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## Cluster policy resilience: new challenges for a mature policy

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James R. Wilson

Orkestra and Deusto Business School,  
University of Deusto,  
Mundaiz 50, San Sebastian, 20012, Spain  
Email: [jwilson@orquestra.deusto.es](mailto:jwilson@orquestra.deusto.es)

**Abstract:** Cluster policy has proved to be an extremely resilient feature of the regional competitiveness policy landscape over 30 years. To examine why cluster policies have become so widespread, this paper makes a clear conceptual distinction between clusters themselves, cluster policies, and cluster policy instruments. This distinction helps to disentangle the cross-over with other policies and provides the foundations for exploring new directions. Three sets of challenges for what is now a mature policy are highlighted: the links between clusters, cluster policies and territorial strategy processes; more effective evaluation of how different policy instruments influence what happens inside clusters; and harnessing the capacity of clusters to respond to social alongside economic challenges.

**Keywords:** clusters; cooperative dynamics; regional competitiveness; cluster policy; regional policy; territorial strategy; policy evaluation; social challenges.

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**Biographical notes:** James R. Wilson is a Senior Researcher at the Orkestra-Basque Institute of Competitiveness and Teaching Faculty at the Deusto Business School. His research interests are in policy-relevant analysis of territorial competitiveness and socio-economic development, focused especially on territorial strategy-making, governance, clusters, policy evaluation, and the roles of universities. Since 2015, he has been a member of the Board of Directors of TCI Network, the global network of cluster and competitiveness practitioners.

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### 1 Introduction

Clusters of industrial firms and other agents, related to one-another through the nature of their activities, have become a key reference point for regional competitiveness policy over the last 30 years. Porter's (1990, 1998) articulation of the cluster concept in the 1990s was quickly transferred to the policy sphere through a host of cluster policy 'pioneers' that mapped the clusters in their regions and dedicated resources to support their development. Encouraged by largely anecdotal evidence of promising experiences, a range of different policy approaches to support cluster development were experimentally

advanced through the 2000s to the extent that today cluster policies have become a mainstay of competitiveness policy.

The popularity of cluster policy has ebbed and flowed during this time often in a highly place-specific way. At the height of the initial wave of fervour, Martin and Sunley (2003) made an influential deconstruction of Porter's cluster concept. They argued that the use of clusters in a policy context "should carry a public health warning" (5) and concluded by echoing words from George Santayana, that "fashionable ideas tend to share one thing in common: they all eventually become unfashionable" (30). In the face of such critique, and alongside well-acknowledged difficulties in gathering robust empirical evidence on the effects of cluster policy interventions (Schmiedeberg, 2010; OECD, 2015; Smith et al., 2018; Uyarra and Ramlogan, 2012), cluster policies have moved in and out of fashion in different places at different times.

Yet, on the whole they have proved to be extremely resilient. The European Commission remains a strong proponent, facilitating pan-European initiatives such as the European Cluster Policy Forum and the European Cluster Collaboration Platform, themselves reflective of the widespread take-up of cluster policies throughout EU regions. The Inter-American Development Bank and UNIDO have also supported many cluster development projects in other parts of the world (Maffioli et al., 2016; UNIDO, 2013), and there is an established global network of cluster practitioners (TCI Network) that regularly attracts large numbers to its annual conferences. Indeed, cluster policies are probably more widespread today than ever (Uyarra and Ramlogan, 2017), and are currently experiencing a resurgence fuelled by their fit with the 'entrepreneurial discovery' dynamics associated with smart specialisation strategies (Aranguren and Wilson, 2013; European Commission, 2013; Foray, 2014; Saha et al., 2018).

This short article has two principle objectives. The first is to examine why cluster policies have moved beyond the usual 'fashion cycle' of policy ideas to become a stable and mainstream feature of the regional competitiveness policy landscape. This analysis requires making a clear conceptual distinction between clusters themselves, cluster policies, and cluster policy instruments, in order to disentangle the cross-over with other policies. The second objective is to explore new directions emerging in research and practice around cluster policies. Three sets of ideas are highlighted: the links between clusters, cluster policies and territorial strategy processes; the task of fostering policy learning through better evaluation of how policy instruments influence what happens inside clusters; and the capacity of cluster dynamics to respond to social alongside economic challenges.

