Reflections on Cluster Policies

Steven Brakman
Charles van Marrewijk

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Abstract

Economic activity tends to cluster. This results in productivity gains. For policy makers this offers an opportunity to formulate and promote policies that foster clustering of economic activity. Paradoxically, although agglomeration rents are often found in empirical research a rationale for cluster policies does not exist. A brief tour through the literature shows that cluster policies face more problems than is often assumed in policy circles. We reflect on the main issues at stake and conclude that, if not carefully applied, cluster policy may do more harm than good.

JEL-Code: F400, F500, R500.

Keywords: economic clusters, regional policy, agglomeration.

Steven Brakman
University of Groningen
Department of Economics
PO Box 800
9700 AV Groningen
The Netherlands
s.brakman@rug.nl

Charles van Marrewijk
Utrecht University
Department of Economics
Janskerkhof 12
3512 BL Utrecht
The Netherlands
J.G.M.vanMarrewijk@uu.nl

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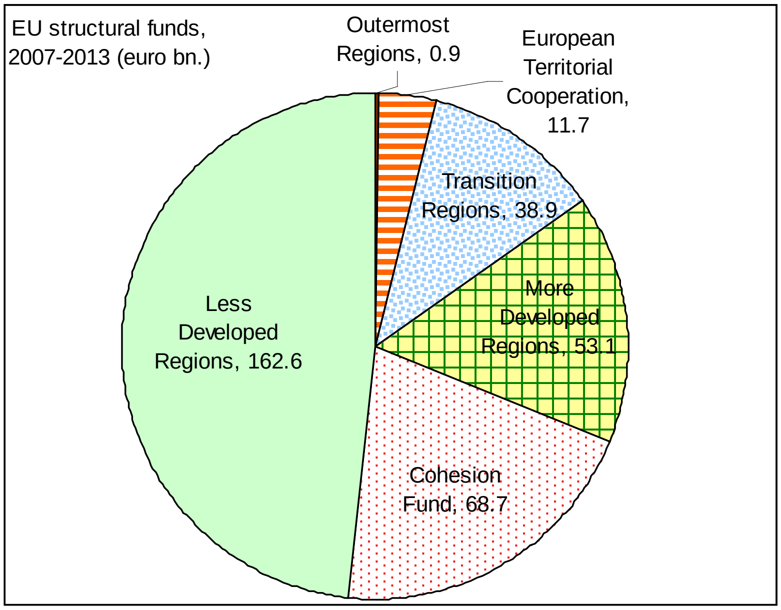
1. Introduction

In a letter to the Dutch parliament on 13 September 2011, the Dutch administration outlined a policy initiative to revive the Dutch economy.[2] This plan, entitled "To the Top", selected various sectors that could become leading sectors for the Dutch economy. A key aspect of the plan is the development of regional clusters. Remarkably, the benefits of the formation of regional clusters go without saying in the plans, which simply states that "Strong regional clusters contribute significantly to welfare in The Netherlands" (our translation). The Dutch government, however, is no exception in this respect. In the final report of the European Cluster Policy Group (ECPG, 2010) drafted for the European commission, similar principles and action proposals for cluster formation can be found. See also the Cluster mapping project in the US for similar observations.[3] Cluster policies are popular among policy makers in many countries, as illustrated by the activities of the ECPG or the US Cluster mapping project.

The recent revival of regional cluster initiatives is remarkable as it resuscitates regional policy that had increasingly become criticized because of a lack of results. EU subsidies to backward regions have had little or no effects on the relative position of peripheral regions relative to core regions. Barro and Sala-i-Martin (2004, p.496), for example, note that the speed of convergence between regions has been noticeably smaller than between countries, and that it takes "25-35 years to eliminate one-half of an initial gap in per capita incomes." Case studies illustrate this. The Mezzogiorno in Italy (Southern Italy), for example, has received large amounts of subsidies from the EU, but it has had little effect on reducing the gap between Northern and Southern Italy.[4] Figure 1 illustrates that the size of the EU's structural funds is substantial (€ 336 bn in the period 2007-2013) and that a large share of the budget goes to less developed regions and transition regions, while only about 16 per cent goes to more developed regions.

[2] http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2011/09/13/kamerbrief-naar-de-top-het-bedrijvenbeleid-in-actie-s/microsoft-word-11134377.pdf
[3] Material on the ECPG are downloadable from: http://www.clusterobservatory.eu/
For the US cluster mapping Project: http://clustermapping.us/index.html
[4] NUTS 2 regions that have a per capita income of 75 per cent or less compared to the EU average are eligible for Cohesion funds. This criterion is consistently met in Southern Italy.

