



Munich Personal RePEc Archive

**Spatial organization of production in  
India: contesting themes and conflicting  
evidence**

Roy, Satyaki

Institute for Studies in Industrial Development

April 2011

Online at <http://mpra.ub.uni-muenchen.de/30986/>  
MPRA Paper No. 30986, posted 19. May 2011 / 13:33

Working Paper  
No: 2011/02

SPATIAL ORGANIZATION  
OF PRODUCTION IN INDIA  
Contesting Themes and Conflicting Evidence

Satyaki Roy

**SPATIAL ORGANIZATION  
OF PRODUCTION IN INDIA**  
**Contesting Themes and Conflicting Evidence**

**Satyaki Roy**

**Institute for Studies in Industrial Development**

4, Institutional Area, Vasant Kunj, New Delhi - 110 070

*Phone:* +91 11 2676 1600; *Fax:* +91 11 2676 1631

*E-mail:* <info@isid.org.in> *Website:* <<http://isid.org.in>>

**April 2011**

ISID Working Papers are meant to disseminate the tentative results and findings obtained from the ongoing research activities at the Institute and to attract comments and suggestions which may kindly be addressed to the author(s).

## CONTENTS

<i>Abstract</i>	1
1. The Context	1
2. Region as a Determinant in Production	3
3. Spatial Organization of Production	6
4. Looking Beyond Uniformity: Conflicting Evidence	8
4.1 Heterogeneity in size distribution of firms	9
4.2 Is this flexible specialization?	10
4.3 Disconnect between the 'global' and 'local'	11
4.4 Autonomy or fragmentation?	12
4.5 'Fluid' labour and 'footloose' industry	13
5. Towards a Regional Policy	14
References	17



# SPATIAL ORGANIZATION OF PRODUCTION IN INDIA

## Contesting Themes and Conflicting Evidence

*Satyaki Roy\**

---

*[Abstract: The emergence of space as a determinant in the functional relations linked to production and growth is a recent development in theories of industrial organization. This paper primarily reviews the contesting themes in explaining changes in relative importance of space. In reference to industrial clusters in India, the paper argues that it is the heterogeneity of the industrial organizations that captures 'space' as an analytical category and broad generalizations often do not address the spatial dimensions. Neither also is it true, at least for developing countries such as India, that small enterprise clusters always reflect the post-Fordist dimension of change in the production organization. In the context of global production chain, this paper further argues that participation in such value chains might lead to contradictory outcomes in production organization giving rise to increased rift between the 'global' and the 'local'.]*

*Key words: endogenous growth, region, technology, fragmentation, footloose industry*

*JEL classification: L23, R12, O12*

---

### 1. The Context

The emergence of space as a determinant in the functional relations linked to production and growth is a recent development in theories of industrial organization. Space was generally considered to be synthetic and uniform, as symmetrical containers in which inputs are rationally allocated. In neoclassical theory, transaction costs are assumed to be zero while in other theories although there has been implicit recognition of the geography of production but was considered to be perturbations in theorization. Region emerged as a distinct parameter of growth only when endogenous determinants of growth were recognised in theoretical discourse. It is primarily the identification of the spatial dimension of knowledge which plays a key role in the dynamics of growth of a region. Moreover, globalisation has made marginal cost of transmission of information and physical capital across geographical space close to zero but that, at the same time,

---

\* The author is Assistant Professors at the Institute. E-mail: satyaki.sat@gmail.com

*Acknowledgement:* The paper was presented in SSE Conference, 2011 at Houston, Texas. The comments received on the earlier version of the paper presented at the International Conference organised by ISID, CSH and CEFC, 2010 is highly appreciated. The author extends gratitude to Puja Mehta and Dhanunjai Kumar for editorial and other assistance.

increased the relative cost of tacit knowledge. The components of knowledge that could not be easily codified are difficult to transact across long distances, they are mostly localized and have made space a serious point of investigation.

