The Global Challenge to Industrial Districts

Small and Medium-sized Enterprises in Italy and Taiwan

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have the right product at the right time ready for the right market (Zielinger, M. "Ace in the Hole: Taiwan's Acer makes surprising comeback in America", Far Eastern Economic Review, 1/26/95, p. 52).  
55. For an early critique, see Ernst and O'Connor (1989, chapter II).  
56. Kotler et al. (1985) remains the classic source.  
57. For the concept of global supply chain management, see Lee and Billington (1995) and Levy (1995).  
58. Design, in this context, includes the capacity to make quick changes in the configuration of motherboards in order to be able to integrate the latest microprocessor generation. While this is a very demanding requirement, it is quite different from the capacity to define architectural standards and create new markets.  
59. This research has clearly established that successful late industrialization critically depends on the international sourcing of knowledge. Examples include Dahlman, Ross-Larson and Westphal (1987); Bell and Pawitt (1993); Nelson and Pack (1995); Kim (1997); Lall (1997); Ernst and Lundvall (1997/1998); and Ernst, Ganiatsos and Mytelka (1998).

6. New Challenges for Industrial Clusters and Districts: Global Production Networks and Knowledge Diffusion

Dieter Ernst, Paolo Guerrieri, Simona Iammarino and Carlo Pietrobelli

1. THE VARIETY OF INDUSTRIAL CLUSTERS AND DISTRICTS AND THEIR EVOLUTION OVER TIME

The main findings reported in this book suggest three inter-related propositions. First, there is no one best model for organizing an industrial district or an industrial cluster, since a diversity of institutional arrangements is possible and each has proved successful in different circumstances. Second, clusters are not cast in iron, but they evolve over time. The third proposition is that globalization reshapes the upgrading options for SME-based clusters, by providing a variety of international knowledge linkages. In a nutshell, we argue that globalization changes both the concept of proximity and the scope of competition: a necessary prerequisite for competitive survival is the capacity to foster the co-evolution of local and global linkages and networks, to develop new interactive modes of knowledge creation and to adjust strategy and organization at short notice.

The first two propositions are fully confirmed by the reorganization of both the Italian industrial districts and Taiwanese SME-based clusters, particularly over the past decade, as assessed in this volume. The typical uniformity in the growth process of SME systems, experienced during the 1970s and 1980s in Italy's local systems, has come to an end. New diversified patterns of growth have been observed and the range of options chosen expands when attempting to draw international comparisons. The empirical analysis, based on a survey carried out in some Italian IDs specialized in textiles and clothing, shows that the reaction to the globalization challenge may differ greatly even among IDs specialized in the same industrial sector. No common and unidirectional development pattern has proved valid any more, and different avenues have been followed to face
the new competitive challenges posed by the globalization of markets and technology. Moreover, the scope and variety of inter-firm organization is continuously expanding, in relation to the increasing internationalization of economic and innovative activities.

Among the crucial factors explaining the evolution of the ID's industrial organization are the (external) inducements derived from technology and technological change that appear important in a world increasingly shaped by the new ICT regime and the growing role of the knowledge economy.

The recent approaches to the analysis of spatial agglomeration of economic activities have gradually shifted the attention from traditional purely economic factors to the mechanisms of knowledge diffusion and accumulation established in spatial clusters of related industries, where learning dynamics and knowledge exchanges are embedded in a distinct environment of interactions among different subjects, sharing common attitudes towards particular types of learning. Dynamic agglomeration economies are likely to affect growth rates and have been considered as central to assess the patterns of development of industrial districts and their reaction to the rapid change brought about by the global competition.

The changes in the technology paradigms and trajectories that crucially affect the foundations of competitiveness are increasingly shaped by the internationalization process and contribute to determine the form of company strategy, especially for what concerns inter-firm attitudes, and the industrial organization prevailing within an enterprise cluster. The shift in the technological paradigm that applies to all sectors requires a substantial industrial reorganization. Again, firms traditionally operating within ID's need to learn to source their technological knowledge from the most convenient locations outside the district, and to reorganize their knowledge linkages from a cluster-based approach to a global and broader approach, such as that represented by the global production network model.