Figure 1 EU structural funds, 2007-2013



Source: based on data from Brandsma (2012), Barca (2009)

The most outspoken exponent of current cluster policies is Michael Porter (1990, 1998, 2000a,b). The basic idea goes back to Alfred Marshall (1890) who already points out that industries tend to cluster in order to benefit from forward and backward linkages, thick labor markets, and spillovers of all sorts.[5] These ideas were formalized by Paul Krugman in a series of articles (Krugman, 1979, 1980, 1991; labelled New Economic Geography) that together earned him the Nobel prize in economics in 2008. It is Michael Porter, however, who made the cluster idea widely known outside the academic world of economists and geographers (see Martin and Sunley, 2003, for a discussion). The literature on clusters can be subdivided into two broad groups: economists & geographers represent the academic side of the debate and policy makers represent the practitioner's side. The opinions of these two groups differ strikingly. On the one hand, there are skeptical reflections on the cluster concept from economists and geographers (see Duranton, 2011, or Martin and Sunley, 2003) with illustrative titles containing variants on "the feeble case for cluster policies" or "Deconstructing Clusters." On the other hand, one can find optimistic policy reports that take the usefulness of the cluster concept for granted, in which the only problem that policy makers face is the proper identification of promising locations and sectors (see note 3).

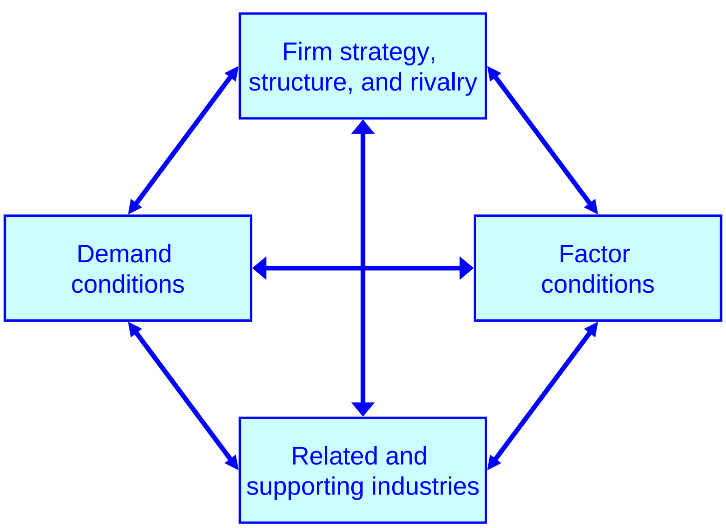
[5] Three mechanisms are at work in a cluster, see section 3.

This article reflects upon the cluster literature. In section 2 we discuss Porter's idea of clusters, which is confronted with the standard objections against his approach. Section 3 discusses the empirical evidence on clusters and points out that the positive relationship found between clusters and productivity does not by itself present a solid case either for or against cluster policy. In section 4, we turn to policy advice related to clusters and argue that even if clusters do result in positive productivity effects, the information requirements to formulate a cluster initiative are too formidable, such that cluster policies are bound to fail. Section 5 concludes.

2. Clusters and their critics

Gordon and McCann (2000) provide a large survey on clusters. One of their conclusions is that the concept of industrial clusters is ambiguous. After a review of the literature they propose to organize the cluster literature into "three analytically distinct forms (or ideal types)." This is literature based on: (i) a model of pure agglomeration, (ii) an industrial-complex model, and (iii) a social-network model. They note that in practice these ideal types are intermingled, which also implies that as an organization framework of the literature the distinction may be useful, but for policy purposes it is less helpful. Arguably the most influential concept of clusters – which combines the three ideal types of Gordon and McCann (2000) – is that of Michael Porter (ibid.). He wrote extensively on the concept, and despite the fact that over time his interpretation changed somewhat, the essence is explained in figure 2: the so-called "Porter Diamond."

Figure 2. Porter's Diamond



Source: Porter (2000a, p.20)

The diamond illustrates that the business environment in a specific location determines productivity, growth, and (most importantly) competitiveness. This is the local context, which feeds into four boxes. These four boxes mention the key elements that are important for the business environment: Firm Rivalry, Factor inputs, Related industries, and Demand conditions. The influences among the four boxes are interrelated, indicated by the two-way arrows. The diamond is used as a metaphor for Porter's theory, and its attractive "looks" and catchy name have contributed significantly to its popularity.

Porter (2000a,b) defines a cluster as: "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities." Originally, Porter stated that clusters contain only one element of the diamond – related and supporting industries – but he later added that (Porter 2000b, p.258): "clusters are best seen as a manifestation of the interaction among all four facets." The interactions between the four boxes strengthen each other and result in a highly competitive cluster. The archetypical cluster used for illustration purposes is Silicon Valley. According to Porter, the most successful clusters are not only competitive regionally, but also globally. Once a cluster is regionally established, global competitiveness follows as a consequence.

