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GOVERNANCE AND UPGRADING: LINKING INDUSTRIAL CLUSTER AND GLOBAL VALUE CHAIN RESEARCH

IDS WORKING PAPER 120

John Humphrey and Hubert Schmitz*

SUMMARY

What is the scope for local upgrading strategies where producers operate in global value chains? The recent literature on industrial clusters is optimistic about the possibility of fostering competitiveness through local governance. The value chain literature, in contrast, emphasises that global buyers govern the chains in which export-oriented clusters operate. This paper examines the interaction of global chain governance and local cluster governance. For both researchers and policy makers, the key question is whether insertion in global value chains enhances or undermines local upgrading strategies. The main purpose of this paper is to unpackage this issue. In order to do so, it distinguishes between different kinds of chain governance and examines why they arise. It also distinguishes between different types of upgrading. On the basis of these distinctions, the paper shows that certain types of chain governance favour some forms of upgrading but not others. Operating in quasi-hierarchical global chains helps local producers to embark on rapid product and process upgrading, but makes it difficult to progress into the design and marketing functions of the chain. Such lock-in is less likely in non-hierarchical chains where relationships are market or network based. In these cases, however, upgrading cannot proceed without substantial investment by local producers and support from local institutions. For such a local strategy to work, the position of the local lead firms is critical: does their prime allegiance lie with the local policy network or with their global buyers? The paper unravels the risks involved for local and global actors in different value chains in order to identify the scope and focus of upgrading strategies.

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1. INTRODUCTION

What is the scope for local development strategies and local competitive advantage based on clustering in a world where trading relationships are increasingly global? Several schools of thought have emphasised the local determinants of competitiveness. These include the 'new economic geography,' business studies, regional science and innovation studies. For example, Scott (1996) suggests that globalisation reinforces the role of local factors in competitive advantage. Becattini (1990), Porter (1998) and many others emphasise that clustering favours innovation and helps local firms to compete globally. Some of these studies are optimistic about the possibility of strengthening this global competitiveness through local or regional industrial policy (e.g. Cooke and Morgan 1998; Pyke and Sengenberger 1992).

This paper is concerned with the interaction between the local and the global in industrial clusters in developing countries. The importance of the clustering of firms and local-level governance for the success of labour-intensive exports from developing countries has been made evident in the work of, amongst others, Nadvi (1997) and (Schmitz 1995a). This work drew much of its inspiration from the literature and experience of industrial clusters in Europe; and there is now a substantial body of literature devoted to analysing clusters in developing countries (a recent collection can be found in Nadvi and Schmitz 1999).

Firms in developing countries, as firms everywhere, are under pressure to improve their performance and increase their competitiveness. New, low-cost producers are entering global markets, intensifying competition in markets for labour-intensive manufactures. How can firms in developing countries respond to this type of challenge while at the same time maintaining returns to both labour and capital from engaging in trade? The literature on competitiveness suggests that the most viable response is to 'upgrade' - to make products more efficiently, and to increase value adding activities by making more sophisticated products and taking on more sophisticated processes. The cluster literature would suggest that such upgrading strategies would be facilitated by local-level governance. Local level governance - by networks of public and private sector institutions - provides the support structure for upgrading.

However, many of the products of developing country clusters are precisely those which are traded globally and show signs of increasing concentration of global trade and retailing in the hands of transnational companies. These companies co-ordinate the chains which connect the developing country producers with the advanced country markets. This is why (Gereffi 1994) and others have drawn attention to the governance of global chains. *The question addressed in this paper is how global chain governance interacts with local cluster governance. Does the insertion of clusters into global value chains enhance or undermine local upgrading strategies?*

The two central concepts, governance and upgrading, require explanation. When firms face competitive pressures, they need either to perform the same activities, but more efficiently, or change the activities they undertake. We use the concept of upgrading to refer to three different shifts which firms or groups of firms might undertake.

- Process upgrading: firms can upgrade processes - transforming inputs into outputs more efficiently by re-organising the production system or introducing superior technology.

- Product upgrading: firms can upgrade by moving into more sophisticated product lines (which can be defined in terms of increased unit values).
- Functional upgrading: firms can acquire new functions in the chain such as design or marketing.¹

While the first type of upgrading involves doing the same things more efficiently, the second two types can lead to a repositioning of the cluster in global markets. The cluster begins to produce different products for different types of customers.

The term governance also requires explanation. We define it as co-ordination of economic activities through non-market relationships and distinguish between three types of governance: network, quasi-hierarchy and hierarchy.

Since the term governance is used in the literature in a number of ways, it may help to make the different meanings explicit. According to Jessop (1998: 29), two meanings can be identified. First, governance can refer to any mode of co-ordination of inter-dependent activities, including ‘the anarchy of exchange, organisational hierarchy, and heterarchy. The second, more restricted, meaning is heterarchy’ by which Jessop means co-ordination through networks. A third meaning, which is implicit in much of the literature, is organisation through non-market relationships. This allows inclusion not just of networks but also more hierarchical forms, such as corporate governance.

In such definitional issues, there is no right or wrong. We favour the third meaning because it retains what we see as the essence of governance, namely that some kind of steering of activities takes place. Such steering can take various forms. In this paper, we distinguish between network, quasi-hierarchy, and hierarchy. In other words, co-ordination through the market is not included in the term of governance.

Table 1 draws together these categories. In addition to the standard triad of market, network and hierarchy (the enterprise), we use the category of quasi-hierarchy. Networks are formed between firms of more or less equal power. Quasi-hierarchy is a relationship between firms in which one is clearly subordinated to the other, as often the case in subcontracting.

Table 1: Types of co-ordination of economic activities

Jessop	Williamson	Humphrey and Schmitz
anarchy of exchange	Market	arm’s-length market relations
self-organising heterarchy	Network	network
		quasi-hierarchy
organisational hierarchy	vertical integration	hierarchy

Sources: Jessop (1998: 29); Williamson (1979); Humphrey and Schmitz (based on discussions in the IDS-INEF research team on global and local governance).

¹ There is a fourth type, ‘inter-sectoral upgrading,’ which is not discussed in this paper. Inter-sectoral upgrading occurs when firms apply the competence acquired in a particular function of a chain (e.g. competence in producing particular inputs, or in export marketing) in a new sector. Such horizontal moves into new sectors seem to have been central to Taiwan’s ability to gain a foothold in skill intensive sectors.

In addition to these forms of private governance, there is public governance through a range of governmental agencies. More relevant for our discussion, however, are the hybrids of public-private governance. Esser *et al.* (1995) and Messner (1997) have shown how and why networks of public and private agencies are required for industrial upgrading and competitiveness. Such ‘policy networks’ (Messner 1997) include business associations, technology centres and groups of business leaders in addition to governmental agencies. Implicitly or explicitly, much of the recent literature concerned with local upgrading strategies regards them as initiatives promoted by policy networks (Helmsing 1999; Humphrey and Schmitz 1996; Messner 1997; Meyer-Stamer 1999). Our question in this paper is how the action scope of such local policy networks is affected by the cluster’s insertion in global value chains. The question is pertinent because the chains are not just a string of exchange relationships but are often governed by external lead firms.

Given that the term governance is thus used for both private and public spheres and at the local and global level, it is important to clarify what interactions this paper is primarily concerned with. Table 2 sets out the relevant categories. Our ultimate aim is to understand the interaction of global value chain governance (field 2) with local level governance - particularly public-private governance (field 5), but by implication also with fields (1) and (3). As will be shown later, there is a burgeoning literature on what goes on within these fields but very little on the interactions. This is where this paper seeks to make a contribution.²

Table 2: Categories of private-public and local-global governance of economic activity

	Local level	Global level
Private Governance	Local business associations Hub-and-spoke cluster (1)	Global buyer-driven chain Global producer-driven chain (2)
Public Governance	Local and regional government agencies (3)	WTO-rules National and supranational rules with global standing (4)
Public-Private Governance	Local and regional policy networks (5)	International standards International NGO campaigns (6)

Source: Discussions in the IDS-INEF research team on global and local governance.

The paper is structured as follows. The following section compares and contrasts the treatment of governance and upgrading in the literatures on industrial clusters and global value chains. Section 3 considers the circumstances in which network and quasi-hierarchical forms of governance emerge in global value chains. What advantages do such forms of chain governance offer and what are its costs? Section 4 asks how the governance of the chain influences local upgrading. What difference does it make, for example, whether

² The omission of the national level does not mean that we regard it as irrelevant but merely that it is not a focus in our work.

the cluster faces few or many buyers? Section 5 considers the scope for local industrial policy to respond to the challenges posed by different types of incorporation into global markets.

2. WHAT CAN BE LEARNT FROM THE LITERATURE?

This section examines the role of governance for gaining competitive advantage by drawing on two sets of literature. The first, derived from the Italian industrial district literature, emphasises the advantages that come from *local*-level co-operation. The second, on *global* value chains, emphasises the importance of co-operation between firms in advanced and developing countries. As will be shown in sections 2.1 and 2.2, the literatures on locality and global chains both stress the importance of governance for upgrading, but ignore the interaction between local and global governance and its consequences for upgrading.