Our focus in this concluding chapter is in particular on the third proposition, that is, the spatial impact of globalization, especially on knowledge diffusion and innovation. In the light of the findings of our book, an important objective is to assess and clarify some propositions on the spatial impact of globalization that have been proposed by innovation and growth theorists (for example, Antonelli, 1999), trade economists (for example, Krugman, 1995), economic geographers (for example, Swann et al., 1998; Scott, 1998), and sociologists (for example, Castells, 1998) that are giving rise to intense policy debates.

2. THE SPATIAL IMPACT OF GLOBALIZATION: RECONSIDERING THE AGGLOMERATION ECONOMIES ARGUMENT

The question of how globalization affects the geographical dispersion of knowledge and innovation, and whether this fosters or constrains local capability formation, has enjoyed an important role in theoretical debates on the role of FDI and multinational corporations (for example, Dunning, 1998). More recently this question has also received attention in innovation theory, the theory of the firm and economic geography (Chandler et al., 1998).

The dominant position has been that innovation, in contrast to most other stages of the value chain, is highly immobile: it remains tied to specific locations, despite a rapid geographical dispersion of markets, finance and production (Archibugi and Michie, 1997). The main reason for such spatial stickiness is the interactive nature of innovation (Kline and Rosenberg 1986; Lundvall, 1988): it requires dense knowledge exchanges between users and producers, much of it being tacit knowledge. Such information-rich transfers require localized clusters within a nation, or even better, an industrial district or micro-region (Porter, 1990; Lundvall, 1992; Saxenian, 1994; Storper and Salais, 1997; Markusen, 1998). This reflects the importance of dynamic agglomeration economies: co-location facilitates a continuous, intense and rapid exchange of new ideas about technical, organizational and production improvements.

Thus knowledge and innovation do not easily migrate across borders: they do not automatically follow, once production moves. If this is true, this would imply that even while globalization extends its reach beyond trade and finance, giving rise to an extensive relocation of production, this may not help to reduce the huge international gaps in knowledge and innovation. For industrial countries, the spatial stickiness of innovation may hinder attempts to sustain their technological superiority. For developing countries, however, spatial stickiness of innovation may fundamentally constrain their sources of growth, and hence perpetuate global inequality.

Proximity exerts a powerful constraining effect on the location of economic activities: industries tend to agglomerate and cluster in particular geographical locations, giving rise to persistent patterns of national and regional specialization. Alfred Marshall's pioneering concept of externalities (1890/1916, p. 271) helps identify both static and dynamic economies of agglomeration. While static agglomeration economies focus on efficiency gains resulting from scale economies, transaction and transport costs and input-output linkages, dynamic agglomeration economies highlight the central role of learning and knowledge creation.

Marshall's important observations have been forgotten for a long time:
until recently neo-classical economists have neglected the agglomeration or clustering of related activities. Since Krugman (1991a, 1995), economic geography has been re-established as a respectable topic for mainstream economists. This has brought back into economic theory increasing returns and other anomalies like the path dependency of spatial location. Unfortunately these debates have remained trapped in the static efficiency paradigm, missing the importance of knowledge creation and learning.

Now, however, there is a growing literature that analyses the dynamics of spatial agglomeration. It is argued that clustering effects are particularly important for knowledge externalities and spillovers (Porter, 1990; Enright, 1998; Spender, 1998; Porter and Solvell, 1998; OECD, 1999). Concentrations of companies succeed when they co-operate as well as compete; the focus of co-operation is on the sharing of knowledge, skills and technologies among companies and with public agencies.

Dynamic agglomeration economies are considered to be an important determinant of firm behaviour. Resources and capabilities that are critical for a firm’s competitive success ‘can often be found inside a region, rather than within any single firm’; ‘regional clusters often involve activities that are shared across firms within the cluster’ (Enright, 1998, pp. 315-16). A regional cluster provides access to specific resources and capabilities that are difficult to reproduce otherwise; it enables a firm to engage in peculiar types of co-ordination and organization; and it allows the firm to share activities with other cluster participants (Enright, 1998, pp. 328-36).

Attempts to construct a neo-Marshallian agglomeration theory are a positive development, as long as we remain conscious of some inherent limitations. It is not possible to apply this concept today without substantial changes. We argue that globalization has created an explosive mix of forces that facilitate international knowledge diffusion, increasing the variety of international knowledge linkages. This creates new opportunities and challenges for the development and upgrading of SME-based industrial districts.

