THE CLUSTERS (UN)ATTRACTIVENESS FOR FOREIGN DIRECT INVESTMENTS

Marta GOETZ, PhD
Institute for western affairs im. Zygmunta Wojciechowskiego,
Aldona STALGIENE, MBA
Department of Farms and Enterprises Economics
Lithuanian Institute of Agrarian Economics

Zina GINEITIENE, Prof. habil. dr.
Department of Business Economics
Faculty of Economics and Finance Management

The article involve the scientific literature based on analysis of clusters, examines the link between cluster development and inward foreign direct investment. Cluster is more and more important phenomena, though, new studies stress their drawbacks. The closer look at three identified sources of cluster attractiveness for investors particularly foreign ones. These are: pecuniary agglomeration economies, knowledge-conducive environment and social dimension. It seems in fact that under some circumstances agglomeration economies, knowledge environment and institutional and social dimension of cluster (understood as reduced uncertainty) may have adverse affect on companies discouraging them from location in cluster. It tries to compile the possible side-effects of identified advantages attributed to clusters.

Keywords: Clusters, localization economies, spatial concentration, foreign direct investment
JEL classification:
R11 - Regional Economic Activity: Growth, Development, Environmental Issues, and Changes R12 - Size and Spatial Distributions of Regional Economic Activity; F21 - International Investment; Long-Term Capital Movements

Introduction

This paper invites to have a closer and more critical look at sources of cluster attractiveness. In other words, it tries to "filter" agglomeration economies, knowledge environment and social dimension of cluster and pick up the possible "strings attached". Potential, hidden traps of these three sources will be outline.

Recent work has revealed that agglomeration economies, knowledge environment as well as social dimension of cluster concept might be regarded as negative phenomenon. In fact, in some cases, under some circumstances they may adversely affect companies residing inside cluster. The results obtained do not undermine the clusters attractiveness. Though, they underline the relativity of identified factors. Seen this way, this paper can be regarded as an enrichment of researches done so far, pointing to the multifaceted character of clusters' attractiveness for foreign direct investment.

1. Agglomeration (dis)economies

Special attention paid to agglomeration economies derives from the fact that they constitute the core of the cluster concept (spatial concentration – Porter 2004) and are regarded as first step in evolution of fully fledged clusters (Andersson 2004). Agglomeration economies can referre to two sources of Marshall's externalities (Marshall 1920) – namely labor pool and input-output linkages. These agglomeration economies were understood as positive external effects deriving from the spatial concentration of companies leading to cost reduction and revenue rise (Bekes 2004; Mindelfahrt-Knarvik *et al.* 2001). Agglomeration may be regarded as a result of positive externalities of economies of scale (Fujita and Thisse 1996; Ottaviano and Thisse 2004), but it may be as well understood in terms of spatial concentration, which allows positive externalities to appear, meaning that critical mass of firms in one place is needed first for positive externalities to emerge (Rosenthal and Strange 2003).

Agglomeration economies including labor pool and backward-forward linkages are regarded by New Economic Geography as centripetal forces. In opposite direction act so-called centrifugal forces. Centripetal and centrifugal forces can be presented as resulting in two externalities, first when

