

# COORDINATION FAILURES, CLUSTER THEORY AND ENTREPRENEURSHIP: A CRITICAL VIEW

*Bogdan Glăvan\**

## 1. Introduction

In the last decades, more and more economists have advanced the idea that significant obstacles impeding economic growth (especially in less developed regions) consist in different market failures, which prevent entrepreneurs from taking the necessary actions to exploit profit opportunities.

Recently, a number of economists have pointed out an interesting market failure that may jeopardize development: coordination failure of different entrepreneurs to act upon perceived profit opportunities.<sup>1</sup> Economists like Rodrik (2004) and Rodriguez-Clare (2005) have used this particular market failure argument as justification for a “new industrial policy”, the goal of which is to induce entrepreneurs to invest in those projects with the highest social return.

As the coordination externality argument goes, exploiting new business opportunities has considerable positive externalities for other entrepreneurs, who can learn about the profitability of certain ventures and can act accordingly. Firms can improve their performance if entrepreneurs realize that their individual success is dependent on the actions of other market participants. They can, for example, get organized to identify common challenges, for example that all companies would profit from a specific training program at the local university, from an investment in improving transport facilities, or from a joint effort to upgrade the local power or water supply. For an individual company it would not make sense to address such issues but for the group as a whole they become hugely beneficial efforts. Put it differently, the social rate of

---

\* Bogdan Glăvan is Assistant Professor of economics at the Romanian-American University in Bucharest.

return on investments in key projects is higher than the pure private return. This means that coordination will be under-supplied and that government should correct market failure, providing proper incentives in order to reach the optimal level of coordination.

These writers' argument can be associated with Porter's idea that clusters, that is, regionally coordinated industries, are critical for overall economic growth.<sup>2</sup> Clusters develop when coordination failures are overcome. "As the cluster develops it becomes a mutually reinforcing system where benefits flow backwards and forwards throughout the industries in the cluster." (LeVeen, 1998) Cluster-based policy aims at removing imperfections of the free market by facilitating the coordination of economic agents.

At the present, the opinion that clusters can play an important role in fostering industrial development is widely held among development economists.<sup>3</sup> In Porter's view, "clusters should represent an important component of state and local economic policy." (Porter 2000, p. 29.) This new ground for industrial policy has found an increasing number of supporters among policymakers throughout the world. "Many areas around the developed world are adopting the clusters approach to regional economic regeneration, with the United Kingdom-wide government Department of Trade and Industry suggesting that this could be a key element in re-establishing the competitiveness of national businesses in the future." (Danson and Whittam)

This paper intends to provide a refutation of the idea that coordination failures as manifested in the inability of clusters to emerge can serve as a ground for government intervention. It uses Porter, Rodrik and Rodriguez-Clare thesis as an example of this approach and criticize the claim that coordination externalities prevent the market process to allocate resources optimally.

The paper is organized as follows. The next section presents the case for government intervention advanced by Porter, Rodrik and Rodriguez-Clare and criticize the notion of coordination failure. In section three, Porter's theory of clusters is shown to be irrelevant and inconsistent on its own terms. Section four explains why arguments

---

<sup>1</sup> Ferris and Gawande (1998) attempt to provide evidence for this argument, referring to the case of developing countries.

<sup>2</sup> As Rodrik (2004, p. 13) put it, "the cluster approach to development represents a narrower version of the same idea." See also Rodriguez-Clare (2005).

<sup>3</sup> See, for example, Nadvi and Barrientos (2004).

based on market imperfections fail to support the case for industrial policy. Section five concludes the paper.

## 2. The criticism of coordination failure

Rodriguez-Clare (2005, p. 3) points out the fact that the success or failure of an action depends upon the context in which it is undertaken: “A firm’s productivity depends not only on its own efforts and abilities, and on general economic conditions (e.g., the macroeconomic environment and the legal system), but also on the actions of other firms, infrastructure, regulation and other public goods”. Unfortunately, the author attempts to relate this observation to the theory of externalities. This makes the analysis deficient and paves the ground for mistaken policy recommendations. Before examining these deficiencies it is necessary to put the issue in a proper perspective.