We need, therefore, an explicit analysis of the impact of globalization on agglomeration economies and on international knowledge diffusion. In this book some new insights and empirical evidence have been put forward along these lines. In addition, research on globalization has clearly established that the centre of gravity has shifted beyond the national economy. Cross-border linkages proliferate, with the result that no country can exist any longer in isolation. The same is true for regions and industrial clusters. They are rapidly becoming internationalized, and increasingly depend on international linkages (Duming, 1998) to import key inputs and to export outputs. Such external linkages cover both tangibles like materials and machinery, and intangibles like finance and knowledge. A significant increase in the share of

the latter is an important distinguishing feature of current rounds of globalization.

3. CONCENTRATED DISPERSION

Despite the fundamental advantages of keeping production at home and at close proximity, geographical dispersion has occurred on a massive scale. This reflects a shift in the carriers of globalization: while intra-industry trade dominated until the mid-1980s, since then, international production has grown considerably faster than international trade. By the 1990s sales of foreign affiliates of multinational enterprises (MNEs) far outpaced exports as the principal vehicle to deliver goods and services to foreign markets.

It is important to emphasize that globalization should not be reduced to geographic dispersion. In contrast to the assumptions of the convergence theory, globalization does not lead to the wonderland of a ‘borderless world’ (Ohmae, 1991) where capital, knowledge and other resources move freely around the globe, acting as a powerful force of equalization. Globalization does not rescind the gravitational forces of geography. It has given rise to ‘ever more finely grained patterns of locational differentiation and specialization’ (Scott, 1998, p. 399). Inequality and diversity prevail. A breathtaking speed of geographical dispersion has been combined with spatial concentration: much of the recent cross-border extension of manufacturing and services has been concentrated on a handful of specialized local clusters, both within the Triad and some emerging economies, especially in East Asia.

The previous chapters on the Taiwanese SMEs and the electronics industry have offered interesting evidence of this. For instance the supply chain of a computer company typically spans different time zones and continents, and integrates a multitude of transactions and local clusters. The degree of dispersion differs across the value chain: it increases the closer one gets to the final product, while dispersion remains concentrated especially for critical precision components.

In short, rapid cross-border dispersion coexists with agglomeration. Globalization often occurs as an extension of national clusters across national borders. This implies two things: first, some stages of the value chain are internationally dispersed, while others remain concentrated; second, the internationally dispersed activities typically congregate in a limited number of overseas clusters. This clearly indicates that agglomeration economies continue to matter, as well as the path-dependent nature of the cluster evolution. What needs to be explained, however, is how they have changed under the impact of globalization. Concentrated dispersion thus raises an
of standard equipment and components, there is no need for close interaction with their customers. However, intense interaction is essential for the client's relation with high-end suppliers of differentiated products that require proprietary technology. Paraphrasing price theory terminology, we call these suppliers technology makers.  

Intense localized interaction is necessary only for newly established and still relatively weak lower-tier suppliers (technology takers) who need to be nurtured until they can stand on their own feet. In the electronics industry, for instance, technology takers are frequently used as second sources. Their main purpose is to provide the client with a price leverage against suppliers who are technology setters and who are inclined to charge premium prices. Technology takers are also used as capacity buffers, especially when the technology setters resist client requests for price cuts. Divergent agglomeration propensities by type of supplier thus provides us with another differentiating factor that shapes distinct cluster development trajectories.  

Probably the most important caveat to the agglomeration economies argument is that dispersion is no longer restricted to lower-end activities. The essential point is that distinctions should be made not on the basis of different industries, but rather for different value chain stages, and this notably applies also to more traditional sectors such as textiles and clothing. There is a growing literature that explains the bifurcation of geographical location patterns along functional activities (Audretsch and Feldman, 1996; McKendrick et al., 2000) or value-chain stages (Dicken, 1992; Ernst, 1997c).  

We now turn to an important organisational innovation, GPN, and its role as a carrier of international knowledge diffusion.  