firm enters a region and starts production it increases the demand for upstream activities thus expanding the home market and second it also increases local supply of downstream output, leading to the so-called market crowding effect. These two forces work against each other and agglomeration takes place when market expansion effect dominates the market crowding effect (Bekes 2004). Therefore one has to be aware that centripetal forces, undoubtedly present in cluster, are accompanied by centrifugal forces, which at certain moment may exceed the centripetal forces, which make clusters attractive and lead to leaving cluster due to some emerging disadvantages. These include among others congestion. Pedersen, while investigating NorCOM cluster, indicates that its technological strength positively attracts resources in terms of financial funds and human capital. The knowledge base is sustained through low labor mobility, spinoffs and knowledge spillovers. However it also occupies many of the available resources and raises wages. Pedersen draws attention to lock-in situation, where cluster's development leads to increasing demand for specialized skilled workforce and thus to increase in wages. (Pedersen 2005). Cantwell mentions about so-called competitive deterrence effects.. This means that high concentration of enterprises is perceived as negative factor repelling new entrants from a given location (Cantwell 2005). Since centrifugal and centripetal forces are inherently attributed to agglomerations, it seems essential to investigate the threshold, when agglomeration economies turn into diseconomies. However, it seems reasonable to claim that in cluster case the agglomeration economies definitely prevail over diseconomies. Otherwise cluster become to disappear, undergo transformation and is approaching its final stage of life-cycle. Regarded in this way, it seems that whereas in clusters agglomeration economies outnumber diseconomies, at a certain point the balance shifts and diseconomies might outweigh positive externalities. In NEG this situation is considered as bifurcation. Recurring feature of models of new economic geography is bifurcation. Bifurcation is a critical value of parameters at which the qualitative behavior of the economy's dynamic changes. (Fuijta *et al.* 1999) They arise because of the tensions between centrifugal and centripetal forces, respectively promoting agglomeration and pushing away. Models in new economic geography are according to Fujita, Krugman and Venables, generally about answering two questions: when is a spatial concentration of economic activity sustainable? (Question about sustain point in bifurcation - critical value at which an economy with agglomeration becomes possible) and when is a symmetric equilibrium, without spatial concentration, unstable? (Question about break point in bifurcation – critical value at which an economy without agglomeration becomes unstable) (Fuijta *et al.* 1999)

The problem of agglomeration (dis)economies requires definitely further detailed analysis. However, it can be sum up already that both labor pool as well as backward-forward linkages identified as centripetal forces may act as centrifugal ones. This means that too many companies have to compete for the labor pool becoming scarce, have to compete for resources and suppliers running out (and thus becoming more expensive) and due to high competition are forced to charge less for their products and services. Audia and Sorenson argue that clusters dis-attractiveness might result form the fact that they are in fact "structurally equivalent organizations", which means that companies have to compete with each other to acquire vital resources. (Audia and Sorenson 2000)

2. Challenging knowledge environment

Broadly understood knowledge as a source of cluster's attractiveness for FDIs had been distinguished due to the intangible character of this production input, mainly so called "tacit knowledge" (Malmberg and Maskell 1999; Dunning 2000; Krugman 1991). Special attention devoted to clusters stemmed from the growing role of knowledge-seeking foreign direct investments – FDIs (Chung and Alcacer 2002), and the phenomenon of KBE – knowledge based economy (Malmberg and Maskell, 1999; Dunning 2000). As a motivation for foreign direct investments, more recently there has been increasing emphasis both in theory as well as in empirical studies on technology-sourcing rather than technology-exploitation.

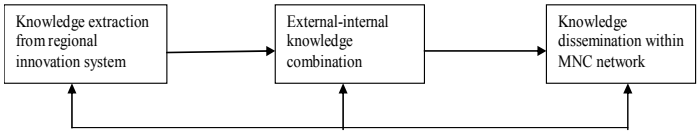
Clusters as proved in some studies seem to be an environment conducive for knowledge processes and often possess knowledge base (where both knowledge base and knowledge mechanisms constitute the so-called knowledge environment applied in earlier studies). (Dunning 2000; UNCTAD WIR 2005; Malmberg and Maskell 1999; Dahl and Pedersen 2002; Longhi and Keeble 2000; Chung and Alcacer 2002; Zeller 2005). Though, some side effects or hidden traps of knowledge environment may occur as well.

Porter has already drawn attention to inertia and "group thinking" – rigidity for changes, adoption of new ideas – which ultimately may lead to lock-in situation (Porter, 2000). As put by Ichniowski and Shaw, learning new skills is easy, unlearning old habits is tough. (Ichniowski and Shaw 1995) Other authors mention about the sclerosis and petrifaction of clusters (Scherer and Bieger 2003). Clusters have to open up to external energy in order to avoid an entropic death. (Keeble and Wilkinson 2000) Or as put by Steiner the risk of regional specialization – are today's cluster-specialized regions the problem areas for tomorrow? (Steiner 1998). Tichy underlines, that whereas specialization increases the efficiency it also increases the risk (Tichy 1998).

Another problem refers to what Pedersen (2005) calls epistemic communities and their narrow scope. Epistemic communities are network of knowledge-based experts or groups with an authoritative claim to policy-relevant knowledge within the domain of their expertise. Members hold a common set of causal beliefs and share notions of validity based on internally defined criteria for evaluation, common policy projects, and shared normative commitments. Physical proximity does not imply the existence of social proximity, since such epistemic communities never include all members of the local community. Knowledge may be far from accessible to most those located nearby. Knowledge circulates in small epistemic communities, which are centered around single firms, rather than flowing freely within clusters.