## **2 The resilience of cluster policy**

To understand the resilience of cluster policy it is important to unpick the underlying rationale behind this family of policies. It is correct to talk about a 'family of policies' rather than 'a policy' because the label 'cluster policy' hides large diversity in terms of specific approaches. In this regard Uyarra and Ramlogan (2017, p.46) have used the term 'umbrella policy' to highlight the range of different instruments – "such as R&D funding, setting up of intermediaries, venture capital funds, competence centres, support for training activities, networking and identity-building" – that are found in different configurations in different places under the broad label of cluster policy. This

heterogeneity generates confusion, both in academic and policy circles, around precisely what cluster policies are and what they are expected to do. It also makes it extremely difficult to compare the success (or not) of cluster policies in different places. To move beyond this confusion and examine what unites different approaches that sit in the cluster policy family requires a clear conceptual distinction between:

- 1 clusters
- 2 cluster policies
- 3 cluster policy instruments.

### 2.1 Clusters

While Porter popularised the cluster terminology, the concept has its roots in Marshall's (1890) analysis of the advantages derived from the agglomeration of economic activity in industrial districts. He argued that industries were localised in specific towns and cities because of manufacturers' needs for human and natural resources and specialised markets, and because their proximity to one another created an atmosphere that afforded other advantages to firms. Becattini (1990) and others later built on the industrial district concept to explore experiences in Italy, rooting their analysis in the socially-embedded nature of these local districts. Porter also built on the district concept, but in a different way (Porter and Ketels, 2009). Taking on board the positive externalities derived from spatial agglomeration – such as tacit knowledge spill-overs, labour market pooling, reduced transaction costs and economies of scale – he added a distinctive emphasis on the co-existence of competitive pressures alongside cooperative dynamics. This led to the most commonly-understood definition of clusters as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, agencies, and trade associations) in particular fields that compete but also cooperate” [Porter, (1998), p.197].

The broadness of this definition has led to great diversity in both practical application and academic analysis. Clusters vary according to the nature of their activity (e.g., based on common value chains, technological bases, end markets), their size (e.g., number of agents, employees, economic turnover), and their structure (e.g., see Markusen's (1996) typology: hub and spoke, satellite platforms, state-anchored). Moreover, the geographic scales at which clusters are analysed include local areas, metropolitan areas, sub-national regions, small countries and cross-border geographies. One consequence is considerable overlap with a range of other concepts that have evolved to explain the economic development significance of territorially-bound socioeconomic relationships in contemporary capitalism. These include new industrial spaces (Scott, 1988), industrial production systems (Storper and Harrison, 1991), innovative milieu (Camagni, 1995), regional innovation systems (Cooke and Morgan, 1998), learning regions (Asheim, 1996), local production systems (Crouch et al., 2001) and entrepreneurial ecosystems (Stam, 2015).

### 2.2 Cluster policies

While clusters are *features* of regional economies, representing the tendency of similar economic activities to co-locate in space, cluster policies can be defined as *purposeful*

*actions* that are oriented to strengthening the competitiveness of existing and emerging clusters.<sup>1</sup> Many of the externalities associated with spatial agglomeration are incidental and occur without planned, purposeful action. In this sense clusters can and do exist without any form of cluster policy. Yet the fundamental rationale for cluster policies rests on the argument that fully exploiting the externalities of spatial agglomeration may require purposeful, collective actions.

Part of the confusion around cluster policies stems from the source of these actions. Their labelling as ‘policies’ often leads to the assumption that the source of action is government. However, the actions developed within ‘cluster initiatives’ in fact emerge from engagement between ‘cluster firms, government and/or the research community’ (Sölvell et al., 2003). This is in line with Ketels’ (2013b, p.256) interpretation of cluster policies as “efforts by governments, alone or in a collaborative effort with companies, universities, and others, that aim to increase the competitiveness of specific clusters” [Ketels, (2013b), p.256]. Thus, while some actions to strengthen clusters may be attributed to government acting alone, a key feature of cluster policies is their reliance on cooperative dynamics.

In line with Porter’s (1998) cluster definition (‘compete but also cooperate’), cooperation is a potent complement to competition when:

- 1 there are common or shared challenges to be addressed
- 2 different cluster agents have different parts of the solution and/or reaching a solution requires a certain scale or critical mass.

There are significant barriers to cooperation, however, related to the degree of trust (Fukuyama, 1995; Lazaric and Lorenz, 1998) and to the level of development of the structural, relational and cognitive dimensions of social capital (Aragon et al., 2014; Nahapiet and Ghoshal, 1998).<sup>2</sup> In particular, when social capital is not well developed within a cluster – or the dimensions unbalanced – the tangible benefits of cooperation for individual agents are difficult to envisage. Hence, a long-term process of building social capital is necessary for cooperation to become embedded alongside other competitive dynamics in clusters.