Following a similar line of reasoning, Marshall (p. 13-14) provides a good explanation of what is meant by coordination failure: “Suppose the economic performance of a country (or a firm, industry, or financial market) depends on large numbers of investors being willing to provide funds. If it is generally believed that *other* investors will withhold funds, it is rational for any *given* investor to refrain from investing. Thus, these beliefs become self-fulfilling. This represents a coordination failure because *everyone* would be better off if *all* investors provided funds to the affected country. Unfortunately, there is no way to coordinate investor actions in this way.”<sup>4</sup>

Rodriguez-Clare (2005, p. 4) starts his difficult way into the the externalities argument by maintaining that “investment by one firm can have a positive effect on

---

<sup>4</sup> Howitt (p. 3-4): “When people on one side of a market put more effort into the matching process, this makes it more worthwhile for those on the other side to do the same thing, because it makes transacting less costly for them. Then the general expectation on the part of firms that it will be difficult to find customers can be self-fulfilling. It leads firms to cut back their hiring effort, which leads to a fall in job vacancies, which makes it harder for unemployed workers to find jobs. As a result unemployment rises, and the consequent fall in incomes makes people generally less willing to buy goods [...] On the other hand, the same chain of reasoning can often be applied to show that the expectation that customers will be easy to find would also be self-fulfilling. Thus there are multiple equilibria, some with optimistic expectations, high income and low unemployment, and others with pessimistic expectations, low income and high unemployment.”

the profitability of investment by other firms, because higher investment gives rise to an increase in aggregate demand, which under economies of scale increases profitability of investment elsewhere in the economy”.<sup>5</sup> Yet why does investment itself enhance the profitability of all the other projects? At a closer look, it seems obvious that a particular investment can have a negative, as well as a positive impact on other businesses. For example, the decision to build a bridge will promote road transportation but will necessarily undermine shipping businesses.

According to Rodriguez-Clare, under the circumstances described above, there are multiple equilibria: a good equilibrium, obtained when entrepreneurs have optimistic expectations and thus, manage to coordinate their businesses, and a bad equilibrium, resulting from entrepreneurs’ reluctance to invest and their failure to coordinate. When the market mechanism does not work, the government should coordinate (stimulate) entrepreneurs into the good equilibrium. As simple as it is, this idea has deep dubious implications.

Suppose that I am contemplating the possibility of building a restaurant. Following Rodrik and Rodriguez-Clare, there are multiple equilibria. On the one hand, if I intend to locate my restaurant in the middle of a future poor neighbourhood, there are few chances that the restaurant will operate profitable. On the other hand, if I intend to situate my business in what is going to become a rich residential area, then probably I will have many customers and the restaurant will prove a good investment. Obviously, in the latter situation, the restaurant will integrate successfully in the community; my investment in opening the restaurant will be consistent with the potential customers’ decision to inhabit the same region. But, as the authors object, one can never be sure that this (good) equilibrium will actually occur, because potential customers do not know about my intention to build the restaurant, and, in turn, I do not know about how many of

---

<sup>5</sup> Yehoue (2005, p. 5) advances a similar argument: “The simultaneous move of different investors can be so profitable for all of them that they can even afford more policy-induced distortions or weaker initial location factors than otherwise. This alleviates the government’s tradeoff. The idea is that with simultaneous investment projects (domestic and foreign alike), the different investment projects can create positive externalities on each other through backward and forward linkages, which will increase return and attract other investment. Without the simultaneous move of some critical mass of investors to set up an initial cluster, the sequential move of potential foreign investors might be difficult, because the first movers might not be able to derive advantage from clusters (at least for some time).”

them intend to live in my neighbourhood. Cautious individuals may choose not move in, even though in the opposite case all of us would be better off and coordination achieved. So, why not convince the government to make the rich people move in the neighbourhood? Thus, coordination will be much easier to accomplish! The fact that nobody will find this idea reasonable is sufficient proof that the coordination failure argument proves far too much. In addition, the argument is silent about the fate of the individuals who actually live in my neighbourhood. When potential restaurant's customers are moved in, the present inhabitants are moved out. It is clear that this dislocation creates its own problems. But the advocates of state intervention overlook the discoordination resulted from this forced coordination.