As far as FDIs are concerned, according to Andersen and Christensen (2005), tapping into localized knowledge is not enough for mulitnational enterprises, which is knowledge seeking. Next steps relate to internal-external knowledge interface. Combining newly accessed knowledge with the one already existing within company and consequently disseminating this new one across company pose a challenge for mulitnational enterprises. This chain of steps, which needs to be taken into account can be termed as a move from localized to corporate excellences.

Scheme 1. From localized to corporate excellence



Source: Andersen P., Christensen R., (2005)

This point to the importance of knowledge mechanisms - one of two dimensions of knowledge environment (besides knowledge base).

Attention could be drawn to the fact that perception of knowledge spillovers by foreign investors depends on their status, i.e. whether they are technology laggards or leaders (Belderbos *et al.* 2004). As far as laggards are concerned, they regard the knowledge spillovers as a positive factor attracting them to a given place. The opposite is true for leading investors, which may be deterred from locations offering high knowledge spillovers, as those are perceived in the categories of threat (Nachum and Wymbs 2002). Studies by Belderbos, Lykogianni, and Veugelers (2004) suggest that the attractiveness of knowledge spillovers for foreign investors is ambiguous. Knowledge spillovers may be regarded as threat and involuntary leakages of possessed knowledge by some FDI mainly form leading technological countries. Pedersen (2005) underlines, that knowledge flows through informal contacts and mobility of employees may have negative effects, such as loss of information to competitors could potentially weaken a firm's performance.

3. Social and institutional constraints

The so called social and institutional dimension of cluster took the form of reduced uncertainty. Uncertainty had been distinguished as the third source of potential clusters' attractiveness, as the analysis concerned the clusters' role for foreign investors and those are especially affected by information asymmetry and other problems stemming form non-locality. Moreover, it gives account to the duality of clusters' existence. It may be namely regarded as "bottom-up" or "top-down" phenomenon, i.e. natural, spontaneous one or political, designed one. It must be noted, that classifying cluster strictly to such dimension is almost impossible, as all clusters seem to reveal features of both extreme situations. Agglomeration economies and knowledge spillovers refer to

cluster as natural phenomenon, whereas uncertainty hypothesis points to the political character of cluster. It is however only due to the assumptions taken in this paper, i.e. organizing capacity as uncertainty reducing.

Uncertainty was considered in terms of information asymmetry, where the information (data) itself is a notion smaller than knowledge. Uncertainty concept was regarded in terms of transaction costs and "organizing capacity" (which clusters are supposed to provide). It seemed reasonably to assume, that this capacity, including social support, public-private partnerships, views, strategies, and leaderships as intangible assets (Van den Berg 2001), could contribute to the atmosphere of trust.

The scope and variety of possible problems, which might be attributed to social and institutional dimension of clusters' potential attractiveness for investors particulalry FDI, seems to be significant. Although, as it has been proved in earlier studies social proximity and institutional frameworks of cluster can contribute to reduced uncertainty and thus rise cluster's attractiveness for FDI (Maskell and Kebir 2005; Gjerding 2005; Van den Berg 2001; Jiang 2002; Zeller 2005; Lundvall 2002; Dunning and Narula 1996). Nevertheless, some clusters' characteristics and processes taking place there might increase the uncertainty faced by foreign investors.

Referring to the principle of multiplier effects common trajectory of development in cluster, which may be very beneficial as well as very detrimental to the companies within cluster and increase their vulnerability to external shocks. This problem seems to be linked with high specialization observed in clusters. Results obtained by Szalavetz (2004), while investing Hungarian regions, point to the fact, that diversification which makes the region less vulnerable to negative turns in the demand cycles of specific industries, is a precondition for success. It could be said, that urban diversity (as opposed to high specialization) are a way to reduce risk and achieve complementarities (Rosenthal and Strange 2003).