2.1 Clusters, governance and upgrading

The importance of proximity and local sources of competitiveness has been stressed in four lines of recent work:

- ‘New Economic Geography’. Since the mid-1980s economists have found a way of modelling increasing returns. This has led to a new body of growth theory. Paul Krugman and collaborators, particularly in their work on trade and geography, have put the increasing returns from economic clustering on the mainstream agenda (Krugman 1991, 1995; Krugman and Venables 1995).³ These concerns have been reinforced by econometric evidence that innovative activity tends to cluster due to knowledge spillovers (Audretsch and Feldman 1996).
- Business studies. Michael Porter and collaborators also emphasise the importance of clustering (Porter 1990, 1998; Porter and Wayland 1995). They argue that competitive advantage derives from a constellation of local factors that sustain the dynamism of leading firms, stressing in particular the importance of local rivalry and supplier networks.⁴
- Regional science. Due to its inter-disciplinary approach, regional science has probably made the greatest contribution to the understanding of clusters. This is reflected in the industrial district literature which focused initially on Italy and then on many other countries in Europe and elsewhere (Becattini 1990; Brusco 1990; Markusen 1996; Pyke and Sengenberger 1992; Scott 1996). It has also led to a new emphasis on the region as a nexus of learning and innovation effects – for example, in the work of Storper (1995) or francophone writings on the milieu innovateur (Maillat 1996).

³ For a critique of the new ‘geographical turn’ in economics, see Martin (1999).

⁴ The term ‘cluster’ is central to Porter’s work where it is sometimes used, as in this paper, to refer to sectoral and geographical concentration of firms. In other parts of his work, however, ‘cluster’ is a broader term, referring to a group of industries with strong vertical ties and located within one country, but not always geographically close.

- Innovation studies. In the literature concerned with technological development, there has long been a focus on the individual firm and a strong distinction between innovation and diffusion. In the 1990s this gave way to greater concern with learning-by-interaction (Lundvall 1993) and then with innovation systems, first at the national then increasingly at the regional and local level (Cassiolato and Lastres 2000; Edquist 1997; Freeman 1995; Maskell and Malmberg 1999).

These four bodies of literature, coming from different traditions, converge in stressing the importance of the local sources of competitiveness. They do not, however, converge on the issue of local governance. The first two play down public governance issues, seeing local competitive advantage emerge and grow from market dynamics and inter-firm networks. Market forces also play an important role in the latter two bodies of work, but market dynamics are considered insufficient to achieve competitiveness via the high road, i.e. through upgrading.

Successful regions have systems of governance which embrace enabling and facilitating institutions both within the local state and civil society, as well as bridging the permeable boundaries between them (Hudson 1998).

This emphasis on the importance of local governance is now widely accepted, particularly in that part of the literature in which regional and innovation studies have merged (Braczyk *et al.* 1998; Cooke and Morgan 1998). There are, however, differences of emphasis and weaknesses in these studies. The remainder of this subsection will draw together the main propositions and the empirical evidence from those studies that have explicitly focused on upgrading in industrial clusters. Later sections will argue that the fragility is – at least in part – due to failing to recognise the interaction between local and global governance.

In the literature on industrial clusters, the connection between governance and upgrading was first established by Brusco (1990). Based on the Italian experience, he distinguishes between an industrial district model Mark I and Mark II. Mark I refers to the early growth which was largely spontaneous. In Mark II, industry requires support from local and regional (public and private) institutions in order to speed up innovation, expand into new markets and thus consolidate growth. Schmitz (1992) suggests that such a distinction between a spontaneous and governed phase also applies to the case of Baden-Württemberg where the regional government pursued a very active upgrading policy in the 1980s.⁵

These and other European experiences gave rise (in the late 1980s/early 1990s) to a new model of local/regional industrial policy which (1) emphasises delegation of functions to a diverse range of governmental and non-governmental institutions; (2) operates through institutions close to the enterprise; (3) extends the concern with entrepreneurship from the private to the public sector; and (4) stresses self-help through business associations and producer consortia. In other words, the proposition is that the

⁵ The role of public policy for innovation and restructuring in the 1990s is less clear.

development and rapid diffusion of knowledge within the cluster do not just result from incidental synergies, the 'industrial atmosphere', but are fostered by policy networks of public and private actors.

This model has been – and continues to be – very influential but its effectiveness for upgrading has rarely been tested empirically.⁶ The ideal way to test the link between local public and private governance and upgrading would be through comparative studies of clusters that face similar upgrading challenges with different kinds (or levels) of local governance. Full-blown comparisons carried out for this purpose do not exist. While not designed for this purpose, Meyer-Stamer's (1998, 1999) comparison of the ceramics and knitwear clusters in Santa Catarina (Brazil) shows that local governance, especially local private governance, makes a difference. Meyer-Stamer shows how the ceramic tile cluster was able to overcome a major crisis in the early 1990s and concludes that an increase in inter-firm co-operation was a key factor. This took various forms, ranging from substantial but informal exchange of information, to benchmarking between local firms, to rejuvenating the business associations. Joint visits were undertaken to learn from the leading tile cluster in Italy and forceful joint action led to the establishment of a new Centre for Ceramics Technology and its partial funding by the state. In contrast, the knitwear cluster was unable to bundle local efforts and was less successful in restructuring and upgrading.

A similar conclusion emerges from a comparison by Scott of the gem and jewellery clusters of Los Angeles and Bangkok. He attributes the greater dynamism of the Thai cluster to 'remarkable collective activism ... significant resources have been mobilised to create an infrastructure of supporting services, ranging from training and educational programs to international marketing and information providing agencies' (1994: 260). Scott particularly emphasises the work of the trade association which – with the support of government agencies – seeks to 'leverage the industry into a developmental pathway characterised by rising skills and product quality' (p 261). This contrasts with the collective inaction in the (less dynamic) American cluster.

While inter-cluster comparisons are rare, more insights and evidence have emerged from intra-cluster comparison. For example, Dei Ottati (1996) examined how the formerly successful Italian district of Prato responded to the crisis of the late 1980s. She found that, in the 1990s, the enterprises which were able to lead the recovery and innovate belonged to (local) networks of closely co-operating enterprises.

Further intra-cluster evidence comes from four studies of developing country clusters that faced major crises in the early to mid 1990s. The events that triggered the crises varied but the challenges were similar: the need to raise quality, flexibility and speed. The investigation focused on private local governance, examining a) whether inter-firm co-operation had increased in response to the external challenges, and b) whether firms that increased co-operation showed greater improvement in performance. These questions were examined in clusters from India (Knorringer 1999a), Pakistan (Nadvi 1999), Mexico (Rabellotti 1999) and Brazil (Schmitz 1999). While the responses to the upgrading challenge differed between and within these clusters, there was a

⁶ In a review of the European industrial districts, Schmitz and Musyck (1994) found little empirical evidence on how local and regional support institutions influenced enterprise behaviour.

common finding across these studies: firms that increased co-operation showed greater improvement in performance. This result emerged from quantitative research (correlation and/or regression analysis of survey data) which was backed up and qualified by qualitative investigation.

The positive and statistically significant relationship between increases in co-operation and improvements in performance supports the argument that responding to major upgrading challenges requires greater local governance. However, the studies also stressed the need to decompose this result: co-operation between local firms tended to be selective rather than cluster-wide, and some forms of co-operation increased more than others: vertical co-operation (between manufacturers and suppliers) was much more pronounced than horizontal co-operation. This increase in vertical co-operation was spearheaded by some of the larger local manufactures, thus supporting the arguments of Markusen (1996) and Harrison (1994) that dynamic clusters are rarely communities in which equals compete and co-operate. Instead, they are organised around larger lead firms in a 'hub-and-spoke' or 'core-and-ring' fashion.

The four studies also found that in response to the upgrading challenge, relationships between local producers and their external buyers had become closer. How the governance of the distribution channel they were feeding into impacted on the governance of the clusters and the eventual consequences of this for upgrading efforts were not examined, however. It is this intersection which is central to this paper.

The cluster literature has not problematised the relationship between cluster governance and distribution channels because it has been concerned primarily with intra-cluster relationships. To be sure, the importance of the customer (or trader) has been recognised, and most clearly so by Weijland (1994), who showed that Indonesian clusters which connected to the outside world through intermediaries had higher average incomes than those which were not connected. But cluster studies have tended to see the buyer as a mere outlet for local products or as the challenger who demands better quality, greater speed or lower price. Some authors have gone further. Knorringa (1996, 1999a) attributes the failure to upgrade in an Indian cluster directly to low trust and minimal information exchange between producers and buyers. Conversely, findings from Pakistan and Brazil suggest that close relationships with buyers were important for upgrading products and production processes (Nadvi 1997; Schmitz 1995b). Nevertheless, the Brazil study also revealed that the producers with the closest ties to global buyers were least interested in collective local initiatives to reposition the cluster (Schmitz 1999). Thus, the exploration of forward linkages into the global economy has begun, but there has been little recognition of the interaction between local and global governance structures and its consequences for upgrading. The question, therefore, arises of how chain and cluster governance interact, whether they reinforce or block each other, and in which circumstances one or the other is more likely to predominate.