Another point in the coordination failure argument is that coordination is costly.<sup>6</sup> The thesis that search costs undermines entrepreneurial coordination is misleading. There is no such thing as cost-free action. Search costs, like transportation costs or labor costs are economic costs which must be taken into account before deciding upon the allocation of resources. The fact that the height of search costs discourages some action is no more relevant than the fact that high transportation costs prevents a doctor from selling his services to a distant customer. If we pursue the argument to its logical conclusion, we will maintain that this is a good reason for state subsidization of the doctor's distant activity. But this is hardly acceptable. Therefore, it is obvious that one cannot derive any sound conclusion by comparing real world situations with the (perfect competition-based) model of Rodrik, where search is costless.

Further, search costs cannot be eliminated through state action, they can only be transferred onto other people. The government has to incur itself some search costs

---

<sup>6</sup> As Rodriguez-Clare (2005, p. 6) explains: "One can think of a similar story to the one above, where coordination failures arise between workers thinking about investing in training and firms thinking about investing in technologies that require trained workers [...] Although a firm can contract with a worker so that they both invest in training and technology, and split the realized surplus, a problem arises because of the risk of separation. At that point, the firm would have to look for a trained worker, and the trained worker has to look for a job in a firm with modern technology. Given search costs, however, there is a risk that a productive match will not materialize, in which case firms and workers will have lost their investment."

(associated with the implementation of cluster development strategies), and covers them through taxation. A natural question is why are these costs more important than taxation?

### **3. Coordination and the development of clusters**

According to Rodriguez-Clare (2005, p. 3), the government should promote the development of clusters by inducing entrepreneurs to invest in those projects that offer high clustering opportunities. This policy proposal is supported by Porter (1998), who argued that “being part of a cluster allows companies to operate more productively in sourcing inputs; accessing information, technology, and needed institutions; coordinating with related companies; and measuring and motivating improvement.” However, this characterization, as well as the policy recommendation based on it, should be considered carefully.

The formation of clusters enhances the productivity of individuals only if it springs naturally from the voluntary actions of the producers. To say that a higher agglomeration of firms (at the extreme, a single cluster) encourages unconditionally the deepening of specialization, development of trade, promotes innovation and supports an increasing of economic growth, is to treat mechanistically human actions. It is true that cluster formation decreases some economic costs, because businessmen do not have to incur the same expenditures with transportation and search costs. But following similar reasoning, an extension of the number of producers on the market – that is, a deepening of the division of labor – increases search costs. Yet, as it is absurd to consider that agglomeration promotes society’s welfare just because, by decreasing transportation and search costs, it simplifies trade and production, it is no more reasonable to assume that industrial clusters bring an increasing of welfare. Individuals do not wish unconditionally to avoid transaction costs by eliminating the distance among them. Beyond a certain level, increased agglomeration does not result in net positive external benefits, but in negative externalities. An important question for the entrepreneur deciding the location of its venture is whether agglomeration benefits are higher than congestion costs. The issue cannot be settled by an independent observer, because respective benefits and costs cannot be determined objectively.

It is difficult to prove empirically that clustering is by necessity beneficial. Rather, as history illustrates, people prefer to spread even if, as a consequence of their choice, the transportation expenses increase. On a free market, entrepreneurs will try to respond properly to the demands of their customers, providing goods in the locations preferred by the public. Therefore, only on a free market would it be possible to discover what is the optimal size of a firm or cluster. Since political action is not a substitute for voluntary cooperation, a discretionary intervention on the organization of production cannot bring any benefits to the community.