Entering the cluster by mulitnational enterprises (MNC) may be perceived negatively by local inhabitants – employees – and may lead to some social disturbances, lack of willingness to cooperate, etc. Lorenzen and Mahnke (2002) draw attention to social barriers existing in clusters, such as suspicion towards FDI or even threats of social sanctions against foreign companies. While it is possible for most newcoming firms to establish direct relations to a few firms, invest heavily in them and hence build mutual trust and shared understanding, it may be much more difficult to become part of a network of indirect relations, because such networks are often 'identity based' i.e. based on social conventions and ambiguous ways of qualifying for trust and acceptance. MNCs may be excluded from some indirect relations, such as membership to industrial associations or social clubs, or incumbent firms may 'hide' social norms or principles for communication, possibly allowing the newcomer into social networks, but refraining from explaining how, where and when local information sharing takes place. Hence, social entry barriers may constitute a serious barrier to reaping some agglomeration economies. The severity of social entry barriers depends upon how incumbent firms view newcomers. Consequently, some barriers may apply to all newcomers, while some are more strategic and depend upon whether newcomers are perceived as a potential competitive threat or as a potential source of knowledge.

Similar problem is raised by Nachum and Wymbs (2002), who claimed that very homogenous culture of cluster makes it more hermetic (airtight) and less inaccessible for foreigners discouraging them from cluster. This is particularly true for FDIs coming from culturally-distant countries. It increases the difficulties of integrating in the cluster and taking active part in the local dynamics of collective learning and shared experiences that determine the benefits of cluster location.

Pedersen (2005) stresses, that so popular in clusters spinoffs may have negative effect on mother firms. Quoting some other authors, he argues that life chances of parent organization decrease, especially when higher ranked employees leave to found new firms. A parent-brain-drain represents a disruption in the routines of the parent, which clearly affects the future of the firm.

Duranton and Puga (2003) highlight the problem of inefficient herding, assuming that the wrong decision was multiplied and repeated by other cluster's members, which may occur in cluster. Assume that firms need to make some investment, say in capacity. Demand is uncertain (e.g., it can be high or low) and each firm privately receives a noisy signal about this. Firms sequentially make their investment with knowledge of previous decisions. The first firm decides on the basis of its own signal only. Then, the second firm uses not only its own signal but also the information it infers from what the first firm did, etc. If the first two firms receive the wrong signal, they both make the wrong

decision. Then, even if the third firm receives the good signal, it rationally chooses to discard it and makes the wrong investment. This is because this firm realizes that the other two firms have received a different signal. This carries more weight than its own signal. Obviously any firm thereafter will also make the wrong decision.

The above described effect may rise cluster's vulnerability to external shocks as well as contribute to subsequent cluster decline. The institutional framework present in clusters may facilitate the operation of FDI, but it can also put some constraints on it. Institutional thickness can provide for rigidity or thus limit or even inhibit activities.

And last, but not least, the issue of high transparency and peer pressure observed in clusters. As it was stated these factors may positively affect information asymmetry experienced by foreign investors and reduce transaction costs they have to incur.

However, Mody, Razin and Sadka (2003) have found while investigating the role of information in driving FDI, that the degree of corporate transparency in the host country is negatively correlated with FDI flows. As they argue, when the signal becomes more accurate, the benefit of screening technology declines. Therefore the advantage of FDI investors in their cream-skimming skills is less pronounced and FDI inflows are expected to be less abundant. Results obtained by these authors point to the fact, that transparent environment in host country may be regarded by some FDI as detrimental for their profits. This is because the rent stemming for unique knowledge declines. Reflections, regarding democratic processes of policy adoption, made by Cukierman (1980) go in similar directions. Cukierman showed that open debates, constituting the part of democratic legislature processes, may cause uncertainty increase and thus lead to postponing investment.

To sum up it seems, that common trajectory, high specialization compounded by multiplier effects are one of the most dangerous aspects of location within cluster. Moreover, for investors while entering cluster run the risk of facing social unwillingness, suspicion or other cultural barriers.

According to Fritz (1998) and Tichy (1998) there are two types of risk associated with regional clusters, in analogy to regional portfolio concept a structural and cyclical risk can be differentiated. The first kind of risk is manifest in the well-known case of old industrial areas, where a permanent decline in specific sectors leads to the decline of whole regions, which specialized in this industries. Regions become closed systems; the petrifaction of the cluster structures impedes innovation and subsequently leads to an inability to adjust to new situation. The second type of risk refers to economic stability: unnecessary fluctuations cause inefficiency and welfare losses (Fritz, 1998). Moreover Tichy (1998) points to a two-sided cluster trap between full specialization on the one side and non- specialization with skill deficit on the other side. Tichy applies notions such as indispensable ageing of clusters, and the nightmare of old industrial areas with deserted plants and unemployed workers. The more successful the cluster is the more it is in danger of petrifaction - cluster is more likely to become a problem area the more successful it is.

