many cases, public sector agencies) in relationships that combine aspects of competition,

² More information on the *Euro-Cluster* project can be sought from the author at the European Policies Research Centre, University of Strathclyde, 40 George Street, Glasgow G1 1QD, UK. Further findings from this project have been reported in Raines (2000).

cooperation and interdependency. Lastly, agglomeration has traditionally been viewed as central to cluster development, in which geographical proximity has facilitated crucial externalities, particularly those relating to the generation and diffusion of tacit knowledge through the creation of an ‘innovative’ environment surrounding the industry. Yet while there is common acceptance of these characteristics, the factors which produce them remain subject to debate. More significantly from a policy perspective, it is not clear the extent to which the conditions necessary for cluster development can be created by policy action where they are absent or even extended or reinvigorated where they are declining.

As a result, ‘clusters’ have been subject to a variety of separate definitions and interlocking concepts. While it is not the intention of this paper to review these different models in detail, it is important to draw attention to their different foci. For example, Porter (1990) maintained a highly firm-centric view of cluster development, addressing issues of sectoral competitiveness in terms of business access to key inputs into their production process, their markets and the behaviour of competitor firms in the same industry: clusters are viewed in national terms, and are the main constituents of national competitive advantage. Others have viewed cluster development in more localized and explicitly spatial terms, seeing cluster development as a function of key sub-national factors and their systemic interaction (a view evident - for example - in the ‘innovative milieu’ group). In this context, clusters are linked to notions of local competitive advantage, where distinct sub-national economic spaces not only operate relatively autonomously, but many of the factors which underlie their economic performance arise from the relationships of businesses and supporting organizations in the main local industries. As a whole, the role of policy in cluster development has not been clearly defined in cluster theory. While models of cluster development have proliferated over the last two decades, few models of cluster *policy* have emerged, only classifications and lists of measures.

Indeed, the major cluster theory models either do not place much emphasis on policy or have described its function in generalized terms. Porter (1990) – at least in his original development of the cluster model - argued that policy intervention had little influence on the emergence of clusters, but should be restricted to creating the environment in which clusters emerged, an ‘indirect’ rather than a direct role. While his later writings suggest greater scope for policy intervention in developing the ‘public goods’ supporting clusters (see, for example, Porter, 1998), Porter remains a strong opponent of industrial targeting by governments in cluster development, echoing the extensive distrust to ‘picking winners’ in industry which has come to permeate (though not always rule) government policy in the developed world.

In contrast, the ‘innovative milieu’ concept foresaw greater scope for policy, though the issue has not been systematically investigated in GREMI studies. For example, Maillat (1996) noted that as the local productive system is constantly dynamic, the scope existed for ‘territorial policy’ to influence the factors which contributed to the emergence of an innovative milieu. Camagni (1995) argued that policy interventions need to be constantly adapted to reinforce the local environment (especially in terms of infrastructure and human resources) and to encourage network linkages between milieu participants. More emphasis has been placed on the role of public institutions in the ‘learning region’ writings of Cooke and Morgan. Here, institutions can act as

‘animateurs’ of local innovation systems, not only identifying the points in the regional economy where self-sustaining innovation can be activated, but also becoming major actors in promoting the creation of networks (Cooke and Morgan, 1998). As with Porter, these writers argued that policy intervention should be based on the identification of market failure in cluster development, but while they agreed that such failure can be more extensive than Porter acknowledged, they do not constitute an academic consensus on what types of failure exist within clusters, the methods by which these can be identified and the policies needed to address them.

Consequently, the diversity of ways in which the cluster concept has been interpreted has resulted in a profusion of policy practices. Indeed, it has been argued that ‘cluster policy’ as such does not exist, at least not as a readily identifiable policy area (Lagendijk, 2000). In borrowing from different policy areas – especially industrial regional development and science and technology policy fields (Boekholt and Thuriaux, 1999) – questions have been raised as to whether the cluster approach consists of little more than a restatement of industrial district theory (as reviewed by Harrison, 1992). However, recent research suggests that the approach does offer new insights to policy-makers, not least in terms of its importance in integrating a variety of often disparate policies and targeting them on specific actions within a limited range of industrial sectors (Brown, 2000; Raines, 2000). Indeed, just as clusters are based on networks among active economic agents, cluster policy itself tends to operate through a policy network, in which neither the design nor the delivery of policy is concentrated in a single organization, but frequently distributed among different public and private sector agents, all coordinated by common policy objectives.

As a final point in this section, it is important to distinguish between areas where cluster policy measures are operated unsystematically and areas where an all-encompassing effort is made to support the development of clusters. In this respect, a distinction should be made between ‘cluster-specific’ and ‘cluster-informed’ policies (Feser, 1998). The former addresses the development of clusters as a whole and tends to be more comprehensive, involving not only established development initiatives, but complementary policies in other areas of government activity (eg. education policy, legal measures to knowledge patenting). In contrast, cluster-informed policy only borrows from the cluster approach – particularly its tools for analyzing an economy – to improve other, traditional policies. It usually concentrates on aspects of cluster development without adopting a holistic, strategic view. Both types of policy can be appropriate, depending on the context of their application, though for the most part, the paper will be dealing with cluster-specific policies.

Cluster policy and national competitive advantage

The link between cluster development and national competitive advantage is most often associated with Porter (1990). In examining the conditions that allow (and encourage) firms within industries to become (and remain) competitive, Porter's focus was largely fixed on the attributes of industries at a national level.³ His diamond model explained competitiveness primarily in terms of the macro-economic parameters within which the industries functioned rather than through the benefits of spatial proximity, seeing competitive advantage in terms of a transactional and regulatory rather than a physical space. This is not to say that geographical concentration is not recognized as a significant factor in cluster development: Porter cited examples of industries which form in highly localized areas, such as British auctioneers in London and urban industrial concentrations in Italy (Porter, 1990, p.155). He also queried whether the nation is the appropriate level of analysis, and acknowledged the clustering effects of proximity with respect to improving information flows and the intensification of competition. Nevertheless, proximity merely magnifies existing competitive advantage deriving from national structural causes as embodied in the diamond. The main determinants of competitive advantage in his analysis are national, especially the regulatory framework for an industry, tax systems, factor costs, and social and political values. He concluded by arguing that it is the combination of national and local factors which determine industrial competitiveness, but suggested that local conditions do not so much generate their own unique and spatially-limited set of factors, but enable national factors to work more effectively.