2.2 Value chains, governance and upgrading

The global value chain concept is one of a number of approaches to inter-firm relations that draws on the simple idea that the design, production and marketing of products involves a chain of activities divided between different enterprises often located in different places. Single companies rarely turn raw materials into finished products and then sell them to consumers.

Various authors from differing intellectual conditions have developed this idea in different ways. Porter (1990: 43–4) uses the terms value chain and value system to discuss company strategies in terms of the management of relationships with other firms. Similarly, Ruigrok and van Tulder (1995) discuss the restructuring strategies of leading global firms by using the concept of ‘industrial complex,’ in which the core firm organises suppliers, workers and dealers, and maintains relations with financiers and governments. Similarly, Wilkinson has analysed the knitwear industry using the concept of productive system, defined as ‘the combination of design, product development, marketing, production and retailing by which products progress from their conception to the final consumer’ (Wilkinson 1995: 1).

The work of Gereffi is the undisputed reference point in this literature, and the value chain concept used in this paper is based on his work. However, Gereffi’s central term, ‘global commodity chain’, can be misleading. In common usage, ‘commodity’ has come to mean standardised products made in large volumes, but the global commodity chain analysis is particularly relevant to trade in differentiated products, as will be shown below. Therefore, we use the term ‘global value chain’, which also has the advantage of drawing attention to the question of who adds value where along the chain.

Chains can be organised in many different ways. The type of chain which is of greatest interest to this paper is that which Gereffi terms ‘buyer-driven.’⁷

Buyer-driven commodity chains refer to those industries in which large retailers, marketers and branded manufacturers play the pivotal roles in setting up decentralised production networks in a variety of exporting countries, typically located in the third world. This pattern of trade-led industrialisation has become common in labour-intensive, consumer goods industries such as garments, footwear, toys, housewares, consumer electronics and a variety of handicrafts. Production is generally carried out by tiered networks of third world contractors that make finished goods for foreign buyers. The specifications are supplied by the large retailers or marketers that order the goods ... these companies design and/or market - but do not make - the branded products they order. They are part of a new breed of ‘manufacturers without factories’ that separate the physical production of goods from the design and marketing stages of the production process’ (Gereffi 1999a: 4).

The aspect of this work which is of greatest relevance for our paper concerns the governance of the chain, namely ‘the functional integration and co-ordination of internationally dispersed activities’ (Gereffi 1999b: 41). The lead firms do not merely buy readily-available products from manufacturers or intermediaries on the basis of arm’s-length market relations. They govern the chain, specifying what is to be produced by whom and monitoring performance. The notion of ‘buyer-driven’ expresses the idea that the buyer exercises control over the chain even in the absence of ownership.

⁷ These are contrasted with ‘producer-driven’ chains in which the lead firms play a central role in the production process as, for example, in the auto chains. For recent analyses of producer-driven chains, see Barnes and Kaplinsky (2000) and Humphrey (forthcoming).

Gereffi links the development of buyer-driven chains in manufacturing to retail concentration in North America and argues that the same tendency is also evident in Europe (Gereffi 1999b: 44–45). Dolan *et al.* (1999) argue that the same tendencies are visible in agriculture, showing how UK supermarkets sourcing fresh vegetables from Africa, exercise control over the chain even though they focus their own activities on retailing.⁸ In a later paper, Dolan and Humphrey (2000) develop the concept of governance within buyer-driven chains, outlining three different areas in which retailers can exercise control:

- Positioning of the chain within the market. Supermarkets play a decisive role in determining what is offered to customers. They determine what products are available and when, and their characteristics (quality, appearance, packaging, etc.). This involves interpreting market trends and specifying what product should be produced to meet these trends. It may also involve specifying the processes used to make the product. However, supermarkets may merely dictate the ‘what’ and leave the ‘how’ to the supplier.⁹
- The structure of the chain. UK supermarkets shifted from sourcing through wholesale markets towards tightly-managed supply chains. Their key decisions influence the overall structure of the chain - the type and number of firms involved and the distribution of functions between them.
- Monitoring and control systems. The UK supermarkets specified the quality systems of suppliers and the procedures for monitoring performance. They will also influence specific decisions about which producers and exporters will be included in or excluded from the chain.

The main message of Gereffi (1999b) and Dolan and Humphrey (2000) is thus one of strong chain governance exercised by buyers. The increasing concentration in retailing in most developed countries makes it likely that such clearly buyer-driven chains will become more common. However, this type of governance is not the only possible type. For example, Knorrninga’s (1999a) and Tewari’s (1999) work on the Indian shoe and garment industry shows that different types of governance can co-exist within the same sector and firms may be inserted into different chains simultaneously. Further, the work of Gereffi (1999a) and Smith (1996) on the East Asian garment industry suggests that governance forms can change over time.

There is little agreement on the question of how the governance of chains by global buyers affects the upgrading of local producers. The most optimistic view is that of Gereffi, based on his research of the garment chain. He concludes that those producers that gain access to the chain have good prospects for upgrading within production and subsequently into design, marketing and branding as a consequence of a

⁸ Of course, this buyer-drivenness is not confined to fresh vegetables. Doel (1996) details the role of large UK retailers in structuring supply chains in a range of fresh and processed foods.

⁹ In the producer-driven value chains, this same variation is captured by the distinction between sub contracting and ‘black box’ design. In the former case, the buyer supplies the design. In the latter case, the buyer defines a design challenge (performance characteristics, durability, interface with the remainder of the product, etc.) to be solved by the supplier.

combination of 'learning by exporting' and 'organisational succession' (see below). Opportunities for upgrading are driven by the needs of the buyer:

In order to deal with the influx of new competition, branded marketers like Liz Claiborne are adopting several strategic responses that will alter the content and scope of their global sourcing networks: they are discontinuing certain support functions (such as pattern grading, marker making and sample making), and reassigning them to contractors; they are instructing the contractors where to obtain needed components ...' (Gereffi 1999b: 47).

In this model, knowledge is transmitted through the chain, and buyers play an active role in transmitting knowledge to their suppliers. The point here is not to dispute this account of particular developments within a particular chain. Rather, the key question concerns its generalisability. Three upgrading issues need to be addressed:¹⁰

- Upgrading in the sphere of production. There is broad agreement in the literature that local producers learn a great deal from global buyers about how to improve their production processes, attain consistent and high quality, and increase the speed of response. This upgrading effect is particularly significant for local producers new to the global market (Keesing and Lall 1992; Lall 1991; Piore and Ruiz Durán 1998; Schmitz and Knorringa 1999; Tewari 1999). Gibbon (2000 forthcoming), however, emphasises that the upgrading of producers integrated into the chains is accompanied by the exclusion of others from such chains.
- Product upgrading through buyer succession. Gereffi uses the term 'organisational succession' to refer to a process by which manufacturers start producing for buyers catering for the low end of the market and then move up to buyers targeting more sophisticated market segments: 'This succession of foreign buyers thus permitted manufacturers to upgrade their facilities as they met buyer demands for more sophisticated products' (Gereffi 1999b: 53). At first sight this scenario seems plausible but three aspects require closer examination. Firstly, to what extent is this upward movement a simple consequence of 'learning by exporting,' or does it rely on more active upgrading efforts by producers. Secondly, this upgrading may well conflict with the interest of established buyers. As will be stressed in a later section, sourcing from new suppliers is rarely possible without the buyer investing in those suppliers capabilities. The greater such sunk costs, the more likely it is that buyers will attempt to prevent their producers simply switching to new buyers. This conflict needs to be recognised, although the extent to which it prevents organisational succession is ultimately an empirical issue. Thirdly, product upgrading does not necessarily require switching buyers. Dolan *et al.* (1999) concur with Gereffi's argument that buyers drive product upgrading, but they suggest that the buyer's repositioning of the chain as a whole provides

¹⁰ There is a related debate on the implications of upgrading for the returns to capital and labour in developing countries which are not discussed in this paper. For details, see Kaplinsky (1998).

upgrading opportunities for existing suppliers. This is also the message of research on strategic networks, in which the lead firm 'is permanently engaged in attracting and selecting members, in spinning off activities, in entering new alliances, in sustaining network relationships by managing conflicts and learning, in positioning or repositioning the network in the market ...' (Sydow 1992: 114).