It is the desirability of cooperative dynamics, and the need to address a ‘systems failure’ (Metcalf, 2005) by supporting the construction of the different dimensions of social capital, that provides the distinctive and unifying theoretical rationale for cluster policies. The ‘messiness’ in cluster policy-making that Uyarra and Ramlogan (2017) highlight arises because approaches to this intersect in practice with other rationales for intervention. Indeed it is the specific issues around which cooperation is likely to occur – provision of specialised infrastructure or training, the development of common standards, entry into new international markets, meeting innovation challenges, etc. – that explains why there is so much cross-over between cluster policies and other policies (science and technology policy, innovation policy, internationalisation policy, infrastructure policy, skills policy, etc.). Yet a distinction can be made. These other policies respond to rationales related to specific market or system failures (e.g., the under-resourcing of innovation investments) *per se*, and they intersect with cluster policies when cooperative dynamics within clusters can play a role in addressing those failures (e.g., through engagement of firms in collaborative innovation projects).

### 2.3 Cluster policy instruments

The challenge of constructing social capital and facilitating cooperative dynamics oriented to strengthening the competitiveness of clusters can be tackled through different instruments. These fall into three cluster policy models, which may be mixed in practice:

- 1 Facilitation of cooperative dynamics and coordination of purposive actions to upgrade competitiveness in a range of clusters from a regional development agency or similar body.<sup>3</sup>
- 2 Provision of financial and/or other forms of support for formal organisations (often called cluster associations) whose role is to facilitate cooperative dynamics supporting competitiveness in specific clusters.<sup>4</sup>
- 3 Funding calls for specific (usually long-term) cluster projects, where the focus of the projects is on cooperation among the applying group of firms and other agents, usually in addressing one or more specific competitiveness challenges (innovation, internationalisation, training, specialised infrastructure, etc.).<sup>5</sup>

Cross-over with other policy areas is evident in each of these approaches. Regional development agencies that directly support competitiveness-enhancing actions in a range of clusters are well-positioned to integrate cooperative dynamics in those clusters with other policy instruments targeting specific rationales. Formal cluster organisations are also likely to engage with other policy instruments designed to support innovation, infrastructure, skills, etc., leveraging the uptake and impact of those instruments among their members. Finally, policy instruments supporting cooperative projects are themselves a mixed instrument: they respond simultaneously to the cooperative rationale of cluster policy and to one or more rationales directly related to other policies (skills, innovation, etc.).

Table 1 summarises this conceptual distinction between clusters, cluster policy and cluster policy instruments. Clarifying the distinction provides some insight with regards the resilience of cluster policies. Clusters themselves are fundamental features of regional economies, and cluster policies work essentially on strengthening cooperative dynamics to upgrade the competitiveness of those ‘building blocks’ of regional development. Such cooperation is widely recognised as being critical for responding to many of the challenges inherent in today’s knowledge economy, where individual agents rarely have all the capacity or knowledge needed to address skills needs, specialised infrastructure investments or key innovation projects. Indeed, even when they are not explicitly labelled as ‘cluster policies’, there is widespread acceptance of the need to design policies that nurture and support cooperative relationships among groups of firms, or between firms and universities.

In this sense the cluster concept and the cluster policy rationale fit well with the needs of regional policy-makers to understand and promote the systemic interaction of agents as a driver of regional competitiveness. Moreover, the close links between cluster policy instruments and a range of other policy instruments responding to specific market or system failures make them particularly attractive as a vertebra around which to organise competitiveness policy. The cooperative dynamics generated within either (or a mix) of

the three models set out in Table 1 have the potential to provide valuable strategic intelligence to policy-makers that can be used to refine and better target a wide range of other competitiveness policy instruments.

**Table 1** Clusters, cluster policies and cluster policy instruments

<i>Clusters</i>	<i>Cluster policy instruments</i>
Key features of regional or local economies	Specific instruments used to operationalise the building of cooperative dynamics supporting cluster competitiveness.
Agglomerations of firms and other agents that are engaged in related economic activities, characterised by competitive and cooperative dynamics	Three categories of instruments may be mixed in practice, and frequently overlap with other competitiveness policy instruments:
	1 <i>Agency model</i> Support for cooperative dynamics and actions within various clusters from an economic development agency or similar.
<i>Cluster policies</i>	
A set of purposeful public and/or private actions that build (on) cooperative dynamics to strengthen the competitiveness of existing and emerging clusters. These actions may be formal and/or informal, and can use a variety of instruments.	2 <i>Cluster association model</i> Support for formal organisations tasked with facilitating cooperative dynamics and actions in specific clusters.
	3 <i>Cooperation projects model</i> Support for the development of specific projects in cooperation, focused on addressing one or a mix of common challenges (innovation, skills, internationalisation, etc.).