4. GLOBAL PRODUCTION NETWORKS AS CARRIERS OF KNOWLEDGE DIFFUSION  

Geographical dispersion poses increasingly demanding co-ordination requirements. As pointed out in Ernst's chapter, global production networks are an organizational innovation that enables network flagships to combine concentrated dispersion with systemic forms of integration. These networks integrate the dispersed supply and customer bases of a network flagship, that is, its subsidiaries, affiliates and joint ventures, its suppliers and subcontractors, its distribution channels and value-added resellers, as well as its R&D alliances and a variety of co-operative agreements, such as standards consortia. The concept of GPNs may have some important implications also for the future evolution of the Italian industrial districts.  

One reason to talk about systemic integration is the substantially broadened scope for international linkages: a GPN encompasses both intra-
firm and inter-firm linkages; creates a diversity of network participants; links together multiple locations; and covers a variety of value chain stages, including higher-end, and more knowledge-intensive ones.

This raises a number of important issues that are highly contested in the literature. For instance, GPNs do not necessarily give rise to less hierarchical forms of firm organization (as predicted for instance in Bartlett and Ghoshal, 1989). Network participants differ in their access to and in their position within such networks, and hence face very different challenges. One could use a taxonomy of network participants that distinguishes various hierarchical layers that range from flagship companies that dominate such networks, down to a variety of usually smaller, local network participants (Ernst, 2000b). The flagship is at the heart of a network: it provides strategic and organizational leadership beyond the resources that, from an accounting perspective, lie directly under its management control (Rugman, 1997, p. 182).

The strategy of the flagship company thus directly affects the growth, the strategic direction and network position of lower-end participants, like specialized suppliers and subcontractors. The flagship derives its strength from its control over critical resources and capabilities, and from its capacity to co-ordinate transactions between the different network nodes. Both are the sources of its superior capacity for generating economic rents. In the case of the industrial districts one could say that the flagship company has an equivalent that may be alternatively a leader or a hub performing a leadership role.

It is also important to distinguish the different capacities of firms to reap potential network benefits, and the institutions and policies required to support weaker network participants.

One critical capability, for instance, is the intellectual property and knowledge associated with setting, maintaining and continuously upgrading a de facto market standard. This requires perpetual improvements in product features, functionality, performance, cost and quality. It is such ‘complementary assets’ (Teece, 1986) that the flagship increasingly outsources. This has given rise to a number of organizational innovations that culminate in the spread of GPN. Take recent developments in the electronics industry which has become the most important breeding ground for a New Industrial Organization model (for example Chandler et al., 1998). For instance, for a typical flagship in the PC business, the cost of components, software and services purchased from outside, has increased from less than 60 per cent to more than 80 per cent of total (ex factory) production costs (Ernst and O’Connor, 1992, chapter 1). This has applied also to a lower technology sector such as textiles and clothing, even though to a much smaller extent. Here it is important to stress that the consequences of globalization on industrial restructuring and reorganization are going to be felt more and more across sectors in the future, and so the industry level could not be the relevant unit of analysis of such changes.

As external sourcing relations become geographically dispersed and increasingly complex, they are fraught with very high co-ordination costs: some firms report that the cost of co-ordinating such outside relations can exceed in-house manufacturing costs (see Chapter 5). As a result, the focus of cost reduction strategies is shifting from scale economies in manufacturing to a reduction of the cost of global sourcing.

In the electronics industry, as shown in our book, this has given rise to a proliferation of specialized suppliers, segmenting the industry into separate, yet closely interacting horizontal layers (Grove, 1996). Each of these individual market segments has become rapidly globalized. This has given rise to the co-existence of complex, globally organized sector-specific value chains, for instance for microprocessors, memories, PCs, HDD and other components, a process accelerated by the introduction of Internet-enabled virtual integration (Ernst, 2000c). Each of these value chains consists of a variety of GPNs that compete with each other, but that may also co-operate.

Most research on the location of knowledge-intensive activities has focused on the role of R&D, but this may be a too narrow focus (for details, see Ernst, 2000f). It is necessary to cast the net wider and to analyse the geographical dispersion of cross-functional, knowledge-intensive support services that are intrinsically linked with production. Even if these activities do not involve formal R&D, they may still give rise to considerable learning and innovation. The latter include for instance trial production (prototyping and ramping-up), tooling and equipment, benchmarking of productivity, testing, process adaptation, product customization and supply chain co-ordination. The result is that an increasing share of the value-added shifts across the boundaries of the firm as well as across national borders, as shown in the chapters on Taiwan’s experience.