Porter's cluster analysis is not only attractive by looks and name, but also gives direction to regional policy. Each element in the diamond can be associated with a regional policy that is directly aimed at that particular part of the diamond. Local tax reductions can attract firms that together form a business park, which then might turn into a cluster. Policies like these seem successful as they attract suppliers from other locations in order to stimulate sourcing from cluster participants (see Barba-Navaretti and Venables, 2004, for a case study of Ireland). This stimulates forward and backward linkages which feed into local economies of scale. Governments can thus help to facilitate location decisions of new firms. The access to clusters should be efficient, suggesting investments in supporting infra-structure. Knowledge development should also be stimulated, which can be supported by creating interrelated and specialized vocational, technical, and university curricula. It is easy to lenghthen the list, but all initiatives are aimed at facilitating growth and productivity of a particular cluster.

The academic literature, in general, is critical of the cluster concept. This discussion is more than just an academic debate, because the criticism explains why cluster policies hardly work in practice (see Duranton, 2011, or Leslie and Kargon, 1996, on a failed attempt to replicate the success of Silicon Valley elsewhere). The problems voiced in the academic literature can be summarized as follows (Duranton, 2011, Martin and Sunley, 2003, or Prager and Thisse, 2012).

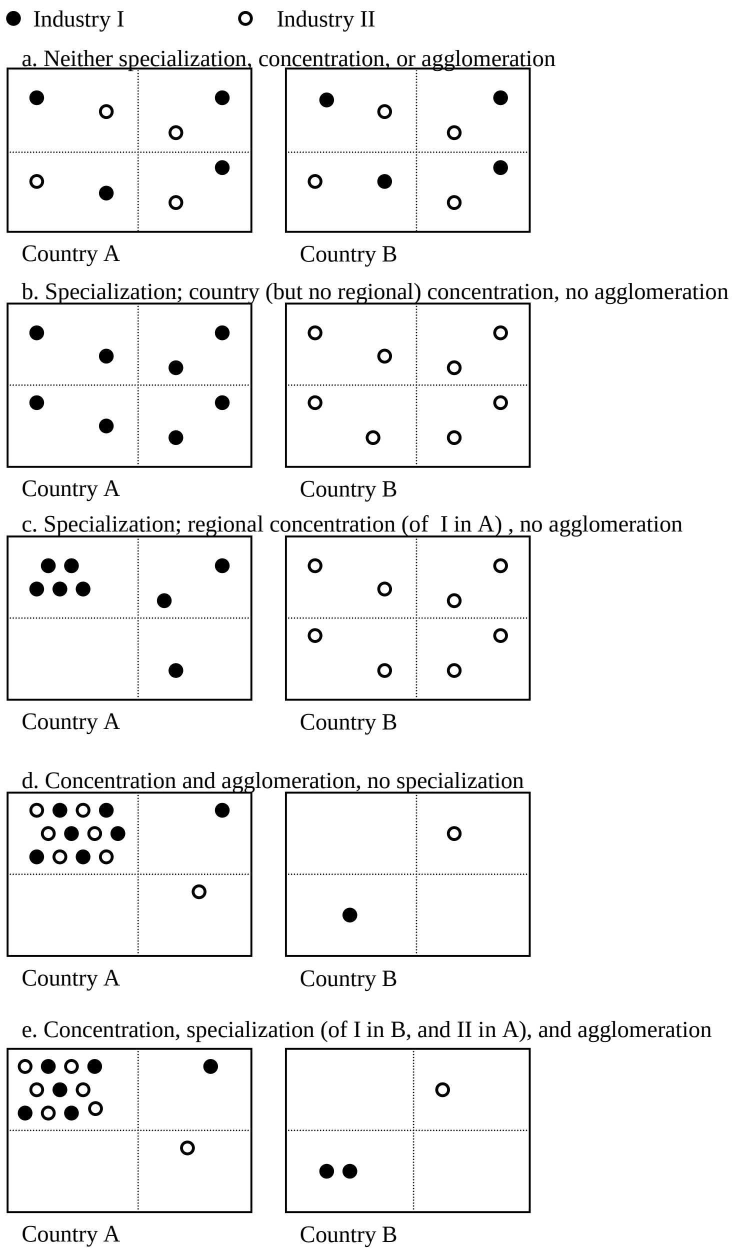
First. It is not clear how to define a cluster. The definition given by Porter stated above gives rise to various interpretations. Martin and Sunley (2003, Table 1) list ten definitions that stress different elements of Porter's original definition; from "similar firms located close together" (Crouch and Farrell, 2001) to "related and supporting institutions that are more competitive by virtue of their relationship" (Feser, 1998) or "strongly interdependent firms… lined to each other in a value-added production chain" (Roelandt and Den Hertog, 1999). Recent contributions also stress networks of "actors" within a cluster (Lorenzen and Mudambi, 2012).[6] These definitions either extend or limit Porter's definition. They extend to include institutions (without specifying the spatial dimension) or limit by referring to interdependencies through the supply chain. Porter does not include institutions as part of clusters (although they can stimulate cluster formation) and has a broader view on clusters than local supply chain relations alone. Although most definitions cited by Martin and Sunley refer to space as an important distinguishing characteristic of clusters, none of them explicitly state the spatial scale on which a cluster should be defined.