The characteristics of a cluster are the outcome of speculative actions. Consequently, not all clusters spur the competitiveness of their members. There are examples of cluster failures.<sup>7</sup> Territorial industrial agglomerations spring from entrepreneurs' actions. Businesses cluster together because it is more efficient. "Clusters dissolve when costs become too high for industries to remain competitive."<sup>8</sup>

Clusters represent a form of industrial organization. It results from the incessant attempt of entrepreneurs to arrange the structure of production so as to fulfill to the best extent possible the consumers' demands. Therefore, clusters are specific consequences of entrepreneurial ventures.<sup>9</sup> Government meddling with clusters is tantamount to interference in the entrepreneurial process by which resources are directed toward the fulfillment of the market participants' most urgent needs. It introduces artificial incentives that weaken the inherent coordinative quality of market incentives.<sup>10</sup>

Instead of reasoning in terms of "externalities" and "market failure", it is time for the mainstream economists to realize that government is the only source of entrepreneurial discoordination. Through its trade policy – imposing different regulations and technical specifications, customs duties, quotas, voluntary export adjustments – immigration laws, regulations concerning capital movement etc., the state is the only

---

<sup>7</sup> The reluctance to accept this perspective has serious practical consequences. As Bresnahan, Gambardella and Saxenian (2001, p. 7) note, "Many governments have made the analytical error of focusing far too much on the second aspect of external effects, and have viewed clusters of innovative activity as no more than a ticket to producer rents. This has provided the intellectual foundation for largely failed policies that attempt to jump-start growth in clusters by directive policy."

<sup>8</sup> See Buss (1999, p. 368).

<sup>9</sup> "Clustering is the result of entrepreneurial activity and is driven by the production of valued goods to seize profits. Governments cannot therefore supersede the market in the creation of clusters." (Desrocher and Sautet 2004, p. 238-239).

<sup>10</sup> Besides this, Barkley and Henry (1997) discusses several shortcomings of cluster development strategies.

source of barriers for trade and economic (inter-regional) integration. In addition, the localization process is also indirectly influenced by the government policy. State intervention is the object of individuals' anticipations, and it consequently changes the behavior of economic agents. If market participants expect a change in government policy, they will act in order to capture all the benefits and minimize the losses arising from that policy. For example, apparent lack of delocalization to improve the coordination of production is due to the expected shift of industrial policy. Therefore, far from being an exogenous variable, the disparities in the production structure should be considered as dependent on the political institutions governing the market process.

According to Porter (1998, p. 226), "a cluster is a form of network that occurs within a geographical location, in which the proximity of firms and institutions ensures certain forms of commonality and increases the frequency and impact of interactions". From the very beginning, it is important to note the vagueness of this definition. As Martin and Sunley (2003, p. 10) emphasize, "the obvious problem raised by these cluster definitions is the lack of clear boundaries, both industrial and geographical. At what level of industrial aggregation should a cluster be defined, and what range of related or associated industries and activities should be included? How strong do the linkages between firms have to be? How economically specialized does a local concentration of firms have to be to constitute a cluster? [...] At what spatial scale, and over what geographical range, do clustering processes (inter-firm linkages, knowledge spillovers, rivalry, business and social networks, and so on) operate? What spatial density of such firms and their interactions defines a cluster?"

Another point is that clusters do not necessarily increase the competitiveness of member firms – a fact acknowledged by Porter himself. When a cluster shares a uniform approach to competing, a sort of groupthink often reinforces old behaviors, suppresses new ideas, and creates rigidities that prevent adoption of improvements. Clusters also might not support truly *radical innovation*, which *tends to invalidate the existing pools of talent, information, suppliers, and infrastructure*. In these circumstances, a cluster participant....might suffer from greater barriers to perceiving the need to change.... (Porter 2000, p. 24, emphasis added.)<sup>11</sup>

