

2010

# Regional Innovation Clusters: A Critical Review

Junbo Yu

Randall Jackson

*West Virginia University*, [randall.jackson@mail.wvu.edu](mailto:randall.jackson@mail.wvu.edu)

Follow this and additional works at: [https://researchrepository.wvu.edu/rri\\_pubs](https://researchrepository.wvu.edu/rri_pubs)



Part of the [Regional Economics Commons](#)

---

## Digital Commons Citation

Yu, Junbo and Jackson, Randall, "Regional Innovation Clusters: A Critical Review" (2010). *Regional Research Institute Publications and Working Papers*. 50.

[https://researchrepository.wvu.edu/rri\\_pubs/50](https://researchrepository.wvu.edu/rri_pubs/50)

This Working Paper is brought to you for free and open access by the Regional Research Institute at The Research Repository @ WVU. It has been accepted for inclusion in Regional Research Institute Publications and Working Papers by an authorized administrator of The Research Repository @ WVU. For more information, please contact [ian.harmon@mail.wvu.edu](mailto:ian.harmon@mail.wvu.edu).

## PERSPECTIVE

### Regional Innovation Clusters: A Critical Review

JUNBO YU AND RANDALL JACKSON

**ABSTRACT** In this paper, we present a critical assessment of recent economic development policy directions centered on the concept of regional innovation clusters. We begin by investigating the rationale underlying the Obama administration's promotion of regional innovation clusters (RICs) and their introduction to the policy arena in its *Strategy for American Innovation*. The connections among RICs and existing research and policies in industry and occupational clusters, regional innovation systems and regional economic development are identified and analyzed to highlight those most critical challenges to conceptualizing and theorizing RICs. While we applaud the long overdue focus of economic development policies on sub-national regions, we identify several major conceptual shortcomings and programmatic difficulties associated with RICs as a centerpiece for economic development strategies.

#### Introduction

Regional innovation clusters (RICs) entered the economic development policy lexicon in the September 21, 2009 publication of the *Strategy for American Innovation*. This document outlined the Obama administration's comprehensive approach to establishing the nation's foundation for sustainable growth and the creation of quality jobs. Innovation lies at the core of that foundation, which is intended not only to rescue the economy from the worst recession since the great depression, but also to empower the U.S. to maintain its cutting-edge competitiveness and long run prosperity. However, like many initiatives defined at the national level, this strategy is inevitably overly inclusive, often diffuse and indeterminate, and largely indifferent to the role of local governments and

*Junbo Yu is an Associate Professor at the School of Administration, Jilin University, Jilin, China. His email address is junbo\_yu@jlu.edu.cn. Randall Jackson is a Director at the Regional Research Institute, West Virginia University, Morgantown, WV, USA. His email address is Randall.Jackson@mail.wvu.edu. The authors would like to thank Caigan McKenzie for formatting the paper for publication. They also thank Dan Rickman, the editor of Growth and Change and two anonymous referees for their most valuable comments on earlier versions of this paper.*

variations in regional economy. This is lamentable in the face of increasing recognition that competitive advantages and innovation capabilities are heavily localized, making regional rather than national economies the salient foci of wealth creation and world trade (e.g., Krugman 1996; Porter 1998).

Perhaps as a result of this recognition, federal efforts to formulate a “regional version” of the *Strategy for American Innovation* were subsequently initiated by the Economic Development Administration (EDA) in its program to fund research to map RICs. The FY2010 Federal Funding Opportunity (FFO) identifies and advocates the regional innovation cluster—the spatial complex constituted by industrial and occupational clusters, innovation capabilities and regional assets all interwoven by their interdependencies—as the “driver of the national economy”,<sup>1</sup> accentuating the regional aspect of competitiveness, innovation, growth and their inter-linkages. The RICs is identified as the core of the “regional version,” and the FFO names identifying and locating RICs and developing a toolkit for local policy makers and practitioners to assess and foster RICs as high priority, fundamental research tasks. These two tasks are intended to inform the federal government decision-making process in allocating its investment across industries and regions, and to assist regional leaders in efforts to leverage their local assets to boost economic prosperity. The Mapping RICs Project seeks to establish a database documenting the geography of RICs, which can be used as a common platform for both federal and regional policy makers to advance and coordinate their economic development policies in general and innovation policies in particular. The results of this project are intended to help direct the *Strategy for American Innovation* to its real ground, that is, the regional economies, and to equip the federal and regional governments with rigorous tools to translate the national innovation strategy to regional action plans.