5. INTENSITY OF LINKAGES

Systemic integration also implies that international linkages are no longer secondary, quasi-option to domestic linkages. Instead, existing clusters in any two countries supplement each other and may experience mutual inter-penetration. Under such conditions international linkages are essential for the continuous growth of an industrial cluster.

This is self-evident for network suppliers, especially lower tier ones, whose growth and strategic direction is heavily determined by the network flagship or the industrial district leader. Dependence, however, also works
the other way round. Insofar as that the flagship has moved to global sourcing, it may no longer have any credible domestic suppliers. This implies an erosion of the collective knowledge which used to be a characteristic feature of the flagship's home location. In some cases, that collective knowledge may have migrated for good to the supplier's overseas cluster(s).

This has important implications also for the experience of the Marshallian industrial districts and the high locally concentrated innovation capability that has been characterizing their evolution up to now.

The evolution of Silicon Valley provides a typical example of how the growing density of international knowledge linkages facilitates the continuous upgrading of an industrial cluster, providing new entry opportunities for small-scale start-up companies. This region has gone through various incarnations. Originally its main function was to churn out 'chips and computers', that is, to provide the basic inputs for the global electronics industry. Its economic structure was defined by a narrow product specialization, the incessant proliferation of new start-up companies, and disintegrated forms of firm organization; limited interaction within the firm between product development and production was compensated by a heavy reliance on the region's sophisticated knowledge base. Saxenian (1994a, p. 5), for instance, argues that, while the region's market orientation is global, its production and innovation system remains primarily local.

This distinction may have made sense during the early stages of development of the region; it is no longer valid. Today, Silicon Valley is a highly diversified industrial region that combines a handful of global network flagships with multiple layers of vibrant SMEs. Its growth is predicated on a capacity to connect and co-ordinate a variety of international linkages that cover almost all stages of the value chain, except hardcore R&D. This region now critically depends on its position as the source and control centre of a dense web of GPN that provide access to lower cost overseas supply bases, global labour markets for engineering talent and (potential) growth markets. Such international linkages can recharge local linkages. They provide important opportunities for international knowledge sourcing (a possible explanation for Silicon Valley's apparently inexhaustible upgrading capacity).

6. NEW OPPORTUNITIES AND CHALLENGES FOR SME INDUSTRIAL CLUSTERS AND DISTRICTS

We have seen that the main purpose of new forms of industrial organization like GPNs is to gain quick access to lower cost foreign capabilities that are complementary to the flagship's own competencies. In order to mobilize and harness these external capabilities, flagships are forced to accept a certain dispersion of the value chain. They must also broaden their capability transfer to individual nodes of their GPN. The (often unintended) result is a creeping migration of knowledge to external actors abroad. This opens new opportunities for international knowledge linkages that SME-based industrial districts should strive to exploit. However it also raises complex challenges for policies as well as firm organization.

A GPN can create a virtuous circle of international knowledge diffusion for two main reasons. First, it increases the length of a firm's value chain, as well as its logistical complexity. This creates new gaps and interstices that can be addressed by small, specialized suppliers. While in some cases (like for instance 'screw-driver' contract assembly), such entry may be short-lived, this is not necessarily so. Outsourcing requirements have become more demanding and have forced specialized suppliers to develop their capabilities. Over time, they may be able to upgrade their position from simple contract manufacturers to providers of integrated service packages, and hence increase the benefits that they can reap from network participation.

Second, once a network supplier successfully upgrades its capabilities, this creates further pressure for a continuous migration of knowledge-intensive, higher value-added support activities to individual network nodes. This may also include engineering, product and process development, reflecting the increasingly demanding competitive requirements. In the electronics industry, for instance, product life-cycles have been cut to six months, and sometimes less, and speed-to-market is of the essence. Overseas production thus frequently occurs soon after the launching of new products. This is only possible if key design information is shared more freely between the network flagship and its overseas affiliates and suppliers. Speed-to-market requires that engineers across the different nodes of a GPN are plugged into the lead company's design debates (both on-line and face-to-face) on a regular basis.