- Functional upgrading. Gereffi (1999b) argues that East Asian garment producers moved from (a) mere assembly of imported inputs, to (b) taking care of the entire production process including the sourcing of inputs, to (c) design of products sold under the brand of other firms, and finally to (d) the sale of their own branded merchandise in internal and external markets. Martin Bell of SPRU, University of Sussex, has referred to this scenario as the 'benign escalator' (personal communication). While the progression from (a) to (b) is not controversial, moving to stages (c) and (d) cannot be taken for granted. Research on the footwear chain suggests that in some chains global buyers discourage, if not obstruct, design, marketing and branding by local producers. As stressed by Schmitz and Knorringa (1999), local producers face obstacles because such upgrading encroaches on their buyers' core competence. There are, however, less strategic producer services that local firms can take over, such as bar-coding, packaging, certification of quality and a range of logistic functions (Dolan, *et al.* 1999). Integration into global value chains creates significant demand for such producer services representing important upgrading opportunities for local firms. Nevertheless, it is important to recognise that these activities are not part of the buyer's core competences.

The above considerations lead to a more cautious assessment of local upgrading opportunities precisely because *global chain governance can create barriers to local upgrading*.¹¹ Whether these barriers can be overcome depends first on how tightly controlled the chains are - an issue examined in a later section. It also depends on the availability of local resources for upgrading. The cluster literature has shown that local resources can be mobilised through incidental synergies and joint action. However, local resources and local governance tend to be ignored in the global value chain literature; all the resources are seen to come from within the chain: 'industrial upgrading in East Asia's apparel commodity chain was produced by the information flows and learning potential associated with the buyer-seller links established by different types of lead firms ...' (Gereffi 1999b: 52). It is this difference in approaches that we now address explicitly.

2.3 The contradiction between cluster and value chain approaches to governance and upgrading

The literatures on clusters and chains and suggest quite distinct upgrading opportunities and trajectories for firms in developing countries. Both emphasise the importance of upgrading in order to sustain incomes in the face of increasing competition in global markets, but the routes to this same end are different. The

¹¹ This lends support to the argument of Lastres *et al.* (1999) that, while production activities are increasingly globalised, strategic innovation activities remain concentrated in the home countries of the global lead firms.

differences are summarised in Table 3. The cluster literature emphasises the need to improve co-operation and local level governance. Even the resources for product and functional upgrading are seen mainly to come from within the locality. Links with the wider world are frequently acknowledged, but they are weakly theorised.¹² Overall, the external world is characterised as a market presenting competitive challenges that must be met through improved organisation and effort within the cluster. Risk-coping mechanisms within the cluster make these challenges easier to meet.

In contrast, the value chain literature emphasises links with the external world, leaving the locality largely untheorised. The value chain literature pays little attention to the role of business associations and local inter-firm co-operation in competitiveness and upgrading.¹³ In other words, local level governance is downplayed, while inter-firm governance within value chains is emphasised. Upgrading occurs as a result of learning by exporting, buyer promotion of the capabilities of developing country producers or by entering value chains with more demanding customers. This also helps to attenuate the risks for suppliers of entering export markets. Inter-firm co-operation within the chain rather than within the locality is viewed as the source of competitive advantage.

Table 3. Governance and upgrading: clusters vs. value chains

	Clusters	Value Chains
Governance within the locality	Strong local governance characterised by close inter-firm co-operation and active private and public institutions. Risks attenuated by local mechanisms for risk-sharing.	Not discussed. Local inter-firm co-operation and government policy largely ignored.
Relations with the external world	External relations not theorised, or assumed (by default) to be based on arm's length market transactions.	Strong governance within the chain. International trade increasingly managed through inter-firm networks based on quasi-hierarchical relations. Risks attenuated by relationships within the chain.
Upgrading	Emphasis on incremental upgrading (learning by doing) and the spread of innovations through interactions within the cluster. For discontinuous upgrading, local innovation centres play an important role.	Incremental upgrading made possible through learning by doing and the allocation of new tasks by the chain's lead firm. Discontinuous upgrading made possible by 'organisational succession' allowing entry into more complex value chains.
Key competitive challenge	Promoting collective efficiency through interactions within the cluster.	Gaining access to chains and developing linkages with major customers.

While the table may have overdrawn the differences, there are clear limitations to both cluster and value chain analysis with respect to governance and upgrading. With regard to governance, the key research

¹² See, for example, Bell and Albu (1999) for a discussion of how large customers are seen as sources of innovation in various cluster studies, but how this link is not theorised.

¹³ The role of national policies is also underplayed.

question relates to the interaction between local cluster governance and global value chain governance. As soon as it is recognised that key local actors also frequently operate in global chains, then the question arises of how local and global governance interact. With regard to upgrading, cluster analyses underrate foreign customers as sources of innovation, while the value chain approach downplays the role of local innovation systems. Further, both approaches tend to underplay the limits to upgrading. If upgrading is so easy, why is it not pervasive in developing countries?¹⁴

3. WHAT DETERMINES FORMS OF VALUE CHAIN GOVERNANCE?

In order to discuss the interaction between local governance in clusters and governance in global value chains, it is necessary to ask a prior question. Under what circumstances are value chains likely to be characterised by particular types of governance. More specifically, when do buyers seek to develop network or quasi-hierarchical relations with distant suppliers? What advantages does this offer, and what are its costs? In what circumstances is reliance on arm's length market governance a better solution for the buyer? The answers to these questions on global chain governance help to delineate the scope for local governance, which is our ultimate concern.

Why would firms in advanced countries go to the trouble and expense of monitoring and supervising international supply chains? No firm will incur the expense of developing arrangements with specific suppliers in order to purchase products that the market freely provides. We suggest that network and quasi-hierarchical relations emerge in value chains when the buyer seeks to define the product and/or the buyer is exposed to considerable risk if the supplier fails to perform:

- Product definition.¹⁵ Where the buyer is involved in product definition, then the buyer has to inform the supplier of what is required. In technology-intensive industries, product definition frequently involves the development of new technology and production processes. In other industries, it may predominantly involve design, branding and marketing. This difference is at the heart of Gereffi's distinction between producer- and buyer-driven chains.
- Losses from the supply chain failure. The increasing importance of non-price competition based on such factors as quality, response time and reliability of delivery, together with increasing concerns about safety and standards, means that buyers (both retailers and manufacturers) in developed countries have become more vulnerable to shortcomings in the performance of their suppliers.

In section 2 of this paper, we outlined four ways of integrating different activities within a chain: market relations, network relationships, quasi-hierarchy and hierarchy (ownership of the supplying unit by the

¹⁴ The authors are grateful to Martin Bell for this observation.

¹⁵ Product definition encompasses the processes of interpreting market demands, creating product concepts and translating these into designs and drawings. It can encompass not only research and development and design but also marketing. This concept is derived from Sturgeon (2000).

buyer). Along the length of a complete value chain, all of these relationships may be found. At any one point in the chain, the factors determining which relationship is likely to occur is summed up in table 4.

Table 4 implies that quasi-hierarchy is likely where global value chains link together producers in developing countries and retailers in developed countries. Global buyers¹⁶ are constantly scouting for lower-cost production sites, which means integrating new producers into value chains and exposing these producers to the demands of more sophisticated markets. Hobday has argued that the ‘latecomer’ firm to the global economy faces two disadvantages. It is ‘dislocated from the main international sources of technology and R&D’ and ‘dislocated from the mainstream international markets it wishes to supply’ (1995: 34). These dislocations create the need for tight governance.

Table 4: Determinants of governance in value chains

Chain Governance	Determinants
Arm’s length market relations	Buyer and supplier do not need to collaborate in product definition. Either the product is standard, or the supplier defines it without reference to particular customers. Risks to buyer are low, either because requirements are easy to meet, or because supplier has a clear capability to meet them. The buyer’s knowledge of this capability may arise from the reputation of a cluster, or from the reputation of a particular manufacturer.
Network	Co-operation between more or less ‘equals’. Supplier and buyer jointly define the product, and combine complementary competences. ¹⁷ This is more common when both buyer and supplier are innovators, close to the technology or market frontiers. The risk to the buyer is minimised by the supplier’s high level of competence. High and generalised competence favours networks and reciprocal inter-dependence.
Quasi-hierarchy	High degree of control of buyer over supplier; buyer defines the product. The buyer would incur losses from the suppliers’ performance failures, and there are some doubts about the competence of the supplier. Where high supplier competence is not generalised, buyers invest in specific suppliers and seek to tie them to their chain.
Hierarchy	Buyer takes direct ownership of developing country operations. The buyer carries out product definition, which may involve proprietary technology. The risks of poor performance by independent suppliers increase if the buyer uses quality has a brand attribute. These factors favour direct control over the production process.

Keesing and Lall (1992) have argued that producers in developing countries are expected to meet requirements that frequently do not (yet) apply to their domestic markets. This creates a gap between the capabilities required for the domestic market and those required for the export market. This gap is widened when the buyer requires consistent quality and supply, creating two reasons for quasi-hierarchical governance. Firstly, close monitoring and control may be required to ensure that products and processes meet the required standards. Secondly, if the gap has to be closed quickly, buyers will need to invest in a few selected suppliers and help them to upgrade. In order to reap the benefits of this investment the buyers have

¹⁶ Global buyers exist in both producer- and buyer-driven chains. For example, vehicle and components production is producer-driven, but leading assemblers still buy products globally.