The implications for cluster development policy were only partially considered by Porter. As already remarked, Porter viewed the impact of government in cluster development as minimal and argued that traditional forms of industrial policy are unlikely to support national competitive advantage. Porter criticized traditional industrial approaches for their advocacy of strong and direct government intervention in a sector's development, particularly in its infant stages (by setting up the conditions and providing the incentives for the emergence of new industries) or at the point of maturity and decline (through direct and indirect subsidy and active involvement in restructuring). Government's role is restricted to "the context and institutional structure surrounding firms" (Porter, 1990, p.620) and is cast in terms of how policy can support the existing competitive factors in a national sector's diamond. Consequently, government can provide limited support in factor creation (by influencing the skills outputs of the national education and training system and facilitating the commercialization of university-based research), demand conditions (through government procurement and the regulation of product standards), and industry structure and firm strategy (by supporting domestic rivalry through tax incentives and competition regulations). Indeed, targeting of industries within industrial policy was viewed with some scepticism. As a whole, Porter even acknowledged the potentially greater scope for regional/local policy in assisting local groups of firms to capitalize on national competitive advantage factors.

³ This is not least evident from the title of his oft-quoted book, *The Competitive Advantage of Nations!*

Nevertheless, despite Porter's caution, policy interest in how to influence national competitive advantage has been rising. Indeed, the role of government in shaping industrial competitiveness at national level has been widely reappraised in recent years. In large part, this has been galvanized by the debate on national competitiveness that marked the last decade, with many governments beginning to measure national interest in internationally competitive and economic terms. While writers like Krugman (1996) have argued forcefully that notions of 'competitiveness' at national level are ill-founded, the concerns have left a strong impression on the direction of national industrial policy. It has contributed to the development of a 'new paradigm' for public intervention in industry, based on the so-called 'knowledge-based economy' and involving a reconsideration of the scale and avenues of policy influence (Drake, 1997). Government capacity to act has been increasingly bounded by widespread constraints on public finances and the recognition that government can be more effective as a facilitator and coordinator of resources. In contrast to the 'national champion' aims of traditional industry policy, the responsibilities of government have been reconceived in terms of setting the conditions in which industries compete and in addressing clearly-defined market failures, particularly those relating to technological knowledge and its diffusion. As a result, the sphere of government action has moved outwards from a focus on individual firms to industrial networks of businesses and beyond, to the economic environments in which these networks operate. Competitiveness may still reside in individual firms, but governments have more and more attributed at least part of that competitiveness to systemic elements in the national economy (ie. the national competitive advantage).

The link with cluster theory has come from combining network approaches to understanding the success of certain industry groups with this new appreciation of the scope for government industrial policy action. Boosted by the popularity of Porter's work, a 'national advantage' model of cluster policy has been described, where the tasks of cluster development are undertaken at the national level (Boekholt and Thuriaux, 1999). In stylized form, national advantage policy can be said to have four aspects:

- *the economy is viewed as an interlinked series of national competitive advantages* (or the 'strategic' aspect of the policy model), as seen in government studies analyzing the whole economy with cluster maps and assessing the strengths and weaknesses of individual clusters;
- *broadly-defined industries become the strategic focus of policy* (or its 'sectoral' aspect), which can result in clusters being defined in relatively general sectoral terms (eg. a food/drink industry rather than a cheese-making or whisky sector);
- *policy activities are restricted to affecting framework conditions for industry* (or its 'framework' aspect), whether these are specific regulations affecting certain forms of product development (eg. patenting or environmental controls) or more general policy setting the macro-economic context for cluster development (eg. steady growth, low inflation etc.); and
- *government addresses national areas of market failure within an industry* (or its 'externalities' aspect), such as the provision of specialized forms of infrastructure (eg. national research centres designed to address private sector reluctance to invest in new technological developments).

The features of the national advantage model can be seen with respect to the two most prominent countries in Western Europe to have focused on national-level clusters: Denmark and the Netherlands. In the case of *Denmark*, the national government has targeted industrial policy on a series of ‘resource areas’, defined as business and institutional networks with a set of products which have a common set of ‘homogenous market characteristics’ (Drejer, Kristensen and Laursen, 1999). The policy has a clear strategic aspect as the resource areas were identified in terms of the main value chains in the Danish economy in a cluster mapping exercise of the whole country. It has a sectoral aspect in that these resource areas consist of six general industrial groupings, including sectors as widely defined as ‘leisure and consumer goods’ and ‘transport, environment and energy’. As a policy, the Danish government distinguished it from older forms of sector policy by the cross-sectoral nature of the resource areas and their internal interdependency. This is reflected in the measures associated with the policy, which display both a framework aspect (as supporting policies have been devised for the individual macro-economic framework conditions of each resource area) and an externalities aspect (as seen in the creation of ‘virtual’ research centres bringing together specific research expertises from the private sector, universities and the government).

Similar developments took place in *the Netherlands*, where a succession of national-sponsored cluster studies culminated in a full policy commitment to cluster policy at the national level with 1997 publication of the White Paper, *Opportunities through Synergy – Government and the Emergence of Innovative Clusters in the Market* (Roelandt *et al*, 1999). The intensity of the mapping exercises and their understanding of the national economy exclusively in terms of interdependent value chains show the strategic and sectoral aspects of policy. The framework and externalities aspects of the policy are apparent in the White Paper, which laid out three areas for policy intervention: developing favourable macro-economic conditions for all sectors (eg. by pursuing an active competition policy); acting as broker and information provider in promoting links within specific clusters (eg. encouraging interfirm alliances in the development of strategic technologies); and using the government’s position as a customer to encourage technological improvements within clusters (eg. through procurement practices).

Denmark and the Netherlands are among the few European countries to have applied cluster concepts to developing competitive advantage on an exclusively national scale. While aspects of the national advantage model can be seen in other countries – especially its strategic aspect (notably the cluster mapping responsibilities of national government) – they have not been combined together in a strategy to support national competitive advantage. The surprising absence can be partially explained by examining distinctive features of Dutch and Danish industrial policy. Cluster policy has emerged out of national industrial policy in both countries: dissatisfaction with previous policies creating national champions in a handful of individual businesses – sometimes in industries with weak roots in the national economic structure – led to both governments being strongly susceptible to Porter’s work. Moreover, the territorial compactness of their countries has meant that both countries have been able to take advantage of geographical proximity in their cluster development: in other words, one of the key features of local competitive advantage – geographical proximity – has been present in national competitive advantage.