All that may enhance the diffusion of knowledge across firm boundaries and national borders, and hence reshape the development trajectories of industrial clusters. Nothing is automatic, however, about these processes.

Integration into GPNs poses a fundamental challenge. An increased mobility of firm-specific resources and capabilities across national boundaries may erode established patterns of specialization, especially for smaller firms. It may also erode the strengths of existing clusters. This may increase the global divide between firms and districts that have and those that do not have access to the information and knowledge that is necessary to reap the benefits of network participation. Many people are understandably concerned that this may lead to a loss of competitiveness, and hence to a decline in growth and welfare.

There is, however, cause for cautious optimism: network participation may
provide new opportunities for reverse knowledge outsourcing by SMEs and industrial districts. Our analysis has shown that GPNs are powerful vehicles for knowledge outsourcing across firm boundaries and national borders. It is important to emphasize their dual nature. Most debates focus on the strategic rationale underlying knowledge outsourcing by large global network flagship companies, and their organizational implications (for example, Patel and Pavitt, 1991; and Granstrand et al., 1993). For SMEs, though, what matters is the other side of the coin: participation in GPNs can facilitate reverse knowledge outsourcing by smaller, lower-tier network participants that may help them to overcome some of their knowledge-related disadvantages.

Three effects of such reverse knowledge outsourcing can be distinguished. First, it can act as a conduit for knowledge transfers for state-of-the-art management approaches as well as product and process technologies. Second, at the same time, these international linkages can also act as catalysts for knowledge creation and capability development within both SMEs and their local environments. Third, over time these linkages may also give rise to joint knowledge creation, with roughly symmetrical contributions from the global network flagship and from the developing country network participants.

In our book we have demonstrated this process for Taiwanese computer firms. Their involvement in the OEM business, the most important of international linkages, has gone through different incarnations, from very simple arrangements to highly complex ones. Each of these stages has given rise to a peculiar pattern of knowledge outsourcing. Paradoxically, an increasing reliance on OEM arrangements has had positive effects for knowledge creation in Taiwan’s computer industry. In contrast to a widespread perception (for example, Hobday, 1995), successful knowledge outsourcing does not necessarily require a sequential move from OEM, up to ODM, and then further up to OBM. Instead Taiwanese suppliers were able to learn and to create knowledge through concurrent implementation of these different knowledge outsourcing approaches.

It is important to emphasize the diversity of such linkages and their non-linear evolutionary character. International linkages include a variety of ties with sales, manufacturing and engineering support affiliates of foreign firms; they also include different forms and trajectories of integration into global production networks. Taiwanese firms, as shown in the book, have typically pursued different approaches in parallel, rather than concentrating exclusively on one particular linkage. It is through such concurrent and multiple linkages that a virtuous circle between knowledge outsourcing and knowledge creation becomes feasible. The Italian districts appear to share this tendency only to a minor extent, and a broadening of their linkages to reach out to distant foreign markets and actors such as large firms, flagship companies, and institutions appears desirable.

Reaping the benefits from participation in GPN cannot be left to market forces alone; much depends on the nature of supporting institutions and policies. An appropriate long-term perspective for the development of industrial districts must focus on improvements in specialization, productivity, and Hirschman-type linkages, all of which necessitate local capability formation and innovation. All these elements are essential prerequisites for improving the capacity to raise patient capital that is necessary for facility investment, R&D and welfare expenditures (Ernst, 2000c). As the example of small Nordic countries and the Netherlands demonstrates, the scope for proactive technology and industrial policies in a liberal ownership regime is far greater than commonly assumed. Taiwan, Singapore and recent developments in Korea also illustrate that a variety of approaches are possible to such policies, involving different interesting hybrid combinations. The choice is much larger than is normally assumed.

Implementing such policies, however, poses daunting political and administrative challenges. Supporting the restructuring process of an industrial cluster requires fundamental changes in the objectives and policy instruments, and a deep understanding of the global competitive dynamics. Not less, but actually more knowledge and expertise are required in the public sector. More specifically, developing a viable cluster requires a deep understanding of sector specificities, rather than a sector-neutral and minimally active policy stance. It requires an understanding of the widely varying technological properties of specific industries, the logistical and strategic concerns of multinational businesses, the fundamental transformations in the organization of their global production networks and the rapidly evolving international investment environment.