But good intentions and the use of appealing and popular terms such as innovation and cluster to formulate economic development solutions by no means establish the soundness of RIC concepts, especially when economists’ lingering skepticism of the efficacy of industry clusters is taken into account (Feser, Renski, and Goldstein 2008; Glaeser and Gottlieb 2008). Tempting though an RIC policy might appear at first blush, this conflation of variant economic development strategies falls far short of constituting a single explicitly identified construct, much less a coherent development policy centerpiece. Accordingly, we begin this commentary in the next section by investigating the connections among RICs and existing cluster, innovation and regional economic development policy and research, focusing on inherent difficulties in conceptualizing, theorizing, and operationalizing the RICs. Next, we identify practical barriers that are likely to paralyze the government’s efforts to identify, map, and promote RICs, after which

we conclude with a call for more strict reflection on and circumspect use of the RIC notion as a policy imperative.

### **The Regional Innovation Cluster and its Antecedents**

Contrary to claims in the announcement of the Federal Funding Opportunity that “the body of literature defining regional innovation clusters and discussing their impact on communities is prolific among academics, policy analysts and national development organizations” (EDA 2010: 3), publications explicitly dedicated to the discussion of RICs are rare and nascent. To the best of our knowledge, *The Geography of Innovation: The Federal Government and the Growth of Regional Innovation Clusters*, a September 2009 Center of American Progress research paper, is the earliest and *only* publicly available study anchored to RICs (Sallet, Paisley, and Justin 2009)<sup>2</sup> as of the publication of the EDA FFO. Surprisingly, Sallet et al. did not claim the property right of inventing the term “RICs.” Instead, by stating that:

We know now—from a *solid record of state and local achievements and academic research*—that *regional innovation clusters* are a critical component of national competitiveness. (Sallet, Paisley, and Justin 2009: 1; emphasis added)

they implied that there had been substantial discussion among and empirical evidence supporting RICs by practitioners and scholars. However, this is not only difficult to confirm since the evidence and discussions are not identified in the paper, but also questionable considering that virtually all available public records referring to RICs appear only *after* 2009.<sup>3</sup>

More surprising—and more disconcerting—is that the entire white paper provides no single, formal definition of a regional innovation cluster. The presumed nature of RICs instead is presented in a more suggestive and descriptive way, closely followed by some well-known illustrative examples:

Geographic regions that are bounded by a network of shared advantages create virtuous circles of innovation that succeed by emphasizing the key strengths of local business, universities and other research and development institutions, and non-profit organization. Think information technology in Silicon Valley, music in Nashville, manufacturing in the Pacific Northwest, or life sciences in Massachusetts. (Sallet, Paisley, and Justin 2009: 1)

The attempt to define by example is particularly curious since these places have often been the targets of pointed debates in both popular and academic literature emphasizing *differences* rather than *similarities* among regions.

The EDA FFO also omitted RIC definitions, managing only to list some of their critical characteristics and possible components by comparing RICs and traditional clusters without having to address the definition issue directly:

Unlike traditional clusters, regional innovation clusters represent not only the economic efficiencies that exist from the co-location of similar industries and suppliers, but also consist of the active networks of synergistic organizations that engage with various businesses within a particular industry sector, the regional assets that exist within the geographic region, and the nodes that are critical for supporting the innovation work of the industry sector, such as R&D centers, venture capitalists, universities and colleges, national labs, and networks of entrepreneurs. (EDA 2010: 3)

Perhaps the cause of this reluctance in defining regional innovation cluster is that people who use the term see its meaning as self-evident: a complex concentrated in a particular geographical scope that exhibits the features of clustering and innovation. According to Sallet et al.

Positive externalities are nothing new. *Nor are high-tech innovation clusters . . . Here is what is new:* The notion that regions can work with the federal government to consciously focus on the creation of shared advantages within clusters to create jobs, create business and, of course, stimulate long-term economic growth (Sallet, Paisley, and Justin 2009: 3; emphasis added).