Cluster policy and local competitive advantage

In spite of the original contextualization of industrial clusters within a framework of national competitive advantage by Porter, it is the concept of local competitive advantage which has dominated discussion of cluster development over the past decade. In part, this is due to the longer tradition of research on localizing competitive advantage, which linked aspects of the cluster concept – notably innovation as an interactive, uncodified and location-specific process and its embedding in local business networks – to spatial considerations. While particularly evident in the industrial district literature and the debates over whether areas such as the Third Italy and Baden-Württemberg represented new regional development paradigms (eg. Piore and Sabel, 1984), the importance of local context was endorsed by Porter (1990) and subsequently investigated in greater detail in the writings of Enright (see especially Enright, 2000), Storper (1997) and others. The result has been an increasing diversity of spatial scales at which competitive advantage and policy is defined.

This has manifested in the growing numbers of regional and local cluster policies in Western Europe over the past decade, in regions as diverse as Styria (Austria), Flanders (Belgium), North-Rhine Westphalia (Germany), the Basque Country (Spain) and Scotland (the UK), as well as at state level throughout the US (particularly Arizona and North Carolina) (Enright, 1996). They differ from policies in support of national competitive advantage in certain key respects. National competitive advantage policies frequently concentrate on support for large firms as the key drivers of developments in certain sectors (as in the case of Denmark and the Netherlands). As a result, they have tended to proceed out of national industrial policy, providing assistance directly (through subsidies) or indirectly (by supplying facilities from which only large firms are likely to benefit). In contrast, sub-national cluster strategies tend to favour SMEs: smaller firms not only require more public intervention to overcome internal and external limits on their capacity to innovate, but that capacity is often linked to key cluster characteristics, notably networking with other firms and research institutes. As a result, sub-national cluster policies tend to be more deeply rooted in spatial policy traditions. The overlap can be seen in the similarity of measures to support networking - among firms, between firms and research institutes, between firms and the private sector, and within the private sector – such as broker programmes, schemes to encourage university RTD commercialization, the development of local industrial associations and the provision of common industrial services. Policies are aimed at affecting the behaviour of the principal agents within a potential or an existing cluster, rather than the economic and regulatory parameters governing the cluster as a whole.

The rise in regional and local cluster policies is part of wider shifts in sub-national economic development policy-making. They are not just ‘regionalized’ versions of policies to support national competitive advantage, but view their local economies as relatively self-contained units on which policy can act. The growing influence of the cluster concept on these policies can be attributed to a series of factors, the most

important of which are changes in the focus, delivery and resources available to local economic development policy; each of these are now discussed in turn.

Policy focus

Although differing in specifics, rationales for most cluster strategies have tended to focus on the common issues of the production of *knowledge*, the importance of *learning* and the use of both in the local economy (Asheim, 1999). To a large extent, this is a recognition of two important insights into regional development which have been popularized in recent years. First, it reflects a greater awareness of the place of knowledge and innovation in sustaining the competitive advantage of industries and, more importantly, the structures in place to ensure that such knowledge can be generated on an on-going basis, diffused throughout a particular sector/region and transformed into products and services which will enhance individual businesses' competitiveness. Innovation is no longer seen as a linear process, but part of a complex series of interactions between different functions within a company (such as marketing, human resource management, etc) as well as between different firms and other organizations (Temple, 1998).

Second, it proceeds from an understanding that such knowledge and innovation are *localized* processes, made possible by the geographical proximity of a range of innovation institutions (Storper, 1997). Proximity and innovation have been closely linked through a renewed understanding of the necessity for trust and cooperation in the development of collective learning. Innovation is perceived to be the function of a local *system* of inter-linked businesses, research institutes and other agents rather than the output of isolated firms. Policy-makers have increasingly realized that such systems are more likely to occur in a regional group of firms and other institutions which have achieved a certain critical mass, where linkages can be denser and stronger and the local environment/milieu can underpin these networks.

These insights have contributed to shifts in economic development policy-making over the last two decades away from a focus on direct business subsidies and attracting capital investment into regions and towards support for the wider business environment, the RTD capacity of indigenous businesses and the ability of local business networks to facilitate local economic development. The trends have been reinforced by mutual changes in other policies, where the cluster approach – and its related concepts of regional innovation systems or milieu – has addressed different policy needs by providing a way in which policy-makers can understand how innovation can contribute to regional economic competitiveness and the points at which policy actions can have an influence. This has been particularly apparent in the cases of technology and foreign investment policies.

In *technology policy*, regionalization exhibits a more sophisticated policy approach to supporting RTD, not least in addressing the specific innovation needs of SMEs (Downes *et al*, 2000). The benefits of a regionalized policy derive from the greater ease with which local policy-makers can identify the RTD strengths and weaknesses of small enterprises and their ability to develop local networks to support innovation. As SME support tends to rely more heavily on relationships of trust and partnership,

spatial distance and in-depth local knowledge have become critical factors in RTD policy implementation. Moreover, the new policy insights have been given international promotion through the European Community's programme of assistance to regions forming Regional Innovation and Technology Transfer Strategies, which themselves have become the bases for cluster policies.

At the same time, the changes in policy mirror new ways of dealing with the challenges of *inward investment attraction*, which has long been a major feature of spatial development policy. With policy priorities shifting more towards retaining existing investment projects, winning 'follow-on' investment and deepening the ties of foreign plants in local economies, policy-makers have become more active in their efforts to embed foreign investment, encouraging higher value linkages between investors and local businesses with a view to promoting skills and technology transfer into the local economy (Brown and Raines, 2000). In consequence, policy has concentrated more on groups of firms in related value chains – often with key foreign-owned plants at their apex - rather than on the investment intentions and behaviour of individual firms.