### 3 New directions for cluster policy research

The above analysis suggests that cluster policy in some form or another is likely to remain a key regional competitiveness policy tool. A recent publication celebrating the 20th anniversary of TCI Network concluded that while “the importance of location-specific competitiveness advantages, of geographic proximity, of connections across related activities, and of the need to organise collaboration around common agendas” are all likely to remain relevant, “global trends related to new technologies and to the interplay between local and global dynamics” will impact on what clusters and cluster policy look like in the future [Wilson et al., (2017), p.66]. The second objective of this paper is to briefly set out some new directions and concerns that are likely to shape research on cluster policy in the coming years. While there are many potential issues that could be highlighted, three sets of ideas stand out in terms of their likely impact on research and policy agendas.

#### 3.1 *Cluster policy, structural transformation and territorial strategy*

Following the distinction set out above, the primary catalyst for new directions in cluster policies is the evolution of clusters themselves. The cluster concept is built on a highly flexible understanding of what constitutes both ‘related economic activities’ and ‘territorial proximity’, and the actual activity and spatial boundaries of clusters are notoriously difficult to pin down empirically. In practice the boundaries of clusters are continually evolving in response to:

- 1 Changing relationships between different economic activities, which are driven by technological change (for example, the influence of digitalisation on different activities) and the pursuit of diversification through related variety (Boschma and Frenken, 2011; Frenken et al., 2007).
- 2 Globalisation processes, again driven in part by technological change, which alter the nature, scale and substitutability of different dimensions of proximity (Boschma, 2005; Buciuni and Pisano, 2015).

This scenario poses important research questions around techniques for dynamic cluster mapping as a basis for up-to-date understanding of whether cluster policy is oriented to supporting the right clusters, defined at the right scope and scale. Yet, the empirical question is not simply one of statistical mapping, but also of arriving at a more sophisticated and context-specific understanding of what drives the dynamics of clusters over time (Fornhal et al., 2015; Martin and Sunley, 2011; Tripl et al., 2015) and how those dynamics influence and are influenced by the dynamics of policy itself (Uyarra and Ramlogan, 2017). In particular, there are interesting questions to explore around the role that cluster and cross-cluster dynamics play in unrelated diversification, by bridging knowledge/ideas gaps, integrating the demand side, or bringing together manufacturing activities and knowledge intensive business services in processes of ‘territorial servitisation’ (Lafuente et al., 2017; Sforzi and Boix, 2018). This is where research into clusters and cluster policy intersects with research on the design and implementation of territorial strategies, such as smart specialisation strategies that are oriented towards facilitating the structural transformation of regional economies (Foray, 2014; Ketels, 2019; Valdaliso and Wilson, 2015).

Indeed, the focus of cluster policy on fostering cooperative dynamics among related business, research and government actors fits well with both the vertical elements of modern industrial policy – which demands private-public-research interaction to determine which activities to prioritise – and the horizontal elements of competitiveness policies that are focused on creating an effective regional ecosystem. Cluster dynamics provide a valuable bridge between strategy at the business and university levels and strategy at the territorial level, enabling information, ideas and knowledge to flow in different directions and promoting the identification of synergies and common vision. In this regard they can help to foster what Porter and Kramer (2011) term ‘shared value’ and can provide strategic policy intelligence to support sustainable capture of the value that is co-created in the territory among different actors (Bailey et al., 2018). In Europe and beyond cluster dynamics are already playing key roles in territorial strategy processes along these lines. There is much to be learned from these practical experiences around how the balance of cooperative and competitive dynamics at the heart of clusters can be harnessed to inform, guide and even evaluate the evolution of territorial strategies.

### *3.2 Evaluation and learning around cluster dynamics*

The evaluation of cluster policies, and specifically the impacts of different cluster policy instruments as employed in different settings, is a second area where there is a clear need for research. The lack of robust empirical evidence of the effects of cluster policies is well acknowledged (OECD, 2015; Uyarra and Ramlogan, 2012; Wise et al., 2017), and is related to distinct methodological challenges (Aranguren et al., 2014; Schmiedeberg,

2010). Indeed, much of what we know about the effects of cluster policies is anecdotal or based on partial statistical evidence. This is problematic both in terms of justifying cluster policy intervention and thus creating conditions for the long-term continuity that the underlying rationale demands, and in terms of learning that will improve specific policy interventions.