The indication here is that the value of “regional innovation cluster” lies more in the raising of new policy expectations and implications than in capturing any previously undetected phenomenon. Hence, perhaps there is no need to provide a definition for this seemingly well-conceived construct. Likewise, in the FFO, RICs are regarded as a subgroup of clusters and thus presumably carry clear meaning:

*Clusters—and specifically regional innovation clusters—represent an important concept for development practitioners aiming to promote the prosperity of their region. (EDA 2010: 2; emphasis added)*  
*Clusters—and specifically regional innovation clusters (RICs)—hold much promise for assisting local economic development specialists . . . (EDA 2010: 3; emphasis added)*

The vanguard advocates of RICs seem to be hoping to credit the concept by associating it closely with the observation, theory and research on industry and occupational clusters and agglomeration economies. But the mere popularity of the cluster concept globally is by no means a guarantee of regional innovation cluster’s efficacy at the local level, especially when it is complicated by incorporating the innovation factor and ambitiously committed to offering a new policy perspective for regional economic development. In view of these observations, and because of its newfound prominence in economic development policy, the regional innovation cluster warrants a comprehensive conceptual critique to identify its position in and inheritance from its separate and distinct source streams and to assess its potential contributions to effective economic development policies and programs.

***Regional Innovation cluster as a regional cluster.*** The international praise given to Michael Porter’s reintroduction of long-established but newly reframed cluster concepts to development policy initially reflected politicians’ and policy makers’ widespread concern for national competitiveness to succeed in the global economy (Martin and Sunley 2003). The acceleration in global economic

integration further highlighted regional competitiveness rather than national competitiveness as the fundamental unit of wealth creation and world trade, and thus redirected attention to clusters from their impact on the national economy to their reciprocity with the regional economy (OECD 2005a, 2007; Scott and Storper 2007). This “re-emergence of the regional economies” (Sabel 1999), or “the localization of the world economy” (Krugman 1996) in turn requires researchers and policy makers all over the world to shift their enthusiasm for clusters from those mere outward-oriented (export-based) ones to those that are deeply rooted in regional socio-economic contexts to tap into local non-tradable and intangible assets (Capello 2007). In the U.S., for instance, Porter himself has lead a major policy-driven research program to “develop a definitive framework to evaluate cluster development and innovative performance at the regional level” so that best practices can be identified and used to “foster *clusters of innovation* in regions across the country” (Porter 2001; Porter and van Opstal 2001). Likewise, OECD is now viewing regional clusters as the drivers to achieve regional and national competitiveness and sustainable economic growth (OECD 2005a).

Meanwhile, the capabilities of regional clusters in spurring innovation are concerning more researchers and policy makers as the advent of the so-called “knowledge economy” has made innovation an imperative for retaining and advancing a region or country’s competitive edge (Norton 2001; OECD 2005b). The emergence of RICs therefore clearly resonates this concern and further seeks to systematically integrate with regional cluster studies and policies. As indicated in the FFO, a regional innovation cluster not only stands for spatial concentrations in industry strength, but also in competitiveness assets and innovation potential, and thereby represents “the inherent link among clusters, innovation and regional assets” (EDA 2010: 4). At this point, RICs distinguish from traditional regional clusters by drawing on a more holistic view in building competitiveness, with an emphasis on the reciprocities between innovation and other components.

However, the distinction from regional clusters does not provide an exemption for RICs from many of the conceptual and theoretical deficiencies conveyed in cluster studies generally. One prominent issue, for example, is the weakness of the cluster concept in terms of defining its own boundaries, industrially, occupationally or geographically. Porter has defined clusters as:

Geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, and trade associations) in particular fields that compete but also co-operate (Porter 1998: 226),

which separates a cluster from mere geographic concentrations by featuring the substantial and beneficial links among firms and industries it comprises. However,

while he admits that these links “rarely conform to standard industrial classification systems . . . .” “Because parts of a cluster often fall within different traditional industrial or service categories . . . .” (Porter 1998: 204), he never makes explicit the range of related or associated industries and activities that should be included and how strong or direct the linkages among firms and industries must be to constitute a cluster. Likewise, while he indicates that the industrial boundaries of clusters should be determined by the strength of spillovers in them and their importance to productivity and innovation, an exact measure for the strength of spillovers cannot be found in Porter’s work (Martin and Sunley 2003). As a result of this ambiguity, researcher and policy maker assessments of the qualification of a local economic complex as a regional innovation cluster remains arbitrary, especially regarding industrial composition and cohesion.