Policy delivery

The popularity of cluster policy models parallels the increasing role of strong, regionalized policy institutions in sub-national economic development. In particular, it can be linked to the rise of regional development agencies (RDAs) in Western Europe and concurrent changes in the institutions responsible for regional development (Morgan, 1996). Over the past few decades in Europe, there has been a clear trend towards the decentralization of regional development policy-making. While funding has continued to be centrally provided, more scope has been given to 'bottom-up' attitudes to local economic development, in large part because there is greater recognition that local institutions are often in a better position to determine local economic needs and (in the case of RDAs) can combine a range of previously disparate policy resources and measures to act on those needs (Armstrong, 1997). As Halkier and Danson (1997) have noted, RDAs represent a new institutional model for delivering policy: they are semi-autonomous organizations (with respect to their central government sponsors), they provide more targeted support for local businesses and they can integrate different policy functions within the same body.

The rise of RDAs in Europe and the increasing popularity of cluster policies at sub-national level are linked. It can be seen in the way in which the newly-created RDAs in the English regions have made 'clusters' a prominent feature of their initial development strategies (as described in more detail below). Several reasons can be cited for the interest in clusters by RDAs. First, cluster development fits with the goal of many RDAs as coordinators of development policy within the same region. Rather than undertaking all policy delivery themselves, RDAs can take the lead in developing consensus in economic development priorities among different organizations and manage the distributed system of policy implementation. In many cases, RDAs are responsible for drawing up development strategies for their regions, and the localized nature of much cluster policy offers an attractive means of organizing these strategies. Second, RDAs are still often implementers of many of the relevant measures involved

in cluster strategies, such as support for training, RTD incentives and industry benchmarking studies; the appeal of a policy model that provides a unified system for their different policy responsibilities can be very strong.

Policy resources

Lastly, localized cluster policy can also be seen as a response to changes in the resources available for spatial development. Indeed, the attractiveness of the cluster concept can be interpreted as a solution to the problem of declining national resources for regional development. Yuill *et al* (1999) have noted that expenditure on national regional policy in Western Europe – especially business incentive schemes - has been steadily falling since the 1980s (though more clearly in the case of northern than southern European countries). The decline in the resources used has arisen from a combination of general budgetary pressures and an increasing scepticism about the benefits of providing extensive business support in less prosperous regions. As a result, policy-makers have altered their incentive schemes to become more targeted and discretionary in the use of financial support to businesses.

Cluster policy methods favours a more refined focus of policy activity on particular aspects of a regional economy. It also supports the integration and coordination of existing policy measures within a region so the spending that does take place is complementary. In this respect, cluster policy has made public sector agencies shift from simple providers of additional resources to support industrial development in regions to *facilitators* of existing resources. This is especially apparent in the ‘self-help’ ethic that characterizes many cluster strategies, in which the public sector acts as a broker or enabler of innovation activity rather than the source of it. At the same time, *increases* in the use of some resources for spatial development through the Structural Funds have also encouraged new policy approaches, particularly in terms of the partnerships required of local institutions in developing and implementing Structural Funds strategies (Bachtler and Taylor, 1997).

Centralized cluster policy

As can be seen then, there are a variety of policy rationales for supporting competitive advantage at different governance levels. However, as noted above, this has only led to the development of national advantage policies in a few countries – such as the Netherlands and Denmark – where clusters have been defined largely in terms of national competitive advantage and evolved out of national level industrial policies. Localized cluster strategies appear to be more prevalent in a larger number of countries. Within Western Europe, there are three different ways in which localized competitive advantage has been defined within cluster policy, as presented in the matrix in the paper’s introduction. Each describes a distinct set of relationships between national and sub-national governance levels: centralized cluster policy; decentralized cluster policy; and feedback cluster policy.

With respect to *centralized* cluster policy, both local competitive advantage and policy tend to be set at national level: in this context, it is worthwhile reviewing the

examples of France and Norway in developing a cluster policy, with particular attention to the policy area in which the cluster concept has been adopted.

France

Traditionally, France has had a strong centralized industrial policy, distinguished by a dirigiste attitude to supporting technological development in industry. Policy interventions tended to take the form of supporting nationalized companies in industries whose technological significance was viewed as part of the national interest (such as aviation and aeronautics), employing a mixture of financial subsidy to large-scale projects (set at relatively high levels), market monopolies and support for blue-sky scientific/technical projects (Dodgson and Bessant, 1996). Policy was dominated by considerations of national competitive advantage and a spatial dimension was not regarded as a major source of sectoral competitiveness.

Nevertheless, this has been counterbalanced by strong spatial considerations: as well as promoting advantage at a national level, policy has also been used to reduce the wide economic disparities between the Île de France and other regions by encouraging, if not actively directing, the sources of French industrial competitiveness to locate to different parts of the country. This regionalization of industrial policy should be seen as a way of redistributing the components of national competitive advantage rather than a national effort to take advantage of local competitive advantage. While the latter did take place – for example, in the support for the aerospace industry around Toulouse – there are numerous examples of state activity in placing RTD centres in areas with limited traditions as seeds for new regionally-based developments in particular sectors. This was particularly apparent in the policy for locating technology and science parks in regions as well in the establishment of a network of Regional Centres for Innovation and Technology Transfer to facilitate technology transfer to locally-based SMEs (Hilpert and Ruffieux, 1991). In both cases, the focus has not just been maintaining competitive advantage at a national level but embedding it regionally.

One of the most famous examples of the policy is the Sophia-Antipolis technopole, where large French companies were encouraged to establish key RTD centres and the national government placed public research facilities in the science park with the aim of creating - rather than exploiting - a local critical mass. Over time, at least in the case of Sophia-Antipolis, the development of the science park resulted in a shift towards the indigenous growth of local competitive advantage through the commercialization of RTD in the original research centres, the attraction of new companies and linkages between the different firms and institutes within the emerging cluster (Longhi, 1999).

Nevertheless, changes in the way in which local competitive advantage has been addressed in national policy have come less from industrial policy in recent years, but spatial policy (that is – in the case of France - policy aimed at reducing spatial economic disparities). As with industrial policy, the highly centralized governing system has historically meant that the framework for – and in many respects, the measures in – spatial policy have been largely fixed at national level through DATAR

and other central government ministries (Wishlade, 1996). As well as incentive policies operated nationally to encourage business development and investment location in favour of the less prosperous regions of the country, there has also been a centralized planning system in which central government approval has been required of local strategies determining public expenditure at regional level (especially through the *contrats de plan état-region*). However, the growing use of the cluster concept in French spatial policy has seen an increased national interest in policies which focus on local competitive advantage. As a first step, in 1999, DATAR funded a nationwide cluster mapping exercise, identifying localized sources of sectoral growth in terms of *systèmes productifs localisés* (SPLs), or ‘local production systems’, existing at very local levels in France and involving mainly small firms in craft-based industries (Josserand, 2000). This was followed by a limited programme of national support of SPL projects. The awarded projects are highly localized, often inspired outside of the public sector by chambers of commerce, and targeting specific sectoral niches.