Change in the relative importance of space is also reflected in the emerging patterns of international division of labour. In early phases of industrialization we find industries concentrated in locations that are endowed with all the factors required for that specific industry. Since 1940s we come across a division of labour where the entire production process of a specific industry is laid down across the globe depending on the distribution of endowments in regions. In other words regions are no longer producers of the entire product but they perform specific tasks in the entire production process. This draws our attention to global value chains or to a more holistic concept of global production networks. The unit of investigation spreads beyond specific industries and also specific regions. This signifies a marked change in the sphere of industrial research in the sense, value chains include all activities, both within and beyond the specific industry, related to the final act of profit making. The production and distribution of profits is viewed as an ensemble of several factors in place of linear relations between inputs and output and might include activities related to agriculture or services mediated through a complex web of relational structures (Coe *et. al.*, 2008). However, splitting up of production and the spatial organization of the chain of activities has given opportunities to less developed countries in contributing to the global production process. This reduces the entry barrier for developing economies because a highly skill intensive final product might have a low-skilled component and a region endowed with low-skilled labour would get the opportunity in contributing to the production of a high-valued product (IDR, 2009). Nevertheless, participation is not all and the distribution of value-added as well as the realized profit draws us to the issues of power relations involved in the governance of such value chains.

The other dimension of space emanates from discourses related to ‘new competition’ that primarily identifies the post-Fordist shift because of complex obligations of new trade and demanding markets. The speed of change in the demand has become faster and focuses customized goods instead of standardized products. The supply of such products is further facilitated by information and communication technology, developments in fields of bio-engineering and material sciences. Competition has also undergone a change in the sense among other means, exacting timeliness, punctuality in delivery, minimum inventory and other non-price qualitative parameters are increasingly becoming important determinants. In the world of customized goods, it is assumed that more discretion and greater autonomy is required to replace the command structure of the Fordist model. This changing pattern of demand and required change in the production structure signifies what is meant to be the ‘Second Industrial Divide’ in the literature (Piore and Sabel, 1984; Gertler, 1988; Belussi and Pilotti 2002; Beacattini, 1992). Instead of hierarchy, coordinated production of smaller firms or synergy between large and small firms on the basis of cooperative competition emerges as the new paradigm of industrial



organization (Zenger and Hesterly, 1997; Schmitz, 1999). The geographical and social embeddedness of such clusters of firms once again brings to the fore the spatial dimension of production.

This paper primarily aims to contextualize the empirical evidence drawn from several industrial clusters in India in reference to the changing perspectives in spatial organization of production. The principal hypothesis of this paper is that, it is the heterogeneity of the clusters that captures 'space' as an analytical category and broad generalizations often do not address the spatial dimensions. Neither also is it true, at least for developing countries such as India, that small enterprise clusters always reflect the post-Fordist dimension of change in the production organization. In the context of global production chain, this paper further argues that participation in such value chains might lead to contradictory outcomes in production organization giving rise to rift between the 'global' and the 'local'. In the following section we discuss the theory of space as a determinant in economic choice; Section 2 draws attention to the spatial organizations of production, clusters and value-chains in the context of new international division of labour; Section 3 brings to the fore the contesting themes that emerge from empirical evidence derived from various clusters located in India; and Section 4 identifies some broad contours of regional dimension of industrial policy.

## **2. Region as a Determinant in Production**

The neoclassical production function begins with the assumption of constant returns to scale and perfect and costless information. Constant returns to scale imply that production is highly divisible and optimal size of the firm is given by the technology of production and determined at the minimum point of the long-run average cost curve. The assumption of full and costless information precludes any advantage of proximity. Furthermore, there is no externality and if it exists at all it only impedes investment to take place at the optimum level because individual producers could not capture all the benefits of investment in price. As a result, externalities caused by knowledge spillovers in a region that pops up dynamic comparative advantage could not be captured in neoclassical production functions. Although it is admitted that regional differences exist, nevertheless, neoclassical theory suggests that spatial disparities would vanish over time by movements of factors of production that finally leads to equalization of factor productivities across regions. The implicit assumption of free movement of factors across regions presumes that labour and capital could be allocated to similar containers of space that might have varying endowments but the space itself does not play any role in the final outcome.