Conclusions

After theoretical and empirical analysis, it can be stated that:

The results obtained do not undermine the previous conclusions regarding clusters' attractiveness. Though, they underline the relativity of identified factors. Seen this way, this paper can be regarded as an enrichment of researches done so far, pointing to the multifaceted character of clusters' attractiveness.

However, it seems that the ambiguity of clusters' attractiveness specifically for FDI stems not only from side-effects of identified factors; it might be as well attributed to other issues.

Further analysis should take into account aspects such as the life-cycle of clusters or existence of different types and modes of investments. This will certainly help obtaining more completed picture; a full-picture of clusters' attractiveness.

SOURCES:

1. Andersen, P. H., Christensen, P. R., 2005. From localized to corporate excellence How do MNCs extract, combine and disseminate sticky knowledge from regional innovation systems? // DRUID Working Papers 05-16, DRUID, Copenhagen Business School, Department of Industrial Economics and Strategy/Aalborg University, Department of Business Studies. P. 6

2. Andersson, T. 2004. *Linking National Science, Technology, and Innovation Policies with FDI policies*, [online] [accessed 10 September 2012] Available from Internet: <http://www.unctad.org/sections/meetings/docs/andersson_en.pdf>.
3. Audia P., G., Sorenson O., The social structure of entrepreneurial activity: Geographic concentration of footwear production in the United States 1940-1989, American Journal of Sociology, 106 (2), p.424-62, 2000
4. Bekes, G., (2004) *Location of manufacturing FDI in Hungary: How important are business-to-business relationships?* Central European University, 29.07.2004. (puslapis
5. Belderbos R, Vandenbussche H, Veugelers R, 2004, Antidumping duties, undertakings, and foreign direct investment in the EU European Economic Review, vol. 48, no. 2 (Apr.), pp. 429 – 453
6. Cantwell J., Globalization and the location of firms, Elgar Reference Collection, USA, 2004, p. xxi
7. Chung W., Alcacer J., (2002) *Knowledge seeking and location choice of foreign direct investment in the United States*, Management Science, Vol. 48, No.12, pp.1534-1554.
8. Cukierman A., The effects of uncertainty on investment under risk neutrality with endogenous information, The Journal of Political Economy, vol.88, no.3, 1980, p.474
9. Dahl M., Pedersen C., (2002) *Knowledge flows through informal contacts in industrial clusters: Myths or realities?* DRUID Working Paper, Aalborg.
10. Dunning J., (2000) *Regions, Globalization and the Knowledge Based Economy*, Oxford University Press: Oxford.
11. Dunning J., Narula R., (1996) *Foreign direct investment and governments: Catalyst for economic restructuring*, Routledge: London, New York. P 17-18
12. Duranton G., Puga D., *Micro-Foundations of Urban Agglomeration Economies*, NBER Working Paper No. 9931, 2003, p. 44
13. Fritz O., A risk oriented analysis of regional clusters // Steiner M., Clusters and Regional Specialization, European Research in Regional Science 8, 1998, p. p. 183-185
14. Fuijta M., Krugman P., Venables A., The Spatial Economy – Cities, Regions, and International Trade, The MIT Press, Cambridge, 1999, pp.9-10; 34 – 41
15. Fujita M., Thisse J., F., 1996. *Economies of Agglomeration,* Journal of the Japanese and International Economics, pp.339-378.
16. Gjerding A., (2005) *Considering foreign direct investment in Denmark: The eclectic paradigm of Dunning revisited*, Department of Business Studies, Aalborg University. P.6
17. Ichniowski, Shaw, 1995 in: Old dogs and new tricks: determinants of the adoption of productivity-enhancing work practices, Brookings Paper on economic activity, Microeconomics 1-65, in: Tichy G., Clusters: less dispensable and more risky than ever;
18. Jiang W., (2002) *Information costs and the location decision of foreign direct investment in China*, University of Michigan, Co-winning Essay State University Ohio. P.3
19. Krugman P., (1991) *Geography and Trade*, MIT Press: Cambridge.
20. Longhi C., Keeble D., (2000) *High-technology clusters and evolutionary trends in the 1990s*, in Keeble D., Wilkinson F., *High-Technology Clusters, Networking and Collective Learning in Europe*, Ashgate: Amsterdam.
21. Lorenzen M., Mahnke V., 2002 MNC Entry in Regional Knowledge Clusters: Acquisition or Greenfield investmen?, Submitted to Scandinavian Journal of Management
22. Lundvall, B.-A. (2002), Innovation, Growth, and Social Cohesion. The Danish Model, Cheltenham: Edward Elgar p. 99
23. Malmberg A., Maskell P., (1999) *Localised learning and industrial competitiveness*, Cambridge Journal of Economics, Vol.23, No. 2, pp.167-185.
24. Malmberg A., Maskell P., (1999) *Localised learning and industrial competitiveness*, Cambridge Journal of Economics, Vol.23, No. 2, pp.167-185.
25. Marshall, A. 1920. *Principles of economics*, Macmillan: London.
26. Maskell P., Kebir L., (2005) *What qualifies as a cluster theory*, DRUID Working Paper, No. 05-09, Aalborg.P. 7
27. Mindelfart-Knarvik, K.H., Overman H., Venables, A., 2000. *Comparative advantage and economic geography: estimating the determinants of industrial location in the EU*, CEPR