Along with the mapping exercise, the DATAR scheme represents the only systematic adoption of the cluster concept in French policy to date. While dictated by national level, the scheme does empower the local governance level by allowing freedom to local projects in how they distribute the awarded resources to cluster development (a feature to be further enshrined in future *contrats de plan* whereby regions will be required to provide support for identified local clusters). However, while it entails some policy decentralization, it remains dominated by the national level. The projects tendering for the initial scheme have been based on traditional local industrial strengths, but their inclusion within the orbit of policy intervention required the sanction of the national mapping exercise. The local clusters were actively encouraged by the national level to submit tenders for assistance, and the scheme continues to be coordinated at national level. Moreover, the governance level directly supporting the clusters is highly localized and at least so far, has only involved project-specific partnerships of organizations, with the lead often being taken by non-public sector actors (such as the chambers of commerce). As a result, there have been few tensions between the different governance levels in French cluster policy, mainly because of the restricted scope for activity in this area at local level.

Norway

As in France, a strong centralized tradition exists within Norwegian industrial and spatial development, but with a different set of relationships between the national and sub-national governance levels (Halvorsen, 1991). The sub-national level has historically had considerable administrative and political strength, as extensive planning powers have been delegated to the *fylke* (or county) level of government and the principle of regional equality in standard of living has been a strong element of Norwegian government policy. The division of powers between local and central government has affected the evolution of economic development policy: regional-level authorities have wide powers in Norway, reflecting the strength of regional identity and the isolation of many communities inside the country, but most significant regional financial support and business environment measures are administered centrally by national government ministries or their subsidiary agencies

(though in many circumstances, these measures are implemented at regional and local levels).

This represents an informal ‘pact’ between national and sub-national governance levels, as local economic development has long been a cornerstone of overall national economic planning. In a sense, it is an approach that regards national competitive advantage in strongly local terms, as balanced regional development is regarded as essential for overall national growth - not just for equity reasons, but out of concern that to do otherwise might exacerbate peripherality, economic underdevelopment and outmigration, potentially compromising national defence as local communities in many northern regions risked extinction (Mønnesland, 1994). Although there is a single department with primary responsibility for regional issues, a regional sensibility has been ubiquitous in Norwegian government policies, especially transport, employment, social welfare and environmental areas. It has led to industrial and regional policies working closely in tandem – epitomized administratively in their joint institutional responsibility of the SND, the main public agency supporting business development and in policy terms in the regional dimension to the location of key public sector investments.

The importance of regional considerations has been apparent in national innovation and technology policy. This has been particularly clear in the last decade, when the Norwegian government set up a number of policies supporting both regional technology transfer and the embedding of key technological expertises at regional level. For example, the TEFT programme encourages local SME collaboration with designated research institutes across the country through a system of attachés whose task has been to assess the RTD opportunities for SMEs. Similarly, industry-business collaboration at local levels has been promoted through the RUSH programme (and its successor, REGINN) and the NT programme, which is restricted to the northern, most peripheral part of the country. Together, the measures represent a significant break from an earlier technology policy which concentrated on supporting centralized RTD within public research institutes, a variant on the national advantage policy approach (Asheim and Isaksen, 1997).

However, as in France, the cluster concept seems to have had the most explicit influence in spatial rather than industrial policy.⁴ An active approach towards clusters has been a very recent development: while cluster studies have been commissioned over the past decade, it is only this year that it has been openly discussed in policy terms. The Ministry of Local Government and Regional Development’s White Paper to the Storting discussed a shift towards supporting local competitive advantage through policy assistance to local clusters. However, interest in cluster concepts is longer-standing - indeed, it was mentioned in the previous White Paper - and complements a parallel, renewed interest within the Ministry in ‘growth-pole’ approaches to developing peripheral areas (in which resources are targeted at the main urban centres in these regions). A large-scale analysis of Norwegian clusters at the national level is underway, with a view to introducing new cluster-specific measures next year. Hence, while cluster policy is being discussed in the context of supporting

⁴ The information in this section is based on author interviews with national government officials in May 2000.

regional development, it is being driven at a national level, acting in a sense on behalf of the regions. Indeed, the Norwegian example can be regarded as a country which has conceived of national and local competitive advantage as closely linked, and consequently in need of coordination at the national level.

Decentralized cluster policy

Typically in countries noted for strong regional governance and active local awareness of distinct regional identities, cluster policy has emerged at sub-national levels without significant national coordination. In this context, cluster policy is part of longer processes of decentralization in economic development policy-making. Interestingly, these include countries where attention first focused on active cluster policy - such as the Basque Country in Spain and Baden-Württemberg in Germany, both countries noted for their decentralized, federalist governance structures (Cooke and Morgan, 1992) - suggesting that the links between cluster policy and the development of local competitive advantage are stronger than with national competitive advantage (in spite of Porter). In large part, what this shows is how the language and ideas of cluster policy could be quickly adapted to existing policy approaches at regional level. This can be seen in how cluster policy has been expressed in the examples of Austria and Italy.

Austria

Cluster policy has been restricted to regional level in Austria. As is also the case in Italy, this is partly the outcome of the long-standing policy divisions between governance levels in Austria as the *Land* had retained the primary responsibility for economic development policy-making. While the central government may provide much of the financing for business development at sub-national level, the various Departments of Economic Development in the *Länder* have the major responsibility for developing local industrial and innovation policy. Austria is a federal state with strong traditions of decision-making by consensus at different governance levels (Downes, 2000). While the constitution does specifically allocate responsibility for economic development policy to one governance level, in practice there has been an informal distribution of policy powers between different bodies at federal, *Land* and local levels, encompassing both legislative and administrative competences in economic development policies. Regionalized development policy has both strategic and institutional aspects. In strategy terms, the nine *Länder* have individual regional development plans, produced and implemented separately by them and aimed at economic development in a self-contained area. In addition, the majority of *Länder* now regional development agencies with specific spatial responsibilities.