A cluster’s geographical boundary also is left unspecified when conceiving of RICs as subgroups of regional clusters. Porter (whose focus is industry rather than occupational clusters) refers to regional cluster examples such as the California agribusiness cluster and the Massachusetts medical devices cluster, along with some 60 others in the rest of the U.S. (Porter 1998: 229). Sallet, Paisley, and Justin (2009: 8) later identify twelve high-tech clusters in the U.S. to demonstrate how RICs should be perceived. Yet precisely how the geographical boundaries of these clusters are or should be drawn has yet to be articulated. For anyone attempting to locate and verify the operation of a regional innovation cluster, not knowing what spatial density of firms, industries and their interactions define a cluster and how far the supply chain supporting the core innovative activity of the cluster should be traced will make it difficult if not impossible to reach an objective decision on the scale, strength, and range of the regional cluster. We are not advocating here a pre-specified geographical size or scale, but since the decision rule can heavily influence the analytics involved and the findings generated, research conclusions and associated policy recommendations must confront the issue.

***The regional innovation cluster as a regional innovation system.*** The focus of scholars on the interplay among industrial strength, occupational structure, innovation capability, and regional assets long pre-dates the use of the term “regional innovation cluster.” The most notable contributions center on the RIS approach, which highlights the crucial importance of spatial proximity and favorable institutional structures for innovation activities. Regional innovation systems have been used to account for the technological dynamics of different types of regions such as high-tech centers, revived industrial zones, and peripheral areas (Cooke 2001; Cooke, Gomez Uranga, and Etxebarria 1997; Trippel 2010). However, as this approach has a labeled interest in understanding the factors conducive to innovation in a systematic manner, it increasingly recognizes that

“innovation occurs more easily when geographical concentration and proximity are present, and therefore *regional cluster* takes a crucial dimension in such processes” (Doloreux and Parto 2004: 6; emphasis added). This assertion further claims that *innovation activities* will benefit greatly from the concentration of economic activities of similar and related firms and industries in a cluster, which in turn facilitates knowledge spillovers and stimulates various forms of adaptation, learning, and creation. Therefore, popularity of the RIS approach closely relates to the emergence of regional clusters of industrial activity and thus also deems region as the most appropriate scale to foster innovation-based economies (Asheim and Isaksen 1997).

The systematic view proposed by the RIS approach, though, has been criticized as being too broad and inclusive to provide any actionable insight that can be employed by practitioners or policy makers on the ground (Carlsson et al. 2002; Cooke, Heidenreich, and Braczyk 2004; Doloreux and Parto 2004). In this respect, the regional innovation cluster resembles RIS in attributing the enhancement of regional competitiveness to a variety of interdependencies and complementarities among industry, institution and other local assets, but contrasts by concentrating on “the networks . . . *within a particular industry sector* . . . and the nodes that are critical for supporting the innovation work *of the industry sector*” (EDA 2010: 3; emphasis added). Such an explicitly pronounced interest in fact reflects a restrained attitude toward the RIS approach—apparently, RIC proponents aim to tailor the idea of RIS to encourage more specified investigations, policy recommendations and actions that directly relate to the innovation performance of particular industries in particular localities.

By drawing on the RIS approach to formulate its own conceptual and theoretical constructs, the regional innovation cluster approach is also obliged to confront other longstanding challenges in innovation studies. Other than sharing the vaguely defined term “regional,” which we have addressed in the previous section, the controversies in defining innovation, its measures and its correspondence with the regional scale have haunted the RIS approach (Grupp and Mogege 2004; OECD 2010a,b) as they will haunt the development of the regional innovation cluster approach. As a multi-faceted construct, innovation has different variants and expressions across different industries and different stages of business and product life cycle and therefore requires an array of measures to capture its entire production process (Smith 2005). The identification of RICs therefore must anticipate not only these difficulties but also disagreements due to the varying and dynamically evolving industrial structures that would require tailored definitions and measures for different regions on the one hand, which will inevitably result in using unequal innovation criteria to compare these regions on the other. Such a

practice cannot be expected to serve the purpose of a federal government seeking to identify regions in which to invest public economic development capital. Furthermore, as been suggested in the RIS literature, the formation of any local production system's innovation capability often involves a complex and evolving integration at different levels of local, national and global forces (Archibugi, Howells, and Michie 1999; Asheim and Isaksen 2002), indicating that a regional system has constantly to expand its own boundaries through a process of economic integration and globalization to sustain innovation and maintain competitiveness. Building on this observation, Bathelt and Malmberg (2004) argue that a cluster's cohesion and strength must tap into interactions with other clusters and the access to national and supra national innovation systems in development, instead of being inward-looking and insular. This line of reasoning, unfortunately, is missing from virtually all of the RICs discussion, and undermines any attempts to comprehensively understand and assess RICs.