---

<sup>11</sup> See Industrial Districts, [www.rrl.wvu.edu/WebBook/Norton/nortonupdate/neoflows1.htm](http://www.rrl.wvu.edu/WebBook/Norton/nortonupdate/neoflows1.htm)

The lack of conceptual precision has been referred to by various analysts as part of the intentional style of Porter, who seeks to provide policymakers with an argument for exercising interventionism. Porter's idea serves as basis for a redefinition of interventionist policy, following the obvious intellectual bankruptcy of the old (rude keynesian) macroeconomic policy and price interventionism. It provides the ground for a more refined, intellectual-appealing interventionism.<sup>12</sup> The definitional elasticity of the cluster concept undermines the operationality of the theory while simultaneously making it an ideal tool for politicians. In the words of Porter (1998, p. 102), "drawing cluster boundaries is often a matter of degree, and involves a creative process informed by understanding the most important linkages and complementarities across industries and institutions to competition." This can only mean that the exact shape of clusters is related to the discretionary choice of policymakers. Any attempt to circumscribe a group of related companies based upon a certain criterion runs the danger of overlooking important clusters; at the same time, too many firms might be selected and clusters can be loosely defined.

The other problem, perhaps more relevant for the mainstream economists, because it explodes any practical relevance of the Porterian theory, arises because of the lack of independence of the criteria set forth by the theory to establish the proper size of a cluster. These criteria are not permanent, but change over time.<sup>13</sup> Technical progress and changes in individual preferences cause the relative prices of goods to vary permanently. The degree of specialization of an economy and the mobility of labor are also determined by the concrete array of relative prices. All this makes the attempt to circumscribe clusters illusory, because the industrial districts so defined continually change. This however, appears more as a recipe for chaos than a serious suggestion for a new industrial policy.

---

<sup>12</sup> As Martin and Sunley (2003, p. 12) observe, the notion of cluster can be used in a variety of situations, "depending on what the aim of the exercise is, or the client or policymaker for whom the analysis is intended."

<sup>13</sup> Porter (1998) admits this explicitly: "Clusters continually evolve as new companies and industries emerge or decline and as local institutions develop and change."

#### 4. Coordination and government intervention

How is government supposed to improve the coordination of market participants? As Rodriguez-Clare (2005, p. 30) argues “One interesting approach would be for the government to create a mechanism whereby business associations representing different clusters would submit proposals that identifying areas for collective action and public support. The different proposals would be reviewed by a “panel of experts,” who would rank them according to the estimated social return for the public investment. Finally, the best projects would be selected for support.” Since the author is optimistic about the quality of such an institutional invention, the natural question that arises is, why not extend the “mechanism” to all businesses and investment projects? The government could tax away individuals’ income and then redistribute it according to the authoritative views of the “panel of experts”. Rodriguez-Clare seems not to notice how much his argument can prove.

The proponents of the new industrial policy are aware that past interventionism has failed miserably to promote growth and prosperity all over the world, and they are very cautious to differentiate their opinions about market failure from the older view of government’s superiority.<sup>14</sup> As Rodriguez-Clare (2005, p. 29-30) maintains, “if one wanted to call the current proposal a sort of industrial policy, it would be a “soft” industrial policy, rather than the “hard” industrial policy implemented in previous decades, which entailed distorting prices so as to reallocate resources to certain sectors as a way to generate a new pattern of comparative advantage [...] This is important because soft policies are likely to be more transparent and less costly.” Porter (2000, p. 27) holds a similar opinion, arguing that “a role for government cluster development and upgrading should not be confused with the notion of industrial policy” and that “the intellectual foundations of cluster theory and industrial policy are fundamentally different, as are their implications for government policy.”

But why is transparency so important about government policy? Freezing commodities’ prices or wages is a very transparent political measure. Yet at the present, it

---

<sup>14</sup> As Rodriguez-Clare (2005, p. 29) mentions, “there is no need for the Government to distort prices so as to reallocate resources towards certain sectors.”

is far from being advocated by policymakers, because its harmful effects have become widely understood.<sup>15</sup> This example shows that transparency is not a proper criterion to evaluate policy initiatives.