¹⁷ For a discussion of the role of complementary competences in the creation of network relationships between firms, see (Richardson 1972).

an interest in locking suppliers into stable relationships. These factors make the costs of this form of governance worthwhile. But the need for global chain governance decreases as the delivery capabilities of local suppliers improve and diffuse.

The key determinant of the governance form is not the intrinsic characteristics of the product, such as its complexity or its closeness to the technology frontier, but rather the risks faced by the buyer. These arise from the level of probability of poor performance and the consequences of that poor performance. Where the loss (the probability and level of loss) is greater than the cost of tight governance, quasi-hierarchy is adopted.¹⁸

While various value chain studies have focused on sectors where quasi-hierarchy predominates, there are various instances of suppliers and buyers co-ordinating their activities through market and network, even when products are sophisticated and fast-changing. Two examples illustrate this point.

Firstly, the personal computer industry provides an example of a chain that produces complex products through a combination of market and network relationships. Part of the sector is organised around arm's-length market relationships. Companies make new products by taking rapid advantage of new technologies and products that become available through market relations to a large number of firms. For companies making personal computers, close relationships with the designers of chips, disk drives, etc. are only important insofar as they provide early access to new product specifications. At other parts of the chain, network relations appear to operate. Sturgeon's (2000) account of linkages between the companies which design and market computers (Dell, Apple, etc.) and the specialist firms which assemble and test circuit boards shows how firms work together while retaining their independence. Clearly, information flows between firms defining products and firms assembling them are important, but the relationship is clearly not one of quasi-hierarchy. There is limited dependence on both sides and no 'tutelage' of supplier by buyer. While Sturgeon attributes the development of this chain structure to factors such as differences in scale economies between automated assembly and marketing, market instability and the dominance of modular architecture¹⁹ for personal computers, similar relationships within chains can be seen in very different circumstances. For example, relationships between large firms in Germany and small suppliers of specialist goods and services seem to have similar 'network' characteristics. Small firms co-operate with large customers, but retain a broad customer base and their autonomy.²⁰

¹⁸ These arguments can be put in the language of transactions costs. Recurrent transactions requiring asset-specific investments - either in monitoring or in co-operation around product definition - are not suitable for market relations. Williamson might suggest that vertical integration would be a possible strategy here (1979: 250–52), but network or quasi-hierarchy would be preferred when producer and buyer have complementary rather than similar competences (Richardson 1972) and where the costs of vertical integration across national boundaries are high.

¹⁹ For the discussion of the distinction between modular and integral product architectures and their impact on the computer industry, see Fine (1998).

²⁰ See Lane (1996: 292) for an account of how small firms in Germany co-operate with large customers while retaining their autonomy. Lane contrasts this case with the situation of small suppliers in Japan, who are tightly linked to large firms by transactional dependence, equity tie-ups, etc.

Secondly, certain products that are sold through agents or auctions provide no direct contact between the user of the product (a retailer or a processor) and the producer. This is typical of many agricultural products. Van der Laan (1993) refers to this type of marketing system as a half-channel marketing network. This type of chain relies on the existence of clearly defined grades and standards and some means by which the buyer can be confident about the quality of the product - either through direct inspection or from the reputation of the seller. In this type of chain, governance certainly exists, albeit not between firms in the chain. Public or private institutions have to define grades of produce, and governments also define and verify phytosanitary standards. These requirements are defined by the receiving country (either unilaterally through governmental regulations on imports or through international agreements). Governance may also exist at the point of production. Two recent analyses of production systems for Brazilian fruit exports (Damiani 1999; Gomes 1999) have emphasised that local-level co-operation between government and local producers was needed to satisfy foreign governments (in particular, in relation to control of fruit fly), to acquire knowledge about market entrance requirements and to establish and maintain regional reputations in the eyes of foreign buyers. In the case described by Damiani, in particular, there were clear signs of co-ordinated local activity by state institutions, business associations and leading private firms.

This section has shown that global value chains can be organised in a range of ways and proposed a categorisation. Its main purpose was to identify the key factors which determine the way the chain is co-ordinated. We emphasised that non-market based co-ordination is costly and only develops when the buyer perceives a high risk of supplier failure. Risks are high when the competence differential is high. This is why quasi-hierarchy is most common in sourcing from new developing country producers.

4. HOW DOES GOVERNANCE OF THE CHAIN INFLUENCE UPGRADING IN THE CLUSTER?

The previous section analysed different kinds of chain governance. This section asks how they influence upgrading in the cluster. This is a difficult question to answer because there are different types of clusters and different kinds of upgrading. In order to simplify the discussion we focus on two types of clusters, those consisting of small and medium sized firms (as in the Italian model) and those organised in a hub-and-spoke fashion in which one or several large local lead firms dominate, or even orchestrate, the activities of the smaller firms in the cluster. We first outline the knowledge flows and investment needed for upgrading and how the two types of clusters can mobilise these. Then we consider the impact of different kinds of chain governance on upgrading processes.

4.1 Upgrading requires investment

In order to deepen our understanding of upgrading, it helps to take two ideas from Bell and Albu's discussion of technological dynamism in clusters. The first is the distinction between production systems and knowledge systems:

The production system can be understood to encompass the product designs, materials, machines, labour inputs, and transaction linkages involved in the production of goods to a given specification ... The knowledge system concept on the other hand, encompasses those flows of knowledge, stocks of knowledge and organisational systems involved in generating and managing changes in the products, processes or organisation of production' (Bell and Albu 1999: 1723).

Understanding upgrading requires a concern with the knowledge system. It also benefits from a second distinction between knowledge-using and knowledge-changing elements:

The knowledge-using elements are involved, for example, in maintaining or expanding capacity using given modes of production; training workers in established operating procedures, or within a cluster context, the imitation of production techniques used by neighbouring firms. The knowledge-changing elements are involved, for example, in the management of innovation processes; in product design and development; or in the search for, selection, adaptation and assimilation of new product or process technology (from outside the cluster)' (Bell and Albu 1999: 1724).

It is widely acknowledged that clusters are very good at using, replicating and circulating knowledge. Alfred Marshall (1920) and many authors since then (e.g. Nadvi 1997) have stressed the fast spread and absorption of new ideas in clusters.²¹ However, upgrading involves more than the passive acquisition and circulation of knowledge acquired through participation in global markets (the most simple form of the 'learning by exporting' idea). Knowledge *changing* requires specific resources: investment in people, organisational arrangements and equipment. Bell (1984) has for a long time insisted that the need for such investment be more explicitly recognised. Such knowledge changing investment may also extend to marketing and buyer relationships. While the upgrading/innovation literature has tended to concentrate on changes in processes and products, the neglect of marketing has begun to be rectified (Hobday 1995; Lall 1991; Wortzel and Wortzel 1981). There is a recognition that breaking into export markets represents a discontinuous step. This is most clearly expressed by Roberts and Tybout (1995), who suggest that the critical barriers to entering export markets are the sunk costs of gathering information on foreign markets, establishing marketing channels and defining products suitable for the new market.

The question to be pursued now is what happens when clusters of predominantly small firms selling into global markets face the need to upgrade? Who is likely to undertake the investment (and carry the risk) for upgrading in the spheres of production and marketing? The advantage that comes with clustering is that it induces specialisation, facilitating effective investment and *upgrading in small and riskable steps*. Producers can concentrate on particular stages of the overall process, leaving other stages to other entrepreneurs. One producer's investment in a specialised skill renders returns because others invest in complementary expertise.

²¹ More recently, the danger of bad practices percolating has also been recognised (McCormick 1998; Visser 1999).

The problem is that such upgrading – while important – rarely changes knowledge in more than an incremental way. The challenge for developing country clusters is that, faced with new competitors in existing global markets, they need to upgrade their products, extend the range of functions they carry out and find new customers. This requires considerable investment. However, large investments in clusters are inhibited by the size structure of local industry where clusters consist of a multitude of small enterprises. Worse still, individual risk taking and large investment is curbed because the resulting knowledge is often difficult to appropriate. Erecting barriers to the flow of new knowledge in a cluster is nearly impossible. Even if the entrepreneurs do not visit each other's factory or laboratory, their employees rotate and meet socially, the enterprises share common suppliers and customers, and there are numerous other ways in which new ideas leak out and percolate. How then can a 'repositioning' of the cluster within global markets be brought about? Bell and Albu argue that this type of upgrading will only occur when the search for knowledge is 'structured, purposeful and open' (1999: 1729). This combines knowledge generated internally by firms and institutions with knowledge acquired from outside the cluster.