***Regional Innovation cluster as an economic development strategy.*** The impacts of the “re-emergence of the regional economies” and the advent of the knowledge economy discussed in Regional Innovation Cluster as a Regional Cluster section also extend to the regional economic development policy arena and have generated significant changes—in the U.S., a transition from the so-called “first-wave” to the “third-wave” state economic development policies manifests in policy makers' increasing interests in replacing the *ad hoc*, firm-based industrial attraction efforts with more holistic, capacity- and network-building strategies (Bradshaw and Blakely 1999; Isserman 1993); in Europe, governmental efforts have been redirected from national trade policies to dynamic industrial and more profound innovation policies (Soete 2007). Specifically, clusters and systems of innovation—the idea sources for regional innovation clusters—are, respectively, the centerpieces of the “third-wave” state economic development policy and new innovation policies (Rosenfeld 2007). In view of this, the promotion of RICs is not only an attempt by the federal government to localize its national innovation strategy, but also an effort to upgrade U.S. regional economic development policies by taking account of both U.S. and international practices and lessons:

While in the past some development specialists could focus exclusively on the “buffalo hunt” (i.e., seek to attract large employers to their region) and conceive strategies in narrow, jurisdictional terms, today these practices are no longer effective and development specialists must engage in thoughtful analysis of regional assets to create *comprehensive strategies* that are capable of successfully promoting regional prosperity. (EDA 2010: 2; emphasis added)

The regional innovation cluster initiative apparently strives for such “comprehensive strategies” by providing a balanced view on industrial strength, innovation

potential and regional assets, and attenuating the interdependencies and synergies among them. By acknowledging the fact that there has been a lack of practitioner-accessible tools with which to inform policy makers in planning and implementing development strategies, the regional innovation cluster initiative has prioritized the development of rigorous publicly available tools to facilitate the identification and evaluation of geographical concentrations in industrial and innovation activities from the very beginning. As these tools are gradually put in place, more empirics are expected to be consolidated and analyzed to substantiate the idea of regional innovation clusters and eventually reify its position as the centerpiece of the “fourth-wave” of regional economic development policies in the U.S.

Seductive though the concept of the regional innovation cluster might be, it also remains problematic and insufficiently well defined to underpin a holistic theory for even and sustainable regional development. A critically important but largely ignored issue concerns the risks of pursuing RICs, which have been underestimated and inadequately recognized. While it seems clear that the promotion of the regional innovation cluster initiative has been and will be based on the analysis of particular types of regional economy (invariably successful regional economies), should all regions, particularly lagging areas, be encouraged to develop their RICs as the panacea to combat distress and adversity? If so, since the idea of regional innovation cluster intrinsically advances innovative industries as the primary long-run source of economic growth and prosperity, is it not be highly likely that regions will be motivated to rely on the same, high-skill, knowledge-intensive industries to perform repetitive investments, and to participate in a revamped version of “smokestack chasing”? By concentrating on and specializing in a few innovative industries, might RICs also expose their regional economies to the risks of rapid decline when confronted by internal paradigm lock-in or external technology shift (Martin and Sunley 2003; Perry 1999). Further, even if the winning regions in RIC development have been perfectly determined, would their increased profitability not inevitably result in widening income disparities within regions between industrial and non-industrial sectors, and across regions between RICs and non-RICs? These and a variety of similar factors and mechanisms clearly should be taken fully into account in the RIC mind-set before it can begin to accommodate a holistic view of regional economic development.