The regional context becomes relevant once we recognize that firms choose their location of activities in the same way they choose other factors of production. If we assume that total cost is the sum of production costs plus transportation costs and the latter being dependent on the average distance between the site of production and that of sale then so

long as transportation costs assume some positive value, space remains to be one of the important choice variables. However, in such arguments space is linear and fails to capture the multidimensional dynamic aspects of space. The new growth theory identified endogenous determinants of growth and that laid the foundation of regional development theories (Abdel-Rahman, 1988; Gianmarco *et. al.*, 2001; Fujita *et. al.*, 1999; Pred, 1977; Myrdal, 1957). It conceptualizes stylized space in place of uniform space, introduces increasing returns to factor productivities, non-linear transportation costs and views technological progress as an endogenous response to economic actors. Technological development and the diffusion of knowledge and innovation is the central concept in regional growth. Despite the fact that region as an analytical category had long been conceived in concepts of 'growth pole' and inter-regional relations in the form of backward and forward linkages, the dominant analytical approach flows from modeling of imperfect competition and increasing returns to scale within the framework of monopolistic competition. In Dixit-Stiglitz (1977) model it is assumed that utility is a function of variety and the spatial version of this model runs as follows. If internal economies of scale are strong and transportation costs are low then it circulates in the following manner; large size of the local demand creates higher profits that result in higher nominal wages for workers, and on the other side greater variety of goods increases worker's real income and greater backward linkages. Krugman (1991) introduced a model involving economies of scale and labour mobility to capture the geography of production. The model reinterprets the Marshallian notion of externalities originating from localized pool of labour and specialized demand for non-traded inputs. A related body of literature originating from new growth theory argues that when individuals or firms accumulate new capital, both physical and human, they actually contribute to the productivity of capital held by others. As Romer (1990) demonstrated if the spillover effects are strong enough, the private marginal product of physical or human capital can remain permanently above the discount rate, even if individual investments would face diminishing returns in the absence of external boost to productivity.

The regional dimension of growth was also captured in various strands of localization theory. Externalities characterized by knowledge spillovers between firms in a spatially concentrated industry are generally known as Marshall-Arrow-Romer (MAR) types of externalities. In a dynamic context it is argued in this theory that local monopoly is better for growth than local competition because local monopoly restricts the flow of ideas to others and allows innovation-internalisation. The other approach derived from urbanization economics, however, says that external economies are generated by large-scale agglomerations and passed to entrepreneurs. It is the dense network of economic and non-economic knowledge generating institutions located in the cities that create such externalities. In contrast to MAR-type, diversity might emerge as the key source of agglomeration economies as knowledge transfers take place through interactions with other industries (McCann and Oort, 2009). Hence, there are contesting arguments in favour of agglomerations emanating from both similar and diverse kind of activities. The

underlying argument of new growth theory was that because of imperfect markets and externalities there would be increasing returns to output and hence prevent rise in the capital-output ratio by use of knowledge capital. In line with the new growth theory, Lucas (1988) identified human capital as a possible explanation for endogenous growth. However, so far there has not been very great application of human capital theory in understanding regional growth precisely because an economy belongs to the nation rather than a region. Only when the rate of in and out migration is low or the net inflow is low or the heterogeneity of migration propensities is low will the flow variables be low in relation to stock variables and in that case regional growth can be modeled in terms of stock of human capital similar to national growth models (McCann and Faggian, 2009).

Although new growth theory recognizes the spatial dimension of knowledge but it ignores two crucial facts: first, knowledge in general cannot be equated to economic knowledge and knowledge does not spill over automatically as crucial knowledge filter exists (Acs *et. al.*, 2006). Second, plant or firm no longer remains the appropriate unit of analysis although new growth models aim to capture increasing returns to scale in reference to firms. Assuming an automatic translation of knowledge investment to economic knowledge results in a gap in understanding entrepreneurship and that is primarily because of the missing bridge between explaining the objective creation of opportunities and the subjective appropriation of such opportunities. The knowledge spillover theory offers a clue to this riddle: Knowledge capital may be necessary but not a sufficient condition—neither to ensure that such investments would automatically lead to commercialization of knowledge, nor did it necessarily generate the cognitive capabilities to contextualize the available stock of knowledge. On the other side, relative increase in the price of tacit knowledge explains the relevance of region. The knowledge production function is found to be robust at the regional level where output of innovation is a function of the innovative inputs in that location. This calls for a dynamic understanding of space in place of modeling at the firm level.