How can the acquisition of such knowledge be arranged? Two routes seem possible. The first is through the development of joint action, particularly through technology centres, business associations and the like. Collectively, they can co-ordinate search efforts and investments in human capital. There is a substantial literature on the collective approach, showing a range of institutional modalities and varying combinations of public and private funding (Helmsing 2000; Humphrey and Schmitz 1996; Pyke 1992, 1994). This literature helps to understand how factors internal to the cluster affect such local governance arrangements. The concern in this paper is with the influence of external factors, notably the governance of the global chain which the clusters feed into.

The second route to upgrading is through the emergence of large firms within the cluster. The 'cluster of equals' is transformed into a hierarchical cluster consisting of many small firms providing products and services for a few large local lead firms. For clusters in the German state of Baden-Württemberg, the importance of large local lead firms drawing on a multitude of small and medium sized suppliers has long been recognised (Sabel 1989; Schmitz 1992). Markusen, in her review of industrial clusters in the USA, calls it the 'hub-and-spoke' model: 'The dynamism in hub-and-spoke economies is associated with the position of these anchor organisations in their national and international markets. Other local firms tend to have subordinate relationships with them' (Markusen 1996: 302). A number of authors have suggested that similar structures are emerging in Italy. In his critique of the industrial district literature, Harrison suggests that 'the industrial districts of Italy are undergoing transformations away from the locally oriented, co-operative form so widely believed to have held the key to their past success' (Harrison 1994: 106). The cluster in which large firms (grown from within or jumping in from the outside) orchestrate the local division of labour is seen as the more competitive form of industrial organisation. This view is shared by Belussi (1999: 731) in her review of a large number of Italian industrial districts: 'During the 1990s, an evolutionary shift towards hierarchically organised "districts," with dominant core/ring structures centred on one or more leading firms, appears to have been a structural feature.'

In many cases, this shift seems to be related to the costs of reaching markets. Camagni and Rabellotti (1997), for example, suggest that Italian shoe clusters have become more hierarchical in the 1990s mainly due to increasing investment requirement in marketing. More generally, Belussi (1999: 731) argues that, ‘Often present within local production systems are hierarchical enterprises or leading enterprises that have direct access to the market and which control internally the more strategic functions (R&D, marketing, logistics, quality control and so on)’.

The development of hub-and-spoke clusters seems to be a trend driven by the costs of developing international marketing and brand identities in an increasingly competitive environment characterised by retail concentration. However, it is neither a necessary nor a sufficient condition for upgrading. Knorringa (1999b), for example, underlines the importance of the hub-and-spoke form in developing countries but draws attention to cases in which the conservatism of the leading families holds back the cluster as a whole.

In itself, neither the existence of collective organisations nor of large local firms leads to the risky investment for major upgrading. However, the organisational precondition for such investment is given. This can be laid out in a table which shows how the two types of governance can help overcome the danger of under-investment in two spheres of upgrading: production and marketing. Note that Table 5 is an abstraction. Most clusters are hybrids, combining different forms of local governance. Successful clusters, for example, often have both collective initiatives and the leadership of large firms.

Table 5: Cluster governance and upgrading

Form of cluster governance	Upgrading in production	Upgrading in marketing
Collective initiatives	e.g. local technology institute	e.g. export consortium
Hub-and-spoke	e.g. R & D by local lead firm	e.g. opening up of new market by local lead firm

We can now proceed to deal with the main question of this section. How do different kinds of chain governance influence cluster upgrading? In section 3, we distinguished between four types of chain coordination: hierarchy, quasi-hierarchy, network and market-based. We will not consider the case of hierarchy where the cluster serves the subsidiary of the chain’s lead firm.²² As before, the clusters under consideration consist of formally independent firms. Such formal independence can, however, mask substantial asymmetry. This is why we introduced the category of quasi-hierarchy. The impact of this form of chain governance on local upgrading is examined first.

²² Markusen (1996) calls them ‘satellite platforms’ and Altenburg and Meyer-Stamer (1999) refer to them as ‘clusters of transnational corporations.’

4.2 Upgrading in quasi-hierarchical chains

How are upgrading possibilities in clusters influenced by their insertion into value chains characterised by quasi-hierarchy? We will consider this question by analysing the case of the Sinos Valley shoe cluster in the South of Brazil.²³ In the late 1960s, this cluster was composed predominantly of small firms producing for the domestic market. With the arrival of buyers from the United States (stimulated by local initiatives and Brazilian government export incentives), the characteristics of the cluster began to change. The external buyers looked for much larger volumes of standardised products, which led to the growth of large firms. By the late 1980s, a significant number of firms were large by shoe industry standards, employing more than 500 people.

At one level, integration into the footwear value chains developed by U.S. footwear manufacturers (some of whom switched from production to trading) and retailers facilitated upgrading. Process standards rose as did product quality. The considerable challenges and risks of entering export markets were eased by the buyers who studied the market, developed models, worked out the product specification, helped producers in the choice of technology and organisation of production, inspected quality on site, organised transport and payment arrangements.

In other words, firms in the Sinos Valley concentrated on the production process and the organisation of their own local supply chains, while the buyers were responsible for product definition (and hence, market knowledge) and logistics. The investment and risks involved in entering export markets were considerably reduced, but the consequence was that the firms in the Valley were confined to a narrow range of functions. Certainly, they became very competent in these functions, and benefited from rapid growth in export sales in the 1970s and 1980s.

Nevertheless, the danger of this situation became evident when Chinese producers undercut Brazilian products in the US market in the early 1990s. While this event can be seen as the result of a more general entry of Chinese producers into the manufacture of labour-intensive products for global markets,²⁴ it should be noted that it is a danger inherent in quasi-hierarchical value chains. Global buyers actively scout for new sources of supply, and substitution by new sources is always a potential threat to existing suppliers. Indeed, some of Brazil's main US buyers helped to build up Chinese export capability. As a result, the Brazilian producers were faced with sharply declining prices for their products in North America. The upgrading imperative was clear. While substantial upgrading occurred in the sphere of production, comparatively little progress was made in marketing. The difference is instructive, it reveals how global chain governance influences local upgrading.

In the sphere of production, the Brazilian producers made enormous progress: raising quality, reducing batch size and increasing speed. By reorganising their factories and local supply chains they were able to offer

²³ The account which follows is based on Schmitz (1995b, 1999).

²⁴ See Kaplinsky (1998: 7) for a discussion of Chinese penetration of U.S. and Japanese markets for labour-intensive products.

their buyers a fast and flexible response. In fact, their buyers assisted them in making the switch to a new way of producing.

As regards the sphere of marketing, the Brazilian producers worked out a collective strategy of raising Brazil's image in the world footwear markets, of strengthening design capabilities, and exhibiting in significant numbers at the world's main trade fairs. These proposals were, however, not put into practice, mainly because a small number of very influential export manufacturers did not support them. Advancing into design and marketing was feared to upset the relationship with their main foreign buyer. The manufacturers realised that upgrading beyond production would encroach on the core competence of their main buyer who accounted for over 80 per cent of their output and close to 40 per cent of the cluster's output. For the same reason, also the individual upgrading strategies of the local lead firms continued to favour the sphere of production and neglect the areas of design and marketing.

All this is reflected in the performance profile of the Sinos Valley. Global buyers in the US and Europe were asked to rate the capabilities of suppliers in Italy, Brazil, China and India. The responses were very clear: on production parameters (production quality, speed of response, punctuality, flexibility) Brazil can match the best of the world (i.e. Italy), whereas it remains poor in innovative design (Schmitz and Knorringa 1999). The under-investment in marketing is reflected in the statistics of the world's main trade fairs. Take the example of the main fair for the European market (in Düsseldorf). In March 1997, of the total of 1,612 exhibitors, only seven came from Brazil, that is 0.43 per cent. Statistics for previous and subsequent fairs show a similar picture. Our main point is that this is an outcome of the way the global chains are organised, notably the chains which connect the Brazilian producers with the US and European market. More evidence is needed from other clusters which operate mainly in quasi-hierarchical chains but the hypothesis is clear: in such chains, functional upgrading is limited. Local firms move into new non-strategic functions,²⁵ but refrain from or are prevented from occupying the strategic functions of the chain which tend to lie in product definition (design, branding, marketing) and chain co-ordination.

4.3 Upgrading in chains of market-based relationships

Conclusive evidence on this proposition would need to come from comparisons with less hierarchical chains. What is the upgrading trajectory of local firms which operate in chains characterised by market-based relationships? Here one would expect that all upgrading paths are open-ended, that there is no external blockage. Functional upgrading is not necessarily easy but there is no barrier arising from the organisation of the chain.

Following our earlier reasoning, developed country clusters are more likely to find themselves in such chains. We emphasised that governance is costly and that the need for governance arises from competence

²⁵ For example, in the footwear and horticulture chains some functions, such as logistics and bar coding, which used to be carried out by the external buyers are now carried out by local firms (Dolan and Humphrey 2000; Schmitz and Knorringa 1999).

differentials and risks of supplier failure. The risk is perceived to be highest when buyers source from new low-wage producers in developing countries and lowest when they source from established clusters where high competence is generalised. This is why developed country clusters are less likely to operate in quasi-hierarchical chains. At least this is our proposition. Our follow-on proposition is that they are more likely to invest in functional upgrading.