In the *Land* of Styria, autonomous policy-making has taken the form of an explicit cluster strategy (Tödting and Sedlacek, 1997). This has formed around the *Land*-driven Technology Policy Concept, an innovation strategy largely developed around support for identifiable regional clusters (which in Styria include 'low-tech' industries such as wood/paper as well as more complex production sectors such as automotives). Principally intended to foster a 'technology policy network' among the main

organizations involved in technology promotion/development, the strategy is based around a series of initiatives involving cooperation between different agencies, including federal level ministries, local government, research institutes, capital providers and 'social partners' (such as union representatives) (CEC, 1999). Integrating existing federal and regional measures, the strategy's instruments are grouped under several headings: those supporting cooperation capacity (eg. subsidized sector-based projects with businesses), 'absorption and diffusion' measures (eg. support for technology demonstration centres and technology transfer programmes), and training and quality standards policies (eg. use of specialized training courses and support to SMEs for meeting technical quality standards).

Italy

Italy presents perhaps the most studied model of a country where local competitive advantage has been pre-eminent. The phenomenon of the Italian industrial districts has not only been a major subject of research, but has been critical in crystallizing new concepts of regional economic development which influenced cluster theory, particularly SME networking (Garofoli, 1991; Beccatini, 1990). In dissecting the patchwork of local competitive advantages that make up northern Italy, numerous studies have been conducted on the sources of industrial district growth, highlighting not just the local economic factors, but sociological (eg. the role of families in business), historical (eg. long-standing crafts traditions) and cultural (eg. the impact of the values of the ruling political parties) ones as well (eg. Cossentino, Pyke and Sengenberger, 1996). The ability of firms in these regions to adapt to changes in wider economic conditions – especially such globalized industries as clothing and textiles – and maintain their competitiveness has been ascribed to the self-renewing strength of these factors (Dei Ottati, 1998).

The development of Italian industrial districts is too varied and complex a process to consider here – what is important to note is that it is widely acknowledged that public policy has not been critical in developing local competitive advantage (eg. Balestri, 2000). Studies of the local production systems emphasize their generally unplanned trajectories of development. However, where policy has been significant, it has been largely confined to local actions designed to reinforce existing local competitiveness (Belussi, 1999). Indeed, cluster policy has tended to be the prerogative of municipal authorities, reflecting the highly localized nature of Italian district clusters and distinguished by a 'bottom-up' system favouring the promotion and reinforcement of collective learning, the enhancement of the existing technological capabilities of firms and the development of 'shared service' centres to address market failures in common externalities (eg. joint marketing projects or training programmes). The focus has been on 'preserving the health' of the cluster through a process of continuous monitoring, addressing specific weaknesses as they develop, an approach exemplified by the activities of the regional development agency, ERVET, in the oft-quoted exemplar industrial district, Emilia-Romagna (Cooke and Morgan, 1992).

Belatedly, there has been increasing activity in cluster policy by national government, but it has been less in terms of creating national competitive advantage, than in facilitating local competitive advantage. As in other European countries, an active

science and technology policy has been pursued at national level with strong sectoral foci – as, for example, represented in the National Research Programmes – but unlike countries such as the Netherlands, it has not developed an explicit cluster dimension (Vitale and Wislade, 1997). Similarly, spatial policy has not fostered a notably cluster approach, as until 1992, it was largely directed to comprehensive economic development in the *Mezzogiorno* region in the south of the country. Cluster policy actions have only emerged at national level in response to local policy initiatives in setting the framework for local governance to act in support of local cluster development: for example, the recent passage into legislation of law 317/91, which would grant formal recognition on industrial districts and their institutions (Mistri, 1999).

Feedback cluster policy

The last typology covers those countries where cluster policy has emerged through an iterative process of policy formation across different governance levels. In the two cases below, the initiative for cluster policy has come from sub-national policy, but been mediated through national level to influence other regional/local policy efforts. Moreover, the national level has established the basic policy framework conditions which allow sub-national authorities to initiate, design and pursue individual cluster policies. Indeed, in the cases of Sweden and the UK, cluster policy developments were part of a wider regionalization of economic development powers.

Sweden

In common with other Scandinavian countries, Sweden has had a strong centralized approach to both its industrial and spatial policy. Spatial policy has been shaped by social equity considerations, but national competitive advantage considerations pervade industrial policy. However, unlike its neighbour Norway, Sweden has experienced the emergence of a strong local governance role in cluster development. Moreover, it has occurred against a background of wider policy decentralization in which policy developments at local governance level appear to have had repercussions in policy objectives at national level.

This has taken place in several ways. First, there has been an increasing shift towards university-based national science and technology policy, where the relationships of the university to the local business community have been a national policy priority in line with the overall commercialization of university-based research. It can be seen in the national programme of designating competence centres in local universities and research institutes in specific technologies and research areas as well as in the distribution of science parks across the country (Brown, 1998).

Second, national spatial policy has moved recently towards a greater use of ‘regional cooperation agreements’. Initiated last year, the agreements have been undertaken by regionally-based County Administrative Boards as strategies laying out the priorities for public policy expenditure in each region. Effectively, these have become medium-term regional economic strategies. The government wants these agreements to foster

greater interaction between different policy areas at regional level so that sector-specific central government expenditure can maximize regional growth and prosperity.

The two trends have both reinforced local competitive advantage and encouraged local authorities to take advantage of it.⁵ In the case of one region – East Sweden – this has led to the emergence of a fully-fledged cluster development perspective. The East Sweden cluster policy developed out of initial and widespread local authority agreement on a series of cluster mapping exercises in 1999. As well as identifying local clusters, these studies highlighted the role of the local university and science park in catalyzing growth in the region's information/communications technology and software clusters. Both the clusters and the factors supporting them have been given explicit focus in the East Sweden regional growth agreement. While the agreement contained no new measures, it has provided strategic coordination of existing policies and set aside financial resources for developing cluster policy in target sectors.

This cluster approach has not been adopted widespread yet in Sweden, but it has increased interest in the cluster concept at national level, especially in the main Swedish industrial development body, NUTEK.⁶ In 2000, NUTEK has initiated cluster policy workshops involving representatives of all regions. There has been an explicit reference to the need to steer technology policy towards support of local clusters, an indication of the need to assist SMEs (NUTEK, 1999). It is also likely to lead to strong national encouragement for a cluster emphasis in the next round of regional growth agreements. In combination, these activities describe a kind of policy loop, in which the regionalization of certain activities by the national level – particularly in the policy towards universities and the regional growth agreements – has induced new policy ideas at a regional level, which in turn have influenced the national level.