### **Practical Barriers for RIC Development**

As announced in the FFO, the first step of the federal government to launch the regional innovation initiative is to “develop a replicable method for identifying

and mapping regional innovation clusters, providing resources on best practices, and providing recommendations on metrics for the evaluation of regional innovation clusters” (EDA 2010: 3)—in essence, to build a set of identification, mapping and evaluation tools to collect, produce, and process the empirics of RICs in the U.S. Although the regional innovation cluster concept clearly derives its foundations from the research and policy contexts of industry and occupational clusters, regional innovation systems, and broader regional economic development theory, conceptual, and methodological problems inherited from these antecedents will substantially deter the achievement of the task in practice.

To begin, there is no consensus on methods for identifying and mapping clusters (Martin and Sunley 2003), a consequence of conceptual ambiguity, so any assertion on the population and geography of RICs will inevitably be controversial. Among the voluminous literature, empirical methodologies to identify industrial clusters still vary notably (see e.g., Bergman and Feser 1999). When a particular regional or local area is under consideration, an ad hoc, “bottom up” approach is often adopted which in practice affirms rather than identifies lists of local clusters provided by local economic agencies. Yet national level, cross-regional cluster identification, in contrast, normally follows a “top-down” approach where national input–output relationships and regional or sub-regional employment data are used to determine sectoral cluster compositions and geographical concentrations. While the “top-down” approach might seem more appropriate for a national regional innovation clusters initiative, debates will be expected immediately to arise when its results are found to contradict those derived from local government funded “bottom-up” efforts, contesting existing local aspirations. In addition, while census-type geographical data on industrial employment and business populations are collected for variable administrative and political units—such as states, metropolitan areas, and counties, there is no agreement on which geographical boundaries are appropriate for cluster identification other than noting that spatial units that are too large can over-bound and obscure clusters and area divisions that are too small can exaggerate the number and significance of clusters (Martin and Sunley 2003). The EDA’s request for RIC information “at the lowest geography level possible” (EDA 2010: 5) will induce not only questions on the extravagant data demands, but also divergences in valuing the effectiveness of the approach.

The use of the regional employment data as evidence of the existence of industry clusters has compounded these problems. Cluster boundaries, recalled from Porter’s (1998: 204) argument, “rarely conform to standard industrial classification systems (and) fail to capture many important actors in competition as well as linkages across industries.” Yet most available tools in cluster analysis have

no option but to use employment, patent, and/or number of businesses, or value added data collected according to standard industrial classifications. As a result, many will contest the validity of using these data to identify RICs since parts of the regional innovation cluster will very likely fall within different industrial and service categories. Likewise, the location quotients and similar measures calculated based on these data will not capture the nature and strength of traded and untraded *inter*-firm linkages, knowledge spillovers, social networks, and institutional support structures, all of which are considered necessary for RICs (as discussed in The Regional Innovation Cluster as a Regional Innovation System section), because they cannot discriminate between inter-linked and mutually independent concentrations.

Last but not least, there is a dearth of solid empirics in support of the positive impact or advisability of RICs on regional economic development and prosperity, which clearly undermines and casts doubt upon the rationale of advocating and participating in associated initiatives and programs. Despite the assertion from Sallet, Paisley, and Justin (2009) that the economic advantages of RICs have already been empirically demonstrated, much of their evidence is anecdotal and based on success stories about certain industries at certain stages of development in certain places, and under certain conditions. In contrast, researchers, policy makers, and practitioners find that the impact of clusters on firm growth and innovation, industrial performance, and local economic development is generally ambiguous at best (Best, 2001; Cutrini 2010; Swann, Prevezer, and Stout 1998). Feser, Renski, and Goldstein (2008) found that highly innovative industries in noncluster areas of the Appalachian region tended to fare better in terms of employment growth than those cluster areas for the period from 1998 to 2002. Glaeser and Gottlieb (2008) concluded from The United States Bureau of Labor Statistic that the rush to government picked high technology industries was in general fruitless. Partridge, Rickman, and Rose Olfert (2008) and Desmet and Fafchamps (2005), adding to a voluminous and long-standing literature on diversification and economic development, report that diverse economies tended to outperform economies concentrated into a few sectors. Finally, based on evidence from France, a country with a strong government and long history of regional and location based development policy, Duranton et al. (2010) seriously question the need for and benefits of cluster policies. Their work suggests that cluster-based wage rate enhancements tend to be quite small and limited to industries within targeted clusters.