According to the proponents of the new industrial policy, the government should shift the attention from individual firms and industries to clusters. Rodriguez-Clare (2005, p. 28) points out that unlike the old strategy, which attempted to pick winners (that is, individual companies), “policy should pick clusters”, and Porter complements this arguing that instead of targeting specific clusters, all existing and emerging clusters deserve attention.

Despite these authors’ efforts to differentiate their proposal from the older industrial policy, the distinctions they introduce are nothing more than rhetorical innovations. As a number of writers have aptly noted, the new sort of interventionism amounts to nothing more than picking winners. In a sense, this new political activism can incur even higher costs on society than previous attempts to engineer development. Since picking clusters means that policymakers should target groups of companies or industries, rather than specific businesses, the magnitude of potential failures increases considerably. If government’s privileges fail to promote growth, than the outcome will be not punctual bankruptcies as in the past, but the occurrence of clusters of losses.<sup>16</sup>

According to Rodrik, the policy of correcting coordination failures need not consist in subsidization. As he explains, “it is the logic of coordination failures that once the simultaneous investments are made all of them end up profitable. Therefore none of the investors needs to be subsidized *ex post*, unless there is an additional reason (i.e., a non-pecuniary externality) that such subsidization is required.” What is needed in order to induce entrepreneurs to start complementary investments is an “ex-ante subsidy”, consisting for example in a implicit bail-out or an investment guarantee. Put it this way, the “new” industrial policy seems to be apparently immune against much of the virus of corruption, rent seeking and malinvestment usually associated with government activity.

---

<sup>15</sup> One could argue that government is always tempted to choose the least transparent measures available at the moment.

<sup>16</sup> Desrochers (2004, p. 239) notes that it is not clear whether cluster-based regional development policy is beneficial for the future of these regions, given that “diversified local economies are more stable than highly specialized regions that are more prone to abrupt decline if their main line of business is supplanted by competitors located elsewhere or if new and better substitute products are manufactured elsewhere.”

In spite of its new clothes, government interventionism has no more solid foundation that it ever had. The problem with industrial policy is deeper than most of its critics admit. Promises to bail-out entrepreneurs in case they fail to operate profitably amount in a *de facto* socialization of private investments.

The advocates of industrial policy thinks government can act as private business do, using profit and loss criterion to decide between different investment projects. Rodriguez-Clare (2005, p. 28) thinks that, “at least in principle, one could calculate a social return for such an investment. With limited resources, the obvious approach would be to invest in the proposals that entail the highest social returns. The problem, of course, is that calculating such social returns is very difficult. One (perhaps limited) way to interpret prospective studies is as a way to facilitate this calculation.” Here, the author (to his own merit) touches the real problem of industrial policy. The state is not an entrepreneur, so it is not in position to “interpret” prospective studies the same way private individuals do. As Buss (1999b, p. 367) says, “there are only individual or group interests that use public authority to their benefit, often at the expense of others.”

## **5. Conclusion**

In this paper I have tried to prove that the coordination failure argument does not provide a solid ground for a reshaping of the industrial policy both because of its lack of sound theoretical foundation, and because of its empirical irrelevance. We have seen that the vagueness of the notion of cluster makes the case for industrial policy appealing. There is no recipe for clusters. The “new” industrial policy should therefore be eliminated from the field of development economics.

Why are cluster-based targeting, so widely practiced? Not because of their scientific merit, but for political reasons. Impressive analytics can be drummed up on demand to justify inherently political proposals. And why, when so many targeted industry strategies have failed, do states and localities continue to rely on them? Partly because they have the appearance of scientific backing, but mainly because of a herd

---

effect. Once some states and localities develop targeting strategies, others feel compelled to follow suit.