Second. This leads to the second qualification; it is difficult to limit a cluster to a spatial scale or to an industry. The available evidence on agglomeration economies is large (see Brakman et al., 2009, for a survey). Economic activity tends to agglomerate over time. This is visible on many levels of aggregation; on a continental scale, national scale, regional scale, and urban scale. In the EU countries, for example, the following three trends can be distinguished (based on production evidence over the last three decades, see Brakman et al. 2005): (i) stable specialization, (ii) industry concentration, and (iii) stable agglomeration. These conclusions, however, tend to be subject to the spatial unit that is covered (see Martin, 1999, for a discussion). In Brakman et al. (2005) various spatial scales are compared, from NUTS 0 (national level) to NUTS 3 (small regional level). They find that agglomeration is stable over time and manifests

[6] They do not discuss the spatial reach of networks that define a cluster in great detail (see their figure 1), but apply it to Bollywood and Bangalore, which suggests geographical limits.

itself mostly on the lowest level of spatial agglomeration, that is the NUTS 3 level. The findings on various spatial scales indicate that the geographical reach of a cluster is subject to discussion; it seems always possible to extend or limit a particular spatial definition such that some form of agglomeration is visible within the arbitrarily defined boundaries. Menzel and Fornahl (2009, p. 222), for example, note that Silicon valley "went on to integrate distant places like Hsinchu/Taiwan … into its development", illustrating that cluster definitions can be enlarged at will and can include more than one continent. In general, global value chains are stretching out more and more internationally, making it difficult to define a local cluster in a specific industry. In the automotive industry, for example, vertical production linkages range from global levels to the local level (Sturgeon et al., 2008). For policy makers this is problematic because it is not clear on what scale policy action is required.

Figure 3. Specialization, concentration and agglomeration



Source: Brakman et al. (2009a, p.186).

It is useful to formally distinguish between specialization, concentration and agglomeration, as these concepts are not identical. Figure 3 summarizes how they differ. Concentration and agglomeration are concerned with spatial clustering. Concentration refers to a limited number of well-defined sectors, whereas agglomeration refers to a much larger set of economic activities. Specialization can take place without any spatial clustering. Porter’s cluster definition is closely related to concentration and agglomeration, as depicted in Figure 3. The figure, however, also illustrates that these two concepts are not identical. What is meant by “limited number of well-defined sectors”? Extending Figure 3 with a third sector does not change the distinctions between the concepts that are discussed, but clarifies that determining a dividing line between the concepts becomes more difficult. Adding to the difficulty of defining a cluster (with similar consequences for policy makers): if activity is not homogeneously spread over space, one can always introduce a boundary that defines a cluster. This refers to the spatial unit as well as to the sectors that can or cannot be included.

Third. Some assumptions regarding the production structure are problematic. Central in most definitions of clusters is space; production takes place in a limited area. Standard neo-classical economics makes the opposite assumption; location choice has no consequence for prices and costs. This implies that within clusters some production factors, intermediate goods, (knowledge) spillovers have to be immobile in order to create agglomeration economies. If all elements are immobile except the final commodity that is produced this could indicate the presence of a cluster. In practice, all elements are mobile to some extent, except factors like land or housing. The more mobile some intermediate steps are in the production process, the more difficult it becomes to define a cluster in the sense of Porter. Clusters themselves can also be mobile as activities are increasingly footloose (Duranton, 2007). Glaeser (2005) points out, for example, that Boston is not a productive city because it held on to certain industries, but instead because it was able to reinvent itself, changing the character of this ‘cluster’ totally. This adds to the issues mentioned above. Brakman, Garretsen and van Marrewijk (2009b) find that spatial linkages are more important at the country level and that density is more relevant at an urban scale, while both vary over time. These findings indicate that at disaggregated spatial scales local factors might indeed be important.