Despite claims to the contrary, there is a paucity of evidence documenting how common and important clusters—much less RICs—are beyond particular industries and regions. To truly be effective, future federal initiatives should be

founded solidly on empirically demonstrated positive functional relationships among programmatic dimensions and regional economic development and prosperity.

## Conclusion

Regional innovation clusters might serve well as a suggestive heuristic, but at this juncture fall far short of constituting a single, explicitly identifiable construct, much less a coherent development policy centerpiece. The regional innovation cluster itself seems to have been born of a well-intentioned but inadequately conceptualized attempt to blend a set of the most prominent and highly visible current regional development strategies. More than merely presenting a loose coupling of independent ideas, the RIC as a strategy combines sometimes inconsistent and frequently incompatible goals, definitions, objectives, priorities, and implications. Further, this chaotic conceptual framework makes it difficult, if not impossible, to define metrics that can be used uniformly to identify and characterize regional innovation clusters or potential, much less prove universally effective in guiding regional development efforts. As such, we propose that the regional development community view the advocacy of RICs with caution and deliberation. Given a lack of conceptual consistency and uniformity, empirical validity and generality, and practical feasibility—policy makers would be much better advised to adopt policies with a stronger research basis. Likewise, the public would be better served by government programs based on coherent regional economic theory and solid empirical evidence rather than chaotic collections of policy *idées du jour*.

## NOTES

1. This clearly contrasts to how the driver of the national economy is pronounced in the national version as a triad of building blocks, competitive markets, and national priorities.
2. This is also the only reference that has been explicitly named in the FFO as the literature for RICs.
3. For instance, see EDA's FY2010 Congressional Budget Request document at <http://www.osec.doc.gov/bmi/budget/10CJ/EDA%20FY%202010%20Congressional.pdf> and a commentary from Brookings Institute that highlighted the significance of RICs at [http://www.brookings.edu/opinions/2009/0513\\_obama\\_budget\\_muro.aspx](http://www.brookings.edu/opinions/2009/0513_obama_budget_muro.aspx).

## REFERENCES

- Archibugi, D., J. Howells, and J. Michie. 1999. *Innovation policy in a global economy*. Cambridge: Cambridge Univ Press.
- Asheim, B.T., and A. Isaksen. 1997. Location, agglomeration and innovation: Towards regional innovation systems in Norway? *European Planning Studies* 5(3): 299–330.
- . 2002. Regional innovation systems: The integration of local “sticky” and global “ubiquitous” knowledge. *Journal of Technology Transfer* 27(1): 77–86.

- Bathelt, H., and A. Malmberg. 2004. Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography* 28(1): 31–56.
- Bergman, E.M., and E.J. Feser. 1999. Industrial and regional clusters: Concepts and comparative applications. In *The web book of regional science*, ed. S. Loveridge. Morgantown, WV: Regional Research Institute, West Virginia University. <http://www.rri.wvu.edu/regscweb.htm> (accessed 14 February 2011).
- Best, M.H. 2001. *The new competitive advantage: The renewal of american industry*. Oxford and New York: Oxford University Press.
- Bradshaw, T.K., and E.J. Blakely. 1999. What are “third-wave” state economic development efforts? From incentives to industrial policy. *Economic Development Quarterly* 13(3): 229–244.
- Capello, R. 2007. Spatial transfer of knowledge in high technology milieux: Learning versus collective learning processes (Volume 33, Number 4, 1999). *Regional Studies* 41(1 Supp 1): 161–173.
- Carlsson, B., S. Jacobsson, M. Holmen, and A. Rickne. 2002. Innovation systems: Analytical and methodological issues. *Research Policy* 31(2): 233–245.
- Cooke, P. 2001. Regional innovation systems, clusters, and the knowledge economy. *Industrial and Corporate Change* 10(4): 945–974.
- , M. Gomez Uranga, and G. Etxebarria. 1997. Regional innovation systems: Institutional and organizational dimensions. *Research Policy* 26(4–5): 475–491.
- , M. Heidenreich, and H.J. Braczyk. 2004. *Regional innovation systems: The role of governance in a globalized world*. New York: Routledge.
- Cutrini, E. 2010. Specialization and concentration from a twofold geographical perspective: Evidence from Europe. *Regional Studies* 44(3): 315–336.
- Desmet, K., and M. Fafchamps. 2005. Changes in the spatial concentration of employment across US counties: A sectoral analysis 1972–2000. *Journal of Economic Geography* 5(3): 261–284.
- Doloreux, D., and S. Parto. 2004. *Regional innovation systems: A critical review*. Maastricht: MERIT.
- Duranton, G., P. Martin, T. Mayer, and F. Mayneris. 2010. *The economics of clusters: Lessons from the French experience*. Oxford: Oxford University Press.
- EDA. 2010. Mapping regional innovation clusters project. <http://www.eda.gov/PDF/Cluster%20mapping%20FFO%20FINAL.pdf> (accessed 4 June 2010).
- Feser, E., H. Renski, and H. Goldstein. 2008. Clusters and economic development outcomes an analysis of the link between clustering and industry growth. *Economic Development Quarterly* 22(4): 324–344.
- Glaeser, E.L., and J.D. Gottlieb. 2008. The economics of place-making policies. *Brookings Papers on Economic Activity* 1: 155–253.
- Grupp, H., and M.E. Moge. 2004. Indicators for national science and technology policy: How robust are composite indicators? *Research Policy* 33(9): 1373–1384.
- Isserman, A.M. 1993. State economic development policy and practice in the United States: A survey article. *International Regional Science Review* 16(1&2): 49–100.
- Krugman, P.R. 1996. *Pop internationalism*. Cambridge, MA: MIT Press.
- Martin, R., and P. Sunley. 2003. Deconstructing clusters: Chaotic concept or policy panacea? *Journal of Economic Geography* 3(1): 5–35.
- Norton, R.D. 2001. *Creating the new economy: The entrepreneur and the US resurgence*. Cheltenham, UK and Northampton, MA: E. Elgar.
- OECD. 2005a. *Building competitive regions: Strategies and governance*. Paris: OECD Publishing.