## References

- Barkley, David L. and Henry, Mark S. 1997. "Rural Industrial Development: To Cluster or Not to Cluster?". *Review of Agricultural Economics* 19(2): 308-325
- Bergman, Edward M. and Feser, Edward J. 1999. "Industrial and Regional Clusters: Concepts and Comparative Applications." In: Jackson, R. W. (Ed.) *The Web Book of Regional Science*, Regional Research Institute, West Virginia University, <http://www.rr.i.wvu.edu/WebBook/Bergman-Feser/contents.htm>.
- Bresnahan, Timothy, Gambardella, Alfonso and Saxennian, AnnaLee. 2001. "'Old Economy' Inputs for 'New Economy' Outcomes: Cluster Formation in the New Sillicon Valleys". *Industrial and Corporate Change* 10(4): 835-860
- Buss, Terry F. 1999a. "The Case Against Targeted Industry Strategies". *Economic Development Quarterly* 13(4): 339-356
- Buss, Terry F. 1999b. "To Target or Not to Target, That's the Question: A Response to Wiewel and Finkle". *Economic Development Quarterly* 13(4): 365-370
- Danson, Michael and Whittam, Geoff. Regional Governance, Institutions and Development. <http://www.rr.i.wvu.edu/WebBook/Danson/chapterfive.htm>
- Desrochers, Pierre, Sautet, Frederic. 2004. "Cluster-Based Economic Strategy, Facilitation Policy and the Market Process". *Review of Austrian Economics* 17(2/3): 233-245
- Feldmann, Maryann P., and Francis, Johanna. 2004. Homegrown Solutions: Fostering Cluster Formation. *Economic development Quarterly* 18(2): 127-137
- Feldmann, Maryann P., Francis, Johanna and Bercowitz, Janet. 2005. Creating a Cluster While Building a Firm: Entrepreneurs and the Formation of Industrial Clusters. *Regional Studies* 39(1): 129-141
- Ferris, Stephen and Gawande, Kishore 1998. Coordination Failures and Government Policy: Evidence From Emerging Countries. Working Paper
- Hoff, Karla and Stiglitz, Joseph. "Modern Economic Theory and Development"

- Howitt, Peter. "Coordination Failures". In Vane H. and Snowden B. eds. *An Encyclopaedia of Macroeconomics*. Edward Elgar
- Ketels, Christian H. M. 2003. "The Development of the cluster concept – present experiences and further developments". Paper Prepared for NRW Conference on Clusters, Duisburg, Germany, 5 December
- Rodriguez-Clare, Andres. 2005. Coordination Failures, Clusters and Microeconomic Interventions. Inter-American development Bank *Working Paper*. June
- Marshall, David. "Understanding the Asian crisis: Systemic Risk as Coordination Failure". *Economic Perspectives*. Federal Reserve Bank of Chicago
- Maskell, Peter and Kebir, Leila. 2005. What qualifies as a cluster theory?. DRUID *Working Paper* no. 05-09
- Martin, Ron and Sunley, Peter. 2003. "Deconstructing Clusters: Chaotic Concept or Policy Panacea?". *Journal of Economic Geography* 3: 5-35
- Nadvi Khalid and Barrientos Stephanie. 2004. *Industrial Clusters and Poverty Reduction. Towards a methodology for poverty and social impact assessment of cluster development initiatives*. UNIDO. Vienna
- Porter, Michael. 2000. "Location, Competition, and Economic Development: Local Clusters in a Global Economy." *Economic Development Quarterly*, 14(1): 15–34
- Porter, Michael. 1998a. *On Competition*. Harvard University Press
- Porter, Michael. 1998b. "Clusters and the New Economics of Competition" *Harvard Business Review* 76(6): 77-90
- Sautet, Frederic. 2002. *Economic Transformation, The Pretence of Knowledge and the Process of Entrepreneurial Competition*. New Zealand Treasury Discussion Paper <http://www.treasury.govt.nz/et/#9>
- Yehoue, Etienne B. 2005. "Clusters as a Driving Engine for FDI". IMF *Working Paper* 05/93