In line with the conceptual distinction made above there are two essential steps to the cluster evaluation challenge. The first is to understand how cluster policy instruments or mixes of instruments influence (or not) the cooperative dynamics within clusters, while the second is to demonstrate the effects of more sophisticated cooperative dynamics on the performance of cluster actors and the region. Yet, there are significant practical difficulties in both measuring the human dimension of cluster dynamics and in isolating their effects on performance (Smith et al., 2018). Uyarra and Ramlogan (2017, p.50) suggest an approach that is more sensitive to policy dynamics and that requires shifting “attention away from heroic attempts at mechanistic evaluation and employ[ing] a mix of approaches more suitable to capturing both network evolution and learning processes in relation to public policy interventions.” Moreover, Smith et al. (2018) illustrate the benefits of integrating different types of knowledge into cluster evaluation dynamics through analysis of a long-term case of academic-policy-practitioner engagement (the cluster policy evaluation working group established by TCI Network). The message is clear that further advances will require a shift in attitude to see cluster evaluation as a strategic intelligence process that integrates knowledge from and generates knowledge for academics, policy-makers and cluster actors alike.

### 3.3 *Clusters beyond GDP*

A third area to highlight is the need for research into the contribution of clusters and cluster policies beyond the purely economic sphere, where they have usually been focused. The ‘beyond GDP’ agenda has been gathering pace over the last decade<sup>6</sup>, and is reflected in the emergence of a range of new ways of measuring socioeconomic progress.<sup>7</sup> The motivation for this agenda is rooted in the importance of dimensions of quality of life that are not reflected in GDP and concern that economic development must be sustainable. Alongside other developments towards fostering ‘mission-oriented’ (Mazzucato, 2018) and/or ‘responsible’ research and innovation<sup>8</sup>, it reflects acknowledgement that the economic, social and environmental elements of progress cannot easily be separated.

Clusters as key features of regional economies offer great potential in terms of bridging economic, social and environmental agendas. They are territorially-rooted constructs characterised by cooperative dynamics integrating a range of different actors (business, government, research, and potentially also civil society). Konstantynova and Wilson (2017), for example, suggest revisiting the community emphasis of Becattini’s (1990) work on industrial districts for inspiration on how clusters might bind economic and social dimensions. Indeed, important questions arise around how the cooperative dynamics characteristic of clusters can be harnessed to solve complex socioeconomic challenges, for example related to the circular economy or public-health enhancing innovations. This is a direction in which cluster policy is starting to move – embracing Porter and Kramer’s (2011) concept of ‘creating shared value’ and/or seeking to integrate the UN sustainable development goals<sup>9</sup> – and there is an important research agenda



around how different cluster policy instruments can be harnessed to actively foster such objectives.

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**Notes**

- 1 Porter (1998) was clear that policy should not seek to create new clusters, and while there is not universal agreement on this – see discussion in Ketels (2013a) and Uyarra and Ramlogan (2017) – it is “widely accepted that governments can create favourable conditions for the emergence of clusters and facilitate their growth only once they have emerged” (Sternberg et al., 2010).
- 2 Following Nahapiet and Ghoshal (1998): the structural dimension refers to the overall pattern of connections between agents; the relational dimension to the values, norms and expectations that are created over time through interaction; and the cognitive dimension to shared interpretations, vision and language.
- 3 For example, the Business Upper Austria/Clusterland agency in the Upper Austria region (<https://www.biz-up.at/en/networking/clusterandnetworks/>).
- 4 For example, support for cluster associations in the Basque Country region (Orkestra, 2017).
- 5 For example, Sweden’s Vinnvaxt Programme (<https://www.vinnova.se/en/publikationer/vinnvaxt/>), France’s competitiveness poles (<http://competitivite.gouv.fr/home-903.html>) or Canada’s superclusters (<https://www.ic.gc.ca/eic/site/093.nsf/eng/00008.html>) combine institutional elements with explicit funding for collaborative R&D.
- 6 It was inspired initially by a high-level conference organised by the European Commission in 2007 and subsequent commissioning of a report by the French Government on the measurement of economic performance and social progress (Stiglitz et al., 2009).
- 7 See, for example, <http://www.socialprogress.org> and [www.oecdbetterlifeindex.org](http://www.oecdbetterlifeindex.org).
- 8 See <http://www.rri-tools.eu>.
- 9 See <http://www.un.org/sustainabledevelopment/sustainable-development-goals>.