Working Paper No. 2618
28. Mody A, Razin A., Sadka E., The role of information in driving FDI: Theory and evidence, NBER Working Paper no. 9255, 2002, p.13
29. Nachum L, Wymbs C (2002) Firm specific attributes and MNE location choices: financial and professional service FDI to New York and London. Working Paper No. 223, ESRC, UK: Centre for Business Research, University of Cambridge. P. 11
30. Ottaviano G., Thisse J.F., 2004. *New Economic Geography: what about the N*?,* CEPR, CORE and Bologna University (occasional paper)
31. Pedersen Ch., The Development Perspectives for the ICT sector in north Jutland – PhD Thesis, Aalborg University, Department of Business Studies, 2005, p. 21, 145
32. Pedersen, Ch., 2005. The Development Perspectives for the ICT sector in north Jutland – PhD Thesis, Aalborg University, Department of Business Studies, 2005, p. 9-10, 21
33. Porter M., Location, competition and economic development: Local clusters in a global economy, Economic Development Quarterly, Feb. 2000, vol. 14, p. 21
34. Rosenthal S., Strange W. 2003. *Evidence on the Nature and Sources of Agglomeration Economies*, Handbook of Urban and Regional Economics, Vol. 4.
35. Rosenthal S., Strange W., Evidence on the Nature and Sources of Agglomeration Economies, Handbook of Urban and Regional Economics, Volume 4, 2003, p. 11
36. Scherer R., Bieger T., Clustering – das Zauberwort der Wirtshcaftsfoerderung, Beitraege zur Regionalwirtschaft, Schriftenreihe des Instituts fuer Oeffentliche Dienstleistungen and Tourismus, Universitaet St. Gallen, 2003
37. Steiner M., The discreet charm of clusters: An introduction in Clusters and Regional Specialization, European Research in Regional Science 8, 1998, p. 5
38. Szalavetz A., 2004 The role of FDI in fostering agglomeration and regional structural change in Hungary, Workpackage no.4 – The role of FDI in the re-location of Industrial Activity, p.5
39. Tichy G., Clusters: less dispensable and more risky than ever // Steiner M., Clusters and Regional Specialization, European Research in Regional Science 8, 1998, p. 226-237
40. Tichy G., Clusters: less dispensable and more risky than ever; Fritz O., A risk oriented analysis of regional clusters in: Steiner M., Clusters and Regional Specialization, European Research in Regional Science 8, 1998, p. 228
41. Van den Berg L., Braun E., Van Winden W., (2001) *Growth Clusters in European Metropolitan Cities*, Ashgate: Amsterdam. P. 7
42. Zeller C., (accessed September 2005) *North Atlantic Innovative Relations of Swiss Pharmaceuticals and the Proximities with Regional Biotech Arenas*, University of Bern – university webpage. P.5