UK

The autonomous development of local competitive advantage at sub-national level has long characterized the governance structure of the UK (Evans and Harding, 1997). Over the past four decades, there has been considerable decentralization of economic development powers to territorial agencies in Wales, Scotland and Northern Ireland, particularly through the establishment of the Scottish Development Agency (succeeded by Scottish Enterprise) and the Welsh Development Agency, whose remits included active business development within their regional economic spheres. The territorial agencies have historically also been active in forming economic development strategies for their regions, involving not only the combination of a range of policy areas - including business support, training and property development - under common objectives, but the independent identification of these region-specific industrial and wider economic goals in the first place. This independence in approach

⁵ The information in this section is based on the author's interviews in East Sweden as part of the Euro-Cluster project in May 2000.

⁶ From the beginning of 2001, NUTEK has been reorganized, with its responsibilities being transferred to a range of new and existing agencies.

and powers has been reflected in the early and extensive pursuit of inward investment promotion by the Scottish and Welsh development agencies and the success with which the policies have been pursued (Raines, 1998).

In light of this tradition of sub-national policy-making, it is not surprising that cluster policy in the UK was developed first in these areas. In large part, the adoption of cluster policy (whether explicitly or implicitly) by the Scottish and Welsh agencies was part of a longer-term process of policy evolution, prompted by the shortcomings of other policies (Langedijk and Charles, 1999). For example, an implication of the existing policies of FDI promotion was a transition of the policy over time towards maximizing the value of existing investments and embedding foreign-owned plants within local production networks (Brown and Raines, 2000). This contributed to a shift towards policies encouraging the upgrading of local suppliers to the foreign investors and strengthening the RTD linkages between major foreign investors and the local research infrastructure. At the same time, interest in cluster development arose in these territories out of an increasing sensitivity to lagging indigenous development, particularly in connection with SMEs. Both Scotland and Wales have relatively low rates of new business formation by UK averages and significant regional obstacles to enterprise growth (Keeble and Walker, 1994). The adoption of the cluster concept addressed the limitations of existing policies and could be developed because of the existing tradition of autonomous strategy-making.

The policies took different forms in the different territories of Wales, Scotland and Northern Ireland. In *Wales*, ‘proto-cluster’ themes were apparent in the supplier development programmes of the 1980s (Cooke and Morgan, 1998). Following an EU-funded RITTS and Regional Technology Plan for the region – which undertook pilot audits of Wales’ ‘innovation capacity – a range of measures were introduced which focused on SMEs. Of these, the most important was perhaps the ‘Source Wales’ programme, which targeted groups of indigenous suppliers in key Welsh sectors where foreign investors were predominant, particularly automotives and consumer electronics, and supported them in their efforts to upgrade and meet investor quality standards. Although not explicitly referring to clusters, the diverse Welsh policies have been based on the idea of supporting local competitive advantage through local business networks.

In *Scotland*, a more self-consciously cluster-based approach was undertaken in the mid-1990s (Danson and Whittam, 1998). Following a comprehensive cluster mapping exercise (by Porter’s consultancy group, Monitor), there was prolonged internal debate over the merits of the model within Scottish Enterprise, which ultimately led to the development of an explicit cluster strategy. The strategy identified four pilot sectors within the Scottish economy for cluster policy intervention: food/drink, semi-conductors, biotechnology and oil/gas (the latter has been subsequently dropped from the pilot list). This has been supplemented by a series of action plans, coordinated by special sectoral teams within Scottish Enterprise but produced in wider consultation with other agents in the local economy (notably industry associations, other public sector bodies and universities).

Similarly, in *Northern Ireland*, policy interest in the cluster concept has been increasing (Langedijk and Charles, 1999). While the Province has not formally

adopted a cluster-based strategy, the impact can be seen in the networking schemes developed by the quasi-public Northern Ireland Growth Challenge – with its focus on encouraging the formation of sector-specific industry groups - and the importance of networking in sectoral development as a long-term goal in the Province's most recent economic strategy, *Strategy 2010*.

To an extent, these sub-national developments took place in parallel with similar changes in national industrial policy (Raines, 1997). Although an interventionist stance on industrial policy had declined during the Conservative governments of 1979 to 1997, renewed attention on focusing on key sectors and the sources of their competitiveness could be seen in a number of policy developments. The most substantial of these was the Technology Foresight programme: launched in 1994 and based on the use of widely-drawn consultative panels, the programme drew up a list of technology sectors and special panels to assess trends and commercial opportunities and then disseminated the results of the sectoral assessment exercises to researchers and industry through workshops, conferences and publications. The targeted sectors were used to inform the objectives and decision criteria of various government policies. A more active industrial policy approach to cluster development arose with the election of the Labour government. The cluster concept was flagged in the 1998 Competitiveness White Paper, which was followed by a pilot cluster study of national competitive advantage in biotechnology. This in turn has led to the launch of a national cluster mapping exercise, administered by the national level but involving regional consultation in identifying local competitive advantages.

However, as in other countries, national interest in cluster policy has emerged less from industrial than spatial policy.⁷ Recent changes to the governance structure of the UK – with institutional devolution in Wales, Scotland and Northern Ireland and the creation of RDAs in England – have taken place alongside a more active promotion of the cluster concept by national government. Here, as in Sweden, the national level has been interested in applying the experience of the territorial agencies in cluster-related policies – notably Scotland – to the revised sub-national governance structure of the English regions (if only – at present – tentatively). Hence, in their strategies listing sectoral priorities for spending their national-based budgets at regional level (which are not dissimilar to the regional growth agreements in Sweden), the new RDAs have been encouraged centrally to identify clusters within their newly-defined territories and develop measures to support them. The national Department of Trade and Industry has also provided significant financial grants to each of the RDAs for projects to develop locally-based clusters. The cluster concept has been a useful corollary to the recent devolution efforts: not only has it helped to give a simple (and standardized) focus to the strategy functions of the new RDAs, but overall, it has been recognized as a way of maximizing the limited development resources available to them.

⁷ The information in this section is based on the author's interviews in the UK Department of Trade and Industry in June 2000.

Whose competitive advantage?