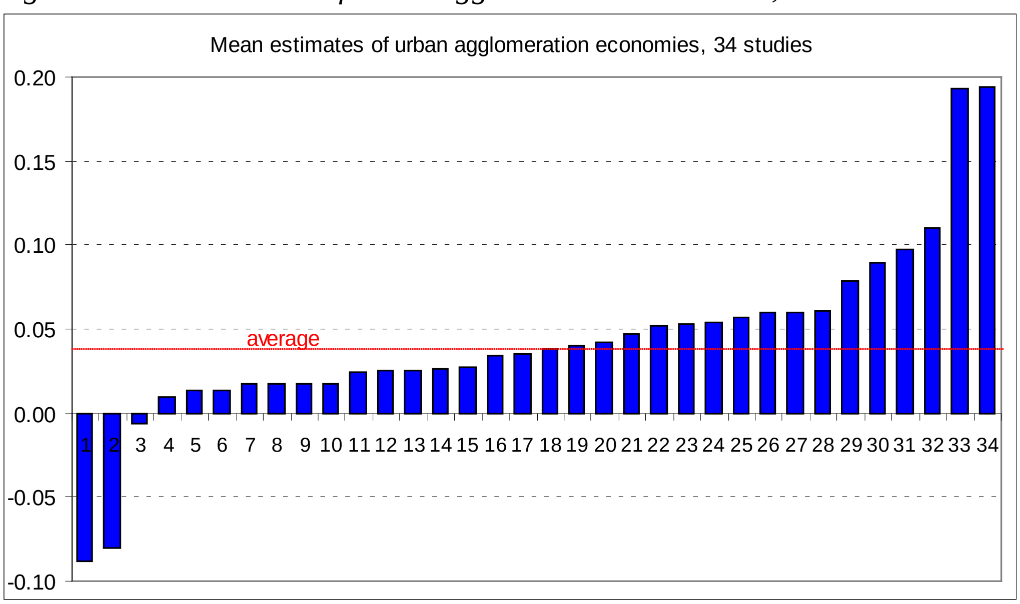
Fourth. Porter’s model is a partial approach. The four elements in the diamond strengthen each other without negative feedback mechanisms. A growing cluster, for example, has consequences for local prices of non-tradable services (housing) or increase congestion and pollution. Adding these elements reduces the growth of clusters (see Brakman, et al., 1996). Also, the growth of one cluster may also have negative consequences for another cluster if factors of production are scarce and stimulated to re-locate. If skilled labor, for example, is relocated from one cluster to another, this could drive up wages for both clusters, with negative welfare consequences.

The critical points discussed above indicate that the cluster concept is not as popular in academic circles as within policy circles. This begs the question as to why it is so popular for policy purposes. An important answer is: empirical evidence, as discussed in the next section.

3. Agglomeration Economics: the empirics

It is by now well-known that agglomeration economies do exist. A 2011 special issue of the Scientific American (September, 2011) illustrates this by discussing the positive side of urban life (the sub-title is "we have seen a brighter future, and it is urban"). In addition, Edward Glaeser (2011a, p.2) points out notable trends of the 2010 US-Census in a Harvard policy brief, one of which is "'money matters' …Americans are following the money and moving to areas that pay more." Ever since Marshall (1890) the possibility of location advantages have been considered both theoretically and empirically (see Brakman et al., 2009a, or Combes et al. 2008, for recent surveys). The mechanisms that are at work in agglomerations are: *matching* (better matching between supply and demand), *sharing* (risks and costs of large local projects can be shared between users), and *learning* (frequent interactions between actors facilitate knowledge spillovers), see Duranton and Puga (2004) for a discussion.

Figure 4 Mean estimates of urban agglomeration economies, 34 studies



Source: based on data from Melo et al. (2009, Table 1).

Although the exact distinction between the contributions of each factor separately is difficult to estimate, the density elasticity of wages (productivity) is usually estimated to be between 0.02 and 0.05, which implies that an average increase of density with one percent raises productivity by 0.02 to 0.05 percent (see Ciccone and Hall, 1996, Rosenthal and Strange, 2004, De Blasio and Addaro, 2005, and Puga, 2002, 2010).[7] Although some consensus exist about the range of the outcomes, a meta study based on 729 estimates from 34 studies reveals that there is large variation in the estimates, as illustrated in Figure 4. According to Melo et al. (2009, p. 341), therefore, there is "no a priori reason to expect similar estimates of comparable magnitude between sectors, urban areas, or countries."[8] The typical specification is given in equation (1), where *w* is a measure of productivity, *dens* a measure of density, *Z* are control variables, *ε* is the error term, and *r* is the spatial unit. A relationship as in equation (1) can be founded on models in New Economic Geography as well as urban economics (see Combes et al., 2008, for a derivation and Brakman et al., 2009b, for an application). As highlighted in Brakman et al. (2009b) the definition of *r* is to a large extent arbitrary (see previous section).[9]

$$(1) \qquad \ln(w_r) = \alpha \ln(dens_r) + \beta \ln(Z_r) + \varepsilon_r$$

The average results refer to different spatial scales which are not readily definable, as our discussion in the previous section also indicated. This problem, on the most relevant unit of observation, refers to the so-called modifiable area unit problem or *MAUP*. The problem is relevant because a unit of observation should reflect economically appropriate concentrations of production factors. As is noted by ESPON (2006, p. 134), for example, standard spatial aggregation levels such as NUTS 1–3, produce "noise" in the sense that these spatial measures do not reflect homogeneous levels of activity and "produce confusion and errors of interpretation because of scale confusion; different geographical objects are sometimes mixed in the same territorial units and sometimes isolated in separate units." In a detailed study Briant et al. (2009) find that this problem is indeed important and might affect results, but that specification problems dominate