Trade fairs are a good place to explore such propositions. Exhibiting at the world's main trade fairs is costly. Earlier we commented that few Brazilian shoe producers make this investment. By comparison, hundreds of Italian producers exhibit their new designs at the Düsseldorf international shoe fair. Many firms have only small stands and only manage to have a presence because their local business associations organise the operation. Some have large stands and are able to manage on their own. Whatever their size, the investment is not a one-off, they need to exhibit regularly (twice a year) and show their new collections. Seven Brazilian exhibitors versus 575 Italian exhibitors is – to some extent – a reflection of the different kinds of value chain that producers from these two countries operate in. The numbers exaggerate the problem (they need to be weighted by the respective shares of the European market) but they underline our basic point that in market-based relationships local firms are unlikely to be locked into sphere of production.

The argument gains support if we compare the quasi-hierarchical chains, which lead from the Sinos Valley to the USA and Europe, with those chains which lead into the Brazilian or Latin American market and which are not buyer-dominated. A number of Sinos Valley firms, who favour the Latin American market, have developed their own design, brands and marketing channels (Schmitz 1999). While this comparison requires more detailed research, a further hypothesis emerges concerning learning from alternative value chains. When the leading export manufacturers are locked into relationships with existing buyers, the most significant advance in functional upgrading may come from firms exploring different value chains. The firms involved may well be second-tier or second-generation exporters.²⁶ And the chains most conducive for learning to compete in global markets are sometimes the national chains. This point is stressed by Tewari (1999), who analyses why the woollen knitwear cluster in Ludhiana (India) was able shift rapidly to Western export markets following the collapse of Soviet markets in the early 1990s. By the late 1980s, a considerable portion of Ludhiana's output of woollen knitwear consisted of low-quality, mass produced products directed to the Soviet market. Following the collapse of this market, a number of exporters were able to find customers in Europe, East Asia and the United States. Tewari argues that firms had developed capabilities to produce for these markets through supplying the domestic market for high-quality knitwear.

The main argument of this section is that, compared with quasi-hierarchical chains, chains of market-based relationships provide more space for functional upgrading. This 'freedom', however, comes at a price, as shown by the experience of two horticulture clusters in North-Eastern Brazil. When exporters work through half-channel systems, such as wholesale markets and international auctions, knowledge about

²⁶ Hence our earlier emphasis on investment in functional upgrading coming from the lead firms needs to be qualified.

markets has to be obtained in different ways. The cases of fruit export from the Northeast of Brazil analysed by Damiani (1999) and Gomes (1999) show how knowledge can be acquired through both the routes outlined in Table 5. Export markets are demanding and as markets for fresh fruit develop and become more sophisticated, entry requirements increase. Exporters have to reach minimum standards of sophistication before they can enter export markets and benefit from the information flows generated by this entry. Therefore, some form of early transmission of market requirements is necessary.

In the case analysed by Damiani, the search for knowledge about export market requirements was led in part by CODEVASF, the agency responsible for promoting agricultural development in areas that were being transformed by the River São Francisco irrigation schemes. The agency facilitated the acquisition of knowledge about market entrance requirements through arranging contacts with existing agricultural exporters in Brazil and with European technical experts. It also promoted an association of export fruit growers, in part to protect the region's reputation in export markets. Further, meeting the pest control requirements of the United States Department of Agriculture required collective efforts to introduce pest control procedures. This was achieved by a combination of federal institutions, economic development agencies, business associations and leading private firms. The important point to note is that when entering half-channel marketing networks, developing country producers do not receive information about market requirements nor assistance to meet these requirements in the way that firms in quasi-hierarchical networks do.

Collective action at local level is not the only solution to market access problems. In the analysis of fruit exports from a different region of Brazil, Gomes (1999) shows how the challenge of meeting European Union requirements was met by large lead firms. They explored export markets, developed production processes suitable for the local environment and pioneered marketing efforts. They organised growing and processing, taking produce from their own plantations and from small growers. In this case, as in the case analysed by Damiani, local governance (public, private and public-private) seemed to act as a substitute for some of the governance processes seen in quasi-hierarchical chains. While this probably slowed down process and product upgrading, in the longer run it might create local capabilities that would enable functional upgrading and market diversification strategies.

4.4 Upgrading in chains of network-relationships

In analysing the effect of chain governance on upgrading in clusters, we have contrasted chains characterised by quasi-hierarchy with those based on market relations. There remains the intermediate case of chains of network relations. Recall that under this kind of chain governance, relationships between firms are more symmetrical than in quasi-hierarchy but contain a stronger mutual commitment than in a market-based relationship. We argued in section 3 that network-based relationships are more likely to arise when producer and user have complementary competences such that both parties can contribute to innovation.

Operating in a chain characterised by such network-based governance is both the most desirable and least likely scenario for most developing country clusters. The desirability is borne out by a substantial body of literature which emphasises that innovation results from an interactive process between producers and

users. Lundvall (1988), Cassiolato (1992) and others have shown that collaboration between users and producers is important in the design and debugging of new products and that the producer's competitiveness becomes structurally linked to the user's competitiveness. Well-known examples are the interaction between Danish makers of dairy equipment and dairy products or the close connection between Italian tanneries and producers of leather goods. These and other examples in the innovation literature seem to come mainly from backward linkages, illustrating the importance of learning-by-interaction between manufacturer and equipment supplier or component supplier. But similar mutual benefits apply in forward linkages even though they are less researched. A prominent example is the surgical instrument cluster of Tuttlingen (Baden-Württemberg) whose lead firms see their key competitive advantage in their close collaboration with pioneering surgeons and hospitals (Gerhard Halder, personal communication).

There are three reasons why developing country clusters are less likely to operate in chains characterised by such innovation-conducive network-based relationships. First, as stressed by Perez (1988) and Cassiolato (1992), the scope for learning by interaction is much greater at the early than at the late stage of the product life cycle. The exports of developing countries are typically mature products. An exception are the 'notebooks' (lap tops) of which the Taiwanese computer cluster is a leading exporter. As shown by Kishimoto (2000), the producers of these computers developed them in conjunction with their main clients (Compaq, Dell, Hitachi, IBM) and made a rapidly increasing contribution to the design of these products. This has occurred in the context of chain relationships which have the network characteristics listed in Table 4.

The second reason why such relationships are rare is the competence differential between buyers and producers. In Section 3 we explained the causes of this competence differential and stressed that it is likely to diminish over time. Nevertheless, network based relationships with the clients are rare. In mature products, some exceptions can be found where the cluster is connected to advanced country markets through small buyers. Some of the leading knitwear exporters in the Ludhiana knitwear cluster prefer to work with the small foreign buyers, rather than the large retailers, because these relationships are more symmetrical and give them the space for experimenting with their own design. Maintaining feedback-intensive relationships for developing new products – rather than merely producing to order – requires however investing in designers who travel to Europe and have first hand knowledge of the final market (Tewari 1999, and personal communication).²⁷ Similarly Hsing (1999) found that some Taiwanese fashion shoe companies distinguished themselves by shifting, from producing to order, to manufacturing products which they had designed themselves. She argues that this functional upgrading was achieved by belonging to production and marketing networks co-ordinated by small trading companies.

The third reason for the infrequency of such relationships is the fragility of network-based relationships. This is a controversial point, given that networks are frequently associated with lasting and stable relationships (Håkansson 1987; Sako 1992). This is not our view. Enterprises engage in networks in order to

²⁷ Most Ludhiana producers operate in chains of market-based relationships.

respond to particular challenges such as changing processes or developing new designs. They make a mutual commitment to solve problems jointly knowing that they need each other's input and that they will both benefit from a successful outcome. Once achieved, there is often a strong incentive to loosen the relationship, either because the jointly developed innovations diffuse rapidly or because they give rise to conflict between the former partners. The former can be illustrated with an example from the Sinos Valley: in order to achieve major improvements in quality and speed, some local manufacturers embarked on a course of close collaboration with their main suppliers of materials and components. Over a period of three years, they were able to achieve dramatic reductions in response time and major improvements in quality. The relationship was however not exclusive and the new delivery practices diffused rapidly, such that the manufacturers could obtain their inputs at the stipulated quality and time from a range of suppliers. As a result, relationships have become more market-based. An example of the latter, is the development of equipment for tile making resulting from close collaboration between Italian tile and machinery makers. This machinery is sold today to the main competitors of the Italian tile makers in Spain and Brazil (Jörg Meyer-Stamer, personal communication). More generally, it should be noted that information-rich collaboration between firms is often temporal in nature and does not preclude open bidding for new contracts. This is one of the lessons from the analyses of contract manufacturing in the electronics industry (Lee and Chen forthcoming; Sturgeon 2000). In fact, long-term relationships may be more frequent in quasi-hierarchical chains with their high degree of transactional dependence. It is not uncommon for firms in network relationships to maintain transactional independence.²⁸

It is probably no accident that most of the vertical network examples cited here focus on backward linkages to machinery or component suppliers rather than forward linkages to buyers.²⁹ There is little material on network-based relationships between developing country clusters and the buyers of their products. The dearth of case material seems to reflect the fact that such chains are rarely found. This has an important consequence for the consideration of the interrelationship between value chains and cluster learning. Developing country clusters do acquire competences through inclusion in global value chains. However, entry into value chains characterised by network governance requires investment in upgrading and related producer services within the cluster. In other words, far from substituting local-level investment, the development of network governance within value chains depends upon firm-level and/or cluster level investment in upgrading. This is one of the clear lessons provided by Kishimoto's (2000) and Lee and Chen's (forthcoming) analysis of competence development in the Taiwanese computer cluster.