The real question, then, is no longer whether national and regional policies can make a difference. Instead, a critical challenge in a globalizing world is to develop a set of supporting institutions and policies that can foster local capability formation and innovation. That effort needs to be based on a sound understanding of how disruptive technological change and liberalization have changed the parameters of global competition, and hence the strategic options for developing SME-based local systems.

NOTES

1. For Krugman (1991a and b), agglomeration in essence results from three factors: (1) substantial increasing returns to scale – both at the level of the single firm (internal economies) and the industry (external economies); (2) sufficiently low transport costs; and (3) large local demand. Proximity matters, resulting in agglomeration, once these three factors interact. For an excellent critique of the ‘New “Geographical” Turn in Economics’.
see Martin (1999).

2. After all, Marshall’s analysis was shaped by value judgements which reflect a peculiar historical concern of the late 19th century Britain (Lazonick, 1999, p. 10 passim): Will Britain be able to survive the new and aggressive competition from emerging nations such as the US and Germany, with their highly concentrated industries? Marshall believed that ‘a proliferation of small-scale proprietary enterprises was both a morally superior form of industrial organization and more favorable to economic development’. The implication was that economic development did not require concentrations of power within industry, like in the US and Germany.

3. During the 1980s, FDI flows quadrupled, growing three times faster than trade flows, and almost four times faster than GDP. Growth has been less impressive, though, for FDI outward stock, which constitutes the capital base for MNE operations: it was 21 per cent between 1986 and 1990, (at current prices), fell to 10.3 per cent between 1991 and 1995, and increased again to 11.5 per cent (1996) and 13.7 per cent (1997) (UNCTAD, 1998, table 1.1).

4. For a critique, see Boyer (1996) and Ernst and Ravenhill (1999).

5. Williamson’s concept of site specificity, a particular form of physical asset specificity, provides a formal treatment of this issue. A fundamental weakness, however, is the theory’s inherent incapacity to address the issue of innovation. As Williamson himself explains: “The introduction of innovation plainly complicates the earlier-described assignment of transactions to markets and hierarchies based entirely on an examination of their asset specificity qualities. Indeed, the study of economic organization in a regime of rapid innovation poses much more difficult issues than those addressed here” (1985, p. 143). In the final analysis, Williamson’s theory explains the firm as a response to market failure: ‘The cause of this market failure is ‘asset specificity’ – a technological condition that is given to the firm’ (Lazonick, 1999, p. 22).

6. Price theory distinguishes perfect competition, where the firm is a price taker, that is, it has no choice but to accept the price that has been determined in the market, and monopolistic competition, where the monopolist can, if so inclined, raise his price (price maker). In analogy, we distinguish technology makers that possess proprietary technology and hence can shape the design trajectory of a particular product or service, and technology takers that have no choice but to accept the design principles established by the former.

7. I refer of course to Penrose-type rents. Spender (1998, p. 433) demonstrates that ‘each type of knowledge can, in principle, be associated with a different kind of rent and competitive advantage’. Tacit social knowledge (which Spender calls collective) is of critical importance: ‘The collective knowledge which develops as key players interact under conditions of uncertainty leads to Penrose rents, so labelled because such activity-based learning lies at the core of her theory of the growth of the firm’.

8. Partial integration is characterized by a loose patchwork of arms’ length trade and stand-alone, unrelated investment projects. Most of these focus either on access to domestic markets or on exploiting particular resources (cheap labour). They are footloose, in the sense that they are prone to rapid closure and redeployment. Partial integration implies a limited scope for international specialization. This is due to an absence of interactions across functions and locations, and to a lack of co-ordination.

9. The critical importance of international linkages is also reflected in the new research agenda of Annal.ee Saxenian whose earlier work on informal peer group networks in Silicon Valley (Saxenian, 1994) made an important contribution to the debate on localized agglomeration economies. She has now moved on to study international linkages: the dense links between the Valley and Taiwan, India, and China, through trans-national technical communities, especially circuit designers and computer engineers (Saxenian, 1999). For a case study of how Taiwan’s computer industry has benefited from such international knowledge linkages, see FEST (2000a).

Bibliography