[7] The implication is that a doubling of density (employment) increases labor productivity between 1.4 per cent and 3.5 per cent (since $100\times(2^{0.02}-1) = 1.4\%$ and $100\times(2^{0.05}-1) = 3.5$). The latter is substantial, while Brakman et al. (2009b) find an elasticity of 0.08, for European regions over the 1988-2006 period.

[8] Melo et al. 2009, also find some evidence of publication biases to publish results confirming positive agglomeration economies.

[9] While ln is the natural logarithm.

the problem of MAUP (see Combes et al., 2008 for a survey on how to measure spatial concentration).

Although the evidence on the relationship between density and productivity is pervasive it does not necessarily imply that clusters economics or agglomeration economics are at work. Certain agglomerations offer good amenities and high wages and could attract (productive) workers and firms, thus becoming denser. The implication is that equation (1) changes into:

(1') $\ln(dens_r) = \alpha \ln(w_r) + \beta \ln(Z_r) + \varepsilon_r$

The causality now runs from high wages and good quality amenities, that attract footloose agents, to density. Combes et al. (2008) find that this "sorting" matters. They find, using a large panel of French workers, that half of the spatial wage (productivity) differences can be attributed to differences in the skill composition of workers. It seems that these workers are able to cover the additional costs of living in larger agglomerations, such as more expensive housing or higher land prices compared to more peripheral locations.[10] Explicitly dealing with reverse causality reduces the estimates of agglomeration economies, as Combes et al. (2011, p.264) conclude: "the existence of consensus is no guarantee of complete reliability."

The literature mentioned above is general in its coverage; it applies to panels of agglomerations. Case studies might reveal a more positive effect for certain specific examples. Well-known and well-studied examples are Silicon valley, Route 128 (Boston area), Hollywood, Bollywood or Bangalore (see, for example, Glaeser, 2005, Saxenian, 1994, or Lorenzen and Mudambi, 2012). Descriptions of cases like these reveal that the success or lack thereof of such a cluster is highly specific. For the success of Bollywood (a film industry cluster in Mumbai), for example, it turns out that (starting from the 1950s) Indian emigration towards the US is particularly important by creating a large and profitable (export) market. During the 1970s and 1980s imports of Bollywood VHS-video's and later DVDs and the use of satellite TV increased the visibility of Bollywood films in the US and stimulated contacts between the US film industry and Bollywood, enabling Bollywood to catch-up with Hollywood (Lorenzen and Mudambi, 2012).

[10] Combes et al. (2011), also point out that it is not only a matter of reverse causation, but also of missing variables. Higher land prices, for instance, reduce the amount of land used by firms, which reduces their marginal productivity and thus wages (see also Duranton et al., 2010). Another possibility, as Rosenthal and Strange (2008) point out, is workers in large cities work longer than in smaller cities.