²⁸ Lane and Bachmann (1996) describe just such a strategy in the case of small suppliers in Germany.

²⁹ Egan and Mody (1992) emphasise the learning effects from close relationships between developing country manufacturers and advanced country buyers but the empirical evidence seems to come mainly from relationships characterised by quasi-hierarchy.

4.5 The broader framework for cluster upgrading

The purpose of this section was to set out how upgrading processes in clusters are affected by different kinds of chain governance. It is important to recognise that there are other determinants of local upgrading. Two, in particular, stand out: strategic intent and the policy environment. The East Asian experience underlines their importance. The literature on Korean, Taiwan, Hong Kong and Singapore provides examples from a number of sectors where local firms were able to graduate from original-equipment-manufacture (OEM) to original-design-manufacture (ODM) and sometimes even original-brand-manufacture (OBM) (Gereffi 1999a; Hobday 1995; Kishimoto 2000; Lee and Chen forthcoming). This graduation corresponds closely to our notion of functional upgrading. The explanations of the progression differ but they seem to have one element in common: the strategic intent of some local firms, that is their conscious effort to learn and their willingness to make the required intra- and inter-firm investment. Why is this strategic intent so much more pronounced in these East Asian countries? Some authors link it to the supportive policy environment (Pack and Westphal 1986; Wade 1990). Closer inspection, however, shows considerable inter-country and inter-sector differences in the policies and support services, thus making generalisations difficult. Clearly, they did not suffer from the kind of disabling macro-economic environment which characterised Brazil and many other countries in the 1980s and 1990s. Frequent and drastic changes in the incentive structure make it difficult to develop or maintain the strategic intent for upgrading. As stressed by Mytelka (2000), risk perceptions and investment decisions for upgrading are influenced by a combination of factors. These might include not only subsidised investment capital in South Korea but also the creation of a human resources and research framework which facilitates innovation and upgrading.

5. THE SCOPE FOR LOCAL INDUSTRIAL POLICY

The question posed at the beginning of this paper was, 'What is the scope for local development strategies and local competitive advantage based on clustering in a world where trading relationships are increasingly global?' Our answer is that this depends on the type of upgrading which is being pursued and on the type of global value chain which the cluster feeds into.

The issue is straightforward where local industrial policy seeks to strengthen the *existing* position of a manufacturing cluster in a global chain. This requires process and product upgrading, usually of an incremental kind. The insertion in a global chain ensures that a good deal of learning occurs in the course of making products defined by external buyers (provided that the local manufacturers make the corresponding investment in people and equipment). Clustering facilitates the rapid diffusion of the knowledge thus acquired. Local industrial policy has an important role to play in expanding infrastructure and strengthening

training, testing and certification facilities.³⁰ Such local industrial policy can usually count on the support of all actors including the buyers because its aim is to strengthen and reinforce the position that the cluster occupies in the global chain.

Upgrading aimed at *repositioning* the cluster requires a more active search and risky investment in capabilities aimed at reaching new markets or reaching old markets in new ways. What scope is there for local industrial policy to foster the radical product upgrading or functional upgrading? In order to be effective, local industrial policy requires building a coalition of the key actors in the public and private sector. Messner (1997, 1998) calls this building policy networks across the public-private divide, emphasising that, increasingly, such policy networks need to be formed along a local – global axis.

The emphasis on policy networks comes from the recognition that the complexities of industrial policy are such that top down approaches are ineffective.

Policy networks are mechanisms of political resource mobilisation in situations where the capacity for decision making, program formulation and implementation is widely distributed or dispersed among private and public actors ... In situations where policy resources are dispersed and context (or actor) dependent, a network is the only mechanism to mobilise and pool resources' (Kenis and Schneider 1991: 41–42).

We would add that this argument extends to the mobilisation of financial resources required for major upgrading initiatives. Collective actors such as business associations are essential players in such policy networks, both because of their sector-specific expertise and ability to mobilise political and financial support. Individual actors can also play a major role, notably the lead firms of hub-and-spoke clusters. As was stressed in section 4, the more clusters are integrated into global markets, the more heterogeneous they become and the more they move towards a hub and spoke organisation in which the lead firms become the gatekeepers of both material and knowledge flows.³¹

Clearly, the dynamics of cluster upgrading depend on whether the lead firms support the repositioning of the cluster. Which is stronger, their allegiance to the local policy network or to their customer(s) in the global chain? This is the critical question. The answer depends on the way the chain is organised. If local firms sell to few buyers to whom they are in a relationship of quasi-hierarchy, their risk of supporting a project of repositioning is particularly high. The risk lies not only in the investment in exploring new markets but also in jeopardising sales to existing markets. In contrast, where producers have more symmetrical network or market-based relationships with their buyers, those buyers are more likely to tolerate new

³⁰ The work of Vargas (2000) on the tobacco cluster in Southern Brazil suggests that much of the work of technical institutes reinforced incremental learning within the cluster rather than providing new knowledge and a gateway to outside knowledge. In large part this was due to the nature of the local tobacco industry, which had been transformed by the arrival of global companies.

³¹ This is not to argue that collective organisations such as business associations are superfluous in such clusters, but their success seems to depend on leadership which is not necessarily or visibly occupied by the lead firms but can rarely be effective without their support.

explorations by the producers. While there is no firm correlation between the degree of hierarchy of a chain and the number of buyers, the latter is a useful proxy in empirical research. It also helps to sum up our conclusion: the smaller the number of buyers the more limited the scope for local industrial policy aimed at repositioning local producers in global chains.

Clearly, insertion into quasi-hierarchical chains does not inevitably lead to lock-in. The successful upgrading of firms in Korea and Taiwan from an initial position of assembly and OEM manufacture to design and own-brand manufacturing illustrates this point. However, this appears to require a combination of human resource and industrial development policies at the national level, local institutional support and firms with strategic intent using a variety of ways to acquire knowledge for upgrading. All too often, firms in clusters are content to enjoy the (considerable) short-term benefits of insertion into global chains.

Where lock-in does exist, considerable efforts are required by both the private and public sectors. Harrison (1994: 33) suggests that in increasingly complex markets, local industrial policy might best be focused on 'projects that deliberately seek to better connect their individual companies and activities to the new global firms and their networks', as opposed to pursuing a 'go-it-alone' strategy. Our analysis suggests that Harrison's 'connectivity' strategy would have to be supported by local industrial policy aimed at strengthening firm-level competences so that they have hard-to-replicate skills that would be valued by other firms in networks.

In the introduction, we asked the question 'Does the insertion of clusters into global value chains enhance or undermine local upgrading strategies?' The preceding analysis leads to the proposition that in developing countries the scope for such local upgrading strategies (promoted by policy networks) is smaller than in advanced countries. Such differences may arise as a result of differences in 'institutional thickness' (essential for local policy networks) but this is not our point. Our concern is the different types of chain which local producers feed into. Producers in developing countries are more likely to operate in chains characterised by quasi-hierarchy. As was stressed in section 3, chain governance is costly and the required investment is more likely to be made where buyers in search of production sites with low labour costs need to upgrade local producers to global standards. Having made the investment it is in their interest to maintain the relationship and the asymmetry. Advanced country producers are less likely to find themselves in such relationships.³²

These conclusions are prompted by insights from real cases but result to a large extent from deductive reasoning. Distinguishing between different types of upgrading and chain governance was critical for this exercise. We are aware that the categories used are abstractions, that real chains are more complex, and that many clusters feed into a variety of chains. We are also aware that our discussion of the scope for local industry policy has been one sided in focusing on the external determinants, notably the organisation of the global chain. Internal determinants were neglected in this paper because they have been discussed at length in

the existing literature even though not always with conclusive results. Some of the helplessness of that literature comes from not understanding the interaction between local and global governance. This is where we sought to make a contribution.

³² This observation does not, however, suggest that clusters in advanced countries are immune to pressures from global value chains and global competition. Harrison's (1994: 81–102) analysis of transformations in Italy shows clearly that Italian clusters, too, are restructuring in the face of global pressures.

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