- . 2005b. *Oslo manual*. Paris: OECD/Eurostat.
- . 2007. *Competitive regional clusters: National policy approaches, OECD reviews of regional innovation*. Paris: OECD.
- . 2010. *Toward a measurement agenda for innovation*. Paris: OECD.
- . 2010. *The OECD innovation strategy: Getting a headstart on tomorrow*. Paris: OECD.
- Partridge, M.D., D.S. Rickman, and M. Rose Olfert. 2008. Employment growth in the American urban hierarchy: Long live distance. *The Berkeley Journal of Macroeconomics: Contributions to Macroeconomics* 8(1): 1–38.
- Perry, M. 1999. Clusters last stand. *Planning Practice and Research* 14(2): 149–152.
- Porter, M.E. 1998. *On competition, the harvard business review book series*. Boston, MA: Harvard Business School Publishing.
- . 2001. *Clusters of innovation: Regional foundations of US competitiveness*. Washington, DC: Council on Competitiveness.
- Porter, M.E., and D. van Opstal 2001. *US competitiveness 2001: Strengths, vulnerabilities, and long-term priorities*. Washington, DC: Council on Competitiveness.
- Rosenfeld, S. 2007. *Cluster-based strategies for growing state economies*. Washington, DC: National Governor Association.
- Sabel, C. 1999. Flexible specialization and the re-emergence of regional economies. In *Reversing industrial decline: Industrial structure and policies in Britain and her competitors*, ed. P. Hirst, and J. Zeitlin, 17–70. Oxford: Burg.
- Sallet, J., E. Paisley, and M. Justin. 2009. *The geography of innovation: The federal government and the growth of regional innovation clusters*. Washington, DC: Center for American Progress.
- Scott, A.J., and M. Storper. 2007. Regions, globalization, development. *Regional Studies* 41(S1): S191–S205.
- Smith, K. 2005. Measuring innovation. In *The Oxford handbook of innovation*, ed. J. Fagerberg, D.C. Mowery, and R.R. Nelson, 148–177. Oxford and New York: Oxford University Press.
- Soete, L. 2007. From industrial to innovation policy. *Journal of Industry, Competition and Trade* 7: 273–284.
- Swann, G.M.P., M. Prevezer, and D.K. Stout. 1998. *The dynamics of industrial clustering: International comparisons in computing and biotechnology*. Oxford and New York: Oxford University Press.
- Trippel, M. 2010. Developing cross-border regional innovation systems: Key factors and challenges. *Tijdschrift voor economische en sociale geografie* 101(2): 150–160.