Conceiving space as an active factor of production generating static and dynamic advantage to the firm is a different notion altogether. It not only debunks uniform abstract space in the sense of physical container of development, but also transcends linearity and calls for diversified relational space that endogenizes growth and development. As a result, instead of efficient allocation of resources, outcomes depend on territorial organization of production and territories are defined as dynamic space, the theatre of cumulative synergies between firms and local level public and private institutions. Regional economics in that case brings back supply-side economics to the fore in order to analyse the differential performance of regions. The growth of demand at the national level is important but it is assumed to affect all regions equally. Success stories refer to regions that could acquire the larger share of the given pie. Hence given the same macroeconomic policies, capabilities of regions differ and that needs to be explained by supply-side factors that fuel endogenous growth. However, the supply-side factors are different from the notions used in neoclassical economics. It talks more about

collective inputs and interdependence; relies more on qualitative variables that are cumulatively generated through cooperative competition and are mutually constitutive. The perspective is a developed cognitive approach that supersedes the traditional functional relations between input and output and conceives the process of production as a complex interaction between economic and non-economic forces.

### **3. Spatial Organization of Production**

The relevance of space once conceived draws our attention to the spatial organization of production. In the context of globalisation, the change in the spatial distribution of production can be viewed in terms of three related themes: a) changes in technology that drives change in the organization of production; b) the re-organization of the international division of labour; c) reconstruction of space as a 'spatial fix' to the problem of capitalist accumulation.

Hirschhorn (1984) argued that the nature of work that arise in given historical periods are often conditioned by the dominant paradigm of technology on which they rely. The nature of bureaucratic organizations that prevailed during the Fordist regime could at least partly be explained by the rigid, fixed motion constraints of machine design that prevailed. With the eventual development of programmable machines, the bureaucratic structure gradually gives way to flexible production organizations. The technological determination of production organization was further captured in post-Fordist theories, which basically argue that new process technologies compel the adoption of organizational forms that rely less on authority and more on dialogue and 'consensual legitimacy'. Brusco (1982) proposes flexible specialization theory primarily as a historical account of institutions. It views economic structures neither being determined by the needs of economic efficiency, nor by the notion of underlying 'mode of production'. It views them as a complex outcome determined by social, political and ideological influences. This perspective gives a 'constructionist' analysis of the Fordist regime (Piore and Sabel, 1984; Gertler, 1988). It was argued that the demise of craft production and the triumph of Fordism was because of some concrete factors specific to United States and could hardly be appreciated in terms of efficiency.

Technological regimes, however, require complimentary regulatory environment that helps in maintaining balance between production and consumption outside the firm. In the Fordist regime such regulations were constructed in several ways. It was believed that the process of capital accumulation is the prime driver of growth and this can be achieved through promotion of big companies as national champions. Entry barriers were high and large structures were meant to produce mass consumption goods. Institutional regulations related to welfare state as well as Keynesian policies and industrial relations system helped maintaining the demand for mass consumption goods. As a result of the decline of the welfare state, the regulatory regime that evolved was no longer conducive to the Fordist structure. Moreover in a globalised regime with open

economies Keynesian demand management became ineffective while developments in technology were increasingly making space for differentiated demands. On the other side, developments in information technology helped in reducing entry barriers in producing niche goods and with the use of multipurpose machines one could reduce the capital-output ratio to a large extent. Larger scales no longer remained an imperative to reduce average costs; rather smaller scales with flexible machines could meet the double requirement of producing differentiated products and also at lower costs. The response was both ways: the large industrial structures were disaggregated to create subsidiaries and satellites while smaller enterprises increasingly agglomerated to reap the benefits of collective indivisible inputs. As a result, the spatial organization of production undergoes a change with agglomerations, clusters, and industrial estates increasingly becoming important markers of industrial development.