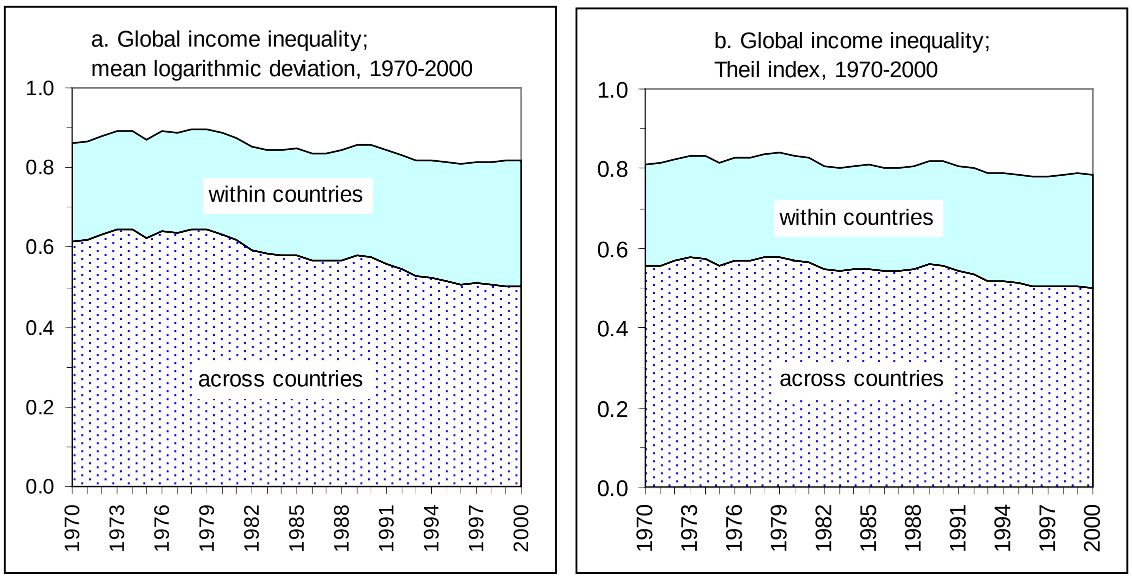
The success of Silicon Valley relative to Route 128 can be attributed to institutional differences, where the industries along Route 128 were organized rather hierarchical and rigid, whereas the organizations of industries in Silicon Valley were far more flexible, facilitating transitions towards changing demands in the computer industry (Saxenian, 1994). As pointed out by Rosenthal and Strange (2004) organizational differences between the two locations explain the differences rather than the natural advantages or agglomeration economies. Examples like this illustrate that specific circumstances can dominate other explanations. It goes without saying that these particular circumstances are difficult to steer beforehand from a policy perspective. To settle the question one would like to have a randomized trial of cluster stimulating policies. This is difficult to desing from a policy point of view; many regions would like to participate, but only if they are in the "treatment" group.

4. Policy consequences

It is well-known that income inequality between nations becomes smaller over time, but income inequality within nations becomes larger over time. This is illustrated in Figure 5 using the mean logarithmic deviation (MLD) index and the Theil index in the period 1970-2000. The highest total income inequality in both cases is measured in 1979 and the lowest in 1996. Total income inequality can be decomposed in an across-country component and a within-country component, as illustrated in the figure. In both cases, the across-country income inequality is *lowest* in 2000 and the within-country income inequality is *highest* in 2000. Over the period 1970-2000, the share of total income inequality explained by the within-country component rose from 28.5 to 38.9 per cent for the MLD index and from 31.4 to 36.3 per cent for the Theil index. Regional policies are geared towards diminishing these regional differences. Regional policies of the EU, for example, are aimed at the peripheral regions that lag behind. If GDP per capita is below 75 per cent of the EU average a region is entitled to subsidies from the structural funds. This policy was implicitly criticized in the World Bank (2009) Development report, which is more general in its policy advice and prefers space-neutral actions. It does not deny that some areas – clusters or not – grow faster than others, but it is hardly possible to formulate a consistent regional policy advice that could work in practice. The implication is that to stimulate convergence EU Cohesion Policies can best be aimed at member states – or even larger areas – instead of separate regions.

Opposed to this more general approach are cluster policies or place-based policies (see Barca et al., 2012, for a survey). This is aimed specifically at individual regions or clusters. The underlying assumption is that some characteristic of such a cluster or region needs to be developed, with or without state aid. Porter's cluster analysis is the best known example but also Barca (2009) is in favor of a place-based policy. The latter approach is problematic in our view for the reasons below (Duranton, 2011).

Figure 5. Income inequality decomposition; across and within countries, 1970-2000



Source: Beugelsdijk et al. (2013, forthcoming).

First. Case study analyses indicate that special circumstances might be crucial for the success or demise of agglomerations or clusters. In the previous section we illustrate this for three examples, but it is easy to find more of these special circumstances. Glaeser (2011b), for example, points out that New Orleans has a more optimal city size after the hurricane Katrina struck the city. Dealing with special circumstances like these make it difficult to predict the success of cluster initiatives and to formulate a policy that is particularly suited for the cluster, region or area at hand. This type of special circumstance is embedded in New Economic Geography modeling. Small, seemingly innocuous changes of special circumstances can tilt an equilibrium dramatically in one way rather than another. Such circumstances are hard to predict and, more importantly, hard to evaluate from a welfare perspective (Brakman et al., 2009a). Regional policy implicitly requires "picking equilibria", which from a welfare point of view is not possible as it assumes comparison of individual welfare. Evidence suggests that flexibility in general is more important for the survival of clusters over time than fostering special circumstances. Glaeser (2005) points this out for Boston, while Duranton (2007) shows that this seems to be a general characteristic of fast growing cities that keep on growing fast.