The case studies show that the use of the basket of spatial and industrial development ideas associated with cluster theory has been instrumental in integrating different policy areas and governance levels. For the most part, cluster policy is still only a recent development in most countries and care needs to be taken in extrapolating too far. However, it is argued here that the general outline of policy development is visible: rather than just a continuation of existing policy strands, cluster policy has helped to crystallize many of the new ideas on the role of policy. At the same time, rather than exacerbating tensions between different governance levels, cluster policy seems to have been an important element in their resolution.

Reviewing the case studies as a whole, there are several relevant points to note. First, cluster policy seems to have been more important in promoting local rather than national competitive advantage as an objective of policy. While this paper has not undertaken a survey of industrial and spatial policies throughout Western Europe, the case studies suggest that cluster policy has generally been more explicitly articulated in sub-national terms. Many of the core concepts of cluster theory have become the foundation for new approaches to national industrial policy – such as the importance of organizational networking and the focus on innovation as the source of industrial competitiveness – but as a whole, they appear to have been more influential on spatial rather than industrial policy. The result has been a tendency for national competitive advantage increasingly to be viewed in some countries as a patchwork of local competitive advantages. For example, it can be seen in the national level's assumption of the task of cluster mapping exercises (notable in the cases of Norway, Sweden and the UK here), almost universally the first step in developing a cluster policy approach: in a sense, defining local competitive advantage and 'authorizing' the spatial scale at which competitiveness should be considered. In some respects, this can be viewed as a reversal of Porter's original ideas, diminishing the importance of national-level factors in industrial competitiveness, or at least suggesting that the factors on which policy operates most effectively tend to occur at sub-national rather than national levels. At least in Europe, it is only geographically compact countries such as Denmark and the Netherlands which have maintained a distinctively national competitive advantage approach towards cluster development.

More significant differences between countries are apparent in the governance level at which local competitive advantage and overall cluster policy frameworks are defined. Two broad models have been identified in this paper. In *centralized* approaches, the national level of governance has the principal responsibility for identifying the targets and instruments of cluster policy. In France, a traditionally centre-dominated control of industrial and spatial policies has not changed in its early cluster policy efforts. Local institutions have been given scope in pursuing cluster development, but this has not translated into a significant shift in policy autonomy towards a recognizable local governance level. In Norway, regional issues have historically been deeply embedded within national policy: as the national interest has long been defined in terms of guaranteeing sub-national economic development, cluster policy is increasingly attractive as a way of identifying and acting on local competitive advantage. By contrast, in the *decentralized* policy model, the national level of governance has traditionally been far weaker, so the application of cluster policy has directly grown

out of existing spatial development strategies at sub-national level. In this context, the only significant difference between Austria and Italy is that cluster development has been far more policy-driven in the former rather than the latter. Nonetheless, both have shown that local competitive advantage can be successfully pursued with limited national policy interventions.

Hence, policy tensions between different governance levels have tended not to arise, not just because national and local competitive advantage policies have not been actively pursued at the same time, but also because of the clear lines of policy authority in most countries. The third category discussed in the case studies – *feedback* approaches, where policy is in a state of flux through the interaction of different governance levels – provides an illuminating example of how cluster policy has helped to formalize these spheres of policy activity rather than exacerbate uncertainties and conflicts. In Sweden, regional growth agreements have reinforced local governance structures through partnerships to develop strategy, resulting in East Sweden in a strategy with a cluster approach to developing local competitive advantage. In the UK, previous rounds of devolution in Scotland and Wales has produced models of local governance and the appeal of local cluster policies which are influencing spatial policy-making in the current round of decentralization in the English regions. In both countries, such delegation of authority is an on-going process in which new levels of governance have been accompanied by a degree of policy experimentation at sub-national level. National level functions have been more important in terms of distributing (and to an extent, enforcing) policy best practice. Overall, cluster policy has not only benefited from decentralization, but partly accelerated the process: it has reinforced both local governance (through a partnership approach to policy which can solidify local policy-making identity) as well as local economic space (by defining local economic boundaries and understanding the local factors which influence them).

The second important point to note is that cluster policy has evolved more directly out of spatial than industrial policy traditions. Given the prevailing concern with local competitive advantage, this is perhaps not surprising: in combining different policy areas, cluster policy has acted as a kind of ‘trojan horse’ in bringing the insights of other policy areas into spatial policy. The resulting relationships between spatial and industrial policies can be summarized by cluster policy typology using the matrix from the introduction.

		Spatial scale of competitive advantage	
		National	Local
Spatial scale of governance	National	<u>National advantage policy</u> <i>Denmark, the Netherlands</i> <ul style="list-style-type: none"> Industrial > spatial policy (though in practice, industrial policy with strong spatial elements) 	<u>Centralized cluster policy</u> <i>France, Norway</i> <ul style="list-style-type: none"> Spatial > industrial policy
			<u>Feedback cluster policy</u> <i>Sweden, the UK</i> <ul style="list-style-type: none"> Spatial ↔ industrial policy
	Local		<u>Decentralized cluster policy</u> <i>Austria, Italy</i> <ul style="list-style-type: none"> Limited policy input

On first glance, the matrix suggests that a clear pattern of industrial and spatial policy relations is not apparent: in some cases, cluster policy has proceeded from industrial policy traditions (national advantage model), in others, the reverse is true (centralized policy model). On closer analysis though, the dominance of spatial policy reveals itself:

- in the *national advantage* model, industrial and spatial policies are closely intertwined because of the compactness of national territories;
- in the *centralized* model, national level concerns with the national ramifications of uneven spatial development have prompted cluster policy experiments;
- in the *feedback* model, spatial and industrial policy have overlapped as the national level has encouraged newly-empowered local governance structures to set local industrial priorities; and
- in the *decentralized* model, neither national industrial nor spatial policy has been particularly relevant, but instead a regionalized industrial policy has been foremost in cluster development.

The latter model highlights the common thread in the different case studies: the regionalization of industrial policy (joined in some cases, by a ‘sectorialization’ of spatial policy). In Western Europe, this has been a long-term evolution of policy, but the cluster concept seems to have introduced a strong impetus into the process, acting not only as a tool for bringing together a range of new ideas from spatial development research but also policy instruments from different policy traditions. As such, cluster policy has become a means of resolving – rather than exacerbating - existing tensions between different policy areas and governance structures.

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