The second related theme underscores the fact how international division of labour changed over time giving rise to changing spatial dimensions. Industrial development was concentrated in its early phase in regions with high concentration of raw materials, especially coal. In a later phase concentration was more around regions producing materials and means of production, primarily processing industries. The third phase signifies concentration in urban space, in cities surrounded by non-industrial areas but driven by the market for durable consumer goods provided by such cities. However, in all these phases we did not find that activities belonging to the same industry are splintered up and distributed across space. Only since 1940s we find that the whole production being split into segments depending on the requirement of skill and technology and deployed onto regions where such inputs are easily available (Hudson, 1988). This was made possible by increasing integration of nations and markets. The reservoir of disposable labour in developing economies was made accessible to all and productivities of such labour were made comparable to developed countries by taking recourse to longer hours of work and other precarious forms of labour process. Furthermore, division and subdivision of the production process were made in such minute details along with increased use of technology and routinisation that the need for skilled labour gradually declined. This process of splitting the production process gave rise to global value chains where tasks and parts are performed in different locations and combined by the use of transport and communication technology.

The value chain describes the full range of activities that are required to bring a product from its conception, through the different phases of production, to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. This approach is based on transaction costs analysis and looks through the various activities and the strategic role of relationships between firms and actors spread across the globe (Kaplinsky and Morris, 2000). This was further developed to define the notion of 'governance' of value chains incorporating the notions of authority and power relationships in determining the allocation and flow of financial, material, and human resources within a chain (Gereffi, 1994). The global production

network provides a framework to go beyond the underlying linearity in value chain concepts. It is argued that production networks are inherently dynamic and in a process of flux—evolving both organizationally and geographically. Hudson (2004) argued that production process always involves multiplicity of linkages, and the spatial-temporality of such networks is highly variable and contingent. Appreciating the dynamics of change requires a heuristic framework that is time and space sensitive, and global production network concept constitutes such a framework.

The destruction of old sites and the emergence of new space as Harvey (1986, 2002) argued is a result of capital's insatiable drive to resolve the inner crisis. The relevance of space was primarily explained by the notion of 'socially necessary turnover time', that is, the average time taken to turn over a given quantity of capital at the average rate of profit under normal conditions of production and circulation. Hence to the individual capitalists there is always a relentless move to turn over their capital faster than the social average to earn excess profits. As a result, there is always a need to reduce the friction of distance. The drive to a 'spatial fix' to capitalist crisis is reflected by an incessant intent to create new spaces and devalue others. The crisis of over-accumulation prevalent in capitalism is reflected by a situation where surplus capital and surplus labour power exist side by side with no way to bring the two together. Hence, labour or capital that could not be absorbed would be devalued and the way to avoid such devaluation is to find alternative sites for investment or use. The problem with the 'spatial fix' is that this geographical expansion is driven by fixity and mobility of capital at the same time. Mobility of capital requires physical spaces to be created in the form of capacities such as infrastructure, institutions and so on such that mobile capital could be usefully deployed. But this creation of new space eventually generates its own surpluses that need to be deployed elsewhere to roll on. As a result, the same dynamics of displacing the crisis goes on, driving in an ever increasing geographical space and by that way defining the spatial distribution of production.

All the above perspectives on spatial organization of production draw attention to one common fact at the minimum: space is neither uniform nor passive to the global process of production and it is deliberately created rather being an outcome of rational allocation through efficiency norms. In the following section in reference to specific contexts of industrial clusters in India we would like to go beyond the above-mentioned minimum and see how the concrete differs from the broad trends and also how different outcomes evolve out of various dimensions of interplay of capabilities, markets and institutions that constitute the space.