Second. It is well-known in the international trade literature that rent-seeking is pervasive. This has become known as DUP activities; Directly Unproductive Profit seeking activities (Bhagwati, 1982). The aim of these activities is to lobby for special treatment, which is unproductive but requires the input of resources, that could have been put into more productive activities. Thus, successful lobbying industries or regions benefit from this special treatment at the expense of other regions. These activities explain why especially weak regions or industries are protected, because these regions or industries gain the most from rent-seeking behaviour (successful industries have less to gain). The consequence could be that resources end up in those industries or regions that are relatively less productive. The fact that most cluster initiatives are found in backward regions could thus point towards rent-seeking (see also Baldwin and Robert-Nicoud, 2007).

Third. The fact that cluster economies or agglomeration economies exist does not necessarily point towards the need for government policies to stimulate a cluster. If anything, New Economic Geography explains that core-periphery patterns can be equilibrium outcomes, such that regional inequality is an equilibrium. Fixing this inequality, the central aim of EU cohesion policies, is not necessary in New Economic Geography and taxing the core or subsidizing the periphery could reduce overall welfare (see Brakman et al., 2007, for a three region analysis). The central question that has to be answered is (Duranton, 2011): "what problem needs to be fixed by a cluster initiative?" Is there a reason to assume that a market outcome is suboptimal? Duranton and Puga (2004) discuss the mechanisms of local increasing returns to scale; sharing, matching and learning. A diagnosis of the precise source of clustering is needed as well as the exact source of the problem, which is difficult to establish in practice (Rosenthal and Strange, 2004). Duranton (2011), for example, illustrates that problems with respect to matching (labor market) require a different policy than problems with respect to learning (knowledge spillovers). Without detailed, location-specific knowledge, a corrective policy is bound to be inefficient. Prager and Thisse (2012, p. 95) conclude: "by reducing the benefits generated by agglomeration economies, development policies that oppose the concentration of activities are likely to have effects that are detrimental to the country's long-term growth."

As a consequence Prager and Thisse (2012) are reluctant to formulate a specific set of policy instruments. They identify four categories of instruments (p. 98): (i) instruments without spatial features (such as national tax rates), (ii) instruments that are spatially neutral, but could have spatial consequences (such as public services, because the supply of these services differs across space), (iii) infrastructure, and (iv) spatially targeted instruments (such as industrial zoning). They note (p. 101), that standardizing "selection criteria for local and regional development policy instruments" is very difficult. Identification of a particular market failure that needs correction by government intervention is hardly possible. We agree with Duranton (2011, p. 36) who advises, for the same reasons, that policies should not be aimed at creating local "top sectors" or the next Silicon Valley, but at improving "land-use planning, urban transport, provision of local public goods, etc. These policies…may not be as 'sexy' as setting up a bio-tech cluster …The recommendation for local governments is to improve their traditional areas of intervention rather than try to do 'new things'"

5. Conclusions

Initiatives to support specific economic clusters or to stimulate the formation of new clusters are again popular in policy circles at all spatial scales (local, region, national, and supra-national). This popularization is based on Michael Porter's work and subsequent refinements, where specific policy actions can easily be linked to each facet of Porter's Diamond. Remarkably, the rationale for policy intervention is hardly questioned at all in policy circles. The opposite seems to hold in large parts of academia, which are much more skeptic of clusters and cluster policies. Not only is the cluster concept rather fuzzy (what is a cluster and how is it defined?), the extent of the spatial scale is also unclear and seems to be changing over time in response to technological changes associated with globalization. The problem for policy makers is that this fuzzyness carries over to specific policies; it is difficult to pin-point what a policy should or could address. In addition, the (long-run) mobility of most factors of production implies that clusters compete with each other for resources; this competition effect as well as the negative feedbacks of clusters (such as congestion, high prices, and pollution) is largely ignored in the cluster literature.

The question why cluster policy is so popular is easy to answer: specific interests and empirical support for agglomeration economies. Policies that support *your* location or stimulate *your* sector have always been in demand. When combined with the overwhelming empirical evidence that higher density is associated with higher productivity, this demand makes it easier to justify cluster policies. The critics of these policies raise some important objections. First, what is the specific problem that needs government action, and is not resolved by the market. Second, the causality is often unclear: does higher density lead to higher productivity or does higher productivity enable higher density? Recent research, indeed indicates that the causility partly runs from productivity to density, which reduces the rationale for policy intervention. Randomized trials to settle this question are hardly possible in practice. Third, the demand for support could lead to so-called directly unproductive profit seeking activities that waste resources. Fourth, and most importantly, even acknowledging that the empirical support for agglomeration economies does not, by itself, justify the use of cluster policies. Stimulating a cluster in one location is at the expense of another cluster, possibly in another location. If the policies focus on stimulating clusters in backward regions, as seems to be the case in the EU, the outcome is likely to slow down or prevent the movement of factors of production from these locations towards other, more productive locations. The policy then leads to overall lower productivity and results in lower welfare for everyone. This is what Glaeser (2011a, p. 2) calls 'leaning against the trend', that is keeping people from moving to more productive areas.

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