#### **4. Looking Beyond Uniformity: Conflicting Evidence**

The interventions made in this section in the discourse on regional industrial development are drawn from a couple of field surveys covering a wide variety of clusters ranging from highly technology intensive automobile manufacturing cluster, skill-

intensive cluster producing surgical instruments, traditional clusters related to foundries and those producing footwear and garments<sup>1</sup>. Industrial clusters in this analysis provide an entry point to look into the complex process of interaction between production organization and space; how regional clusters capture the 'local' and the way specifics deviate from received theories. Some of these clusters have a large export share such as footwear cluster in Agra (Uttar Pradesh) or garments producing clusters located in Tirupur (Tamil Nadu) and National Capital Region while foundries in Howrah (West Bengal) and surgical instruments producing cluster in Baruipur (West Bengal) are mostly targeted to the domestic market although having some share in exports. The automobile cluster in Pune (Maharashtra) has a large concentration of domestic players who have tied up with FDI and major global players in the automotive sector. This gives us a spectrum of high-end to low-end clusters in India although the paper neither aims to construct some taxonomy of clusters nor a detailed analysis of individual clusters. Rather in some eclectic manner we focus on some distractions from the received theory that are contextual to each of these clusters and might help us to understand the reconstruction of the division of labour in a more concrete way.

#### **4.1. Heterogeneity in size distribution of firms**

One can start from a preliminary observation that clusters are heterogeneous both across and within a specific cluster. The heterogeneity spans from issues related to size distribution of firms, variety in the composition of output, production organization and division of labour; the labour process, market and non-market institutions related to the cluster that includes non-economic dimensions as cultural and political milieu and so on. Let us begin from the widely agreed determinants of size distribution of firms within industrial clusters as well as that of scale of operation that defines the spatial organization of production. The techno-allocation paradigm informs us how the optimal size of the firm is determined at the minimum point of the firm's long run average cost curve. However, if the long run average cost curve has flat stretches then the minimum point and hence the optimal size of the firm becomes indeterminate. Furthermore, according to this argument if there are global decreasing returns to scale then appropriate size would be infinitesimal while if there are global increasing returns to scale then optimal scale would be infinite. So, how and when diseconomies of scale due to organization and technology set in remains largely unexplained in theory. One can say that the appropriate size of the firm will be determined at the intersection between rising economies of scale flowing from increasing returns and diseconomies of organization arising from increasing size. But this involves a dynamic analysis that cannot be limited to technological factors alone.

---

<sup>1</sup> The study on these industrial clusters were done by the author as part of ISID project on 'SME Clusters in India: Identifying Areas of Intervention for Inclusive Growth', sponsored by the Planning Commission, Government of India, (Hashim *et al*, 2010).

However, the technological determinants help us to explain the difference in size distribution of firms across clusters if not the distribution within. More the average production becomes capital intensive, the more would be the average size of the firm in different clusters. The automobile cluster would always have a larger average size of firms than that in garments or footwear cluster. On the other side, within a cluster the difference in size could not always be explained by difference in technology. For instance in the footwear producing cluster in Agra it is seen that larger exporting firms operate with more or less the same technology albeit with greater division of labour and detailed planning and standardization of the production process. With similar capital intensities in technology, division of labour in the production process determines the average size. The tiny firms in Agra producing shoes on an average have a larger size compared to *chappal* producing firms in footwear cluster at Kolkata and the reason being that production of shoes involves greater division of labour than that in *chappals*. Technological determinants apart from other things might have strong influence on the size of the cluster as a whole. For instance, in the case of Tirupur producing knitted garments there can be large number of permutations and combinations within stages such as knitting, dyeing and printing depending on the type of the garment and it is very difficult to produce all the types by a single firm. Rather cooperation between specialized subcontractors emerges as the natural outcome. Thus, large integrated firms seem to be less efficient an arrangement compared to coordination between similar sized firms having strong complementarities between them. The average size of the firm in a cluster might well be the result of various institutional factors. Sometimes legal norms limit the size of a firm in way of determining the land allotted by the local government. The garments producing firms in Delhi have a greater uniformity in size because of such reasons and institutional rules offer options only for horizontal expansion rather than vertical integration.

#### **4.2. Is this flexible specialization?**

The rise of industrial clusters has often been explained uncritically by the notion of 'flexible specialisation' signifying the post-Fordist structure of production. In India only a few clusters are involved in the production of customized goods that is assumed to require flexible production process. In majority of the clusters goods are produced to cater to the lower end of the domestic market. Within a cluster we might find only a thin layer of firms producing high valued goods for exports or for the higher value-added demand in the domestic market. The exporting firms in garments and footwear produce goods, especially catering to the demands of the mass market in Europe and US. Although, on an average, India might have a higher edge compared to Bangladesh in terms of variety in value-added but products with similar quality and even with much higher value-added are being produced in larger scale of production structures in China and also some in Bangladesh. The underlying fact precisely is that Indian firms on an average do not operate at a quality range that is incompatible to Fordist structure of production organization. On the contrary, in many instances the nature of subcontracting



relationships that exists in most of the clusters discourages producing higher value-added goods. In many of the cases the parent firm retains part of the working capital of the subcontracting firm in such a way that the subcontracting firm would not be inclined to invest for producing higher value added goods and get entangled to increased dependence. The subcontracting relationships that define the interaction between small firms in most of the clusters in India reflect the cause of numerical flexibility driven by cost concerns that hardly has any relation to the kind of flexibility often talked about in the context of 'new competition'.

The reproduction of clusters producing low valued goods could be explained both from the demand and supply side. Low valued consumer goods are produced in clusters of small enterprises in this case not because of increased customization in demand. It is only because of the absence of standardized mass market together with highly fragmented multilayered demand for consumer goods that the small enterprise clusters exist. Income inequality and resulting segmentation in the domestic market might not allow firms to produce at the minimum point of the long run average cost curve given by a technology that fits to larger scale. On the other side, the large reservoir of low wage labour contributes to the demand for low quality goods and supply labour at a lower cost for the production of the same. The availability of large pool of unskilled labour gives rise to contradictory and opposing trends in the choice of technology. On the one hand, in labour intensive sectors it delays the process of 'creative destruction' in the sense that because of low labour costs use of outdated technologies would not impede profitability. On the other hand, in industries with higher technology intensity, such as automobile, the response would be introduction of technologies that deskill the labour process. Firms in the automobile component sector introduce machines and production techniques that standardize and routinise the production process at a level such that undergoing a training of one or two days would make a 'raw' labour capable of working in the automotive industry. This process is quite similar to the Fordist mode of standardization involving routinised labour albeit with higher levels of technology. This narrative matches well with the situation that prevails in the large majority of the small enterprise clusters in India and could be better explained by the notion of 'flexible accumulation' rather than 'flexible specialisation'. Nevertheless, the other side of the picture exists although limited to a small minority of automobile and IT clusters that might capture the image of the 'second industrial divide'.

#### **4.3. Disconnect between the 'global' and 'local'**

There are a large number of firms in Tirupur, Agra as well as in National Capital Region that are exclusively involved in exporting garments or footwear. These are buyer driven value-chains although all the firms produce the final product and none such are found performing some intermediate task in the global value chain. These global chains seem to have a limited extension in the domestic production process. In fact one can easily find a 'disconnect' within the cluster between exporters and those producing for the domestic

market. The size of the exporting firm as mentioned earlier is relatively large not because of the technology of production, but primarily because of the following two reasons: First, exporters could get access to a large volume of standardized demand at a lesser transaction cost compared to those selling in the domestic market because exports involve only a few number of buyers, comparatively less circulation time, and also relatively no fixed costs for establishing marketing channels; Second, more the asset specificity increases due to the rise in the quality of goods, the more it becomes difficult to coordinate through market transactions and that prompts vertical integration giving rise to comparatively large exporting firms. But this might not be the only possible response to the rising demand for quality. The institutional aspect of size distribution of firms goes beyond the domain of technology. Transactions become idiosyncratic with rise in the quality of product and since most of the smaller firms could not secure the required standard, the value chain could not flow further down involving the vast number of tiny firms in the cluster. However, if the necessary monitoring of quality could be done otherwise, vertical integration might not be the necessary outcome. This is the case in Tirupur where trust among the owners and subcontracting firms primarily flows from caste relations to which the majority of the owners belong to. These value-chains represent some sort of Taylorism in which low labour costs are the primary determinant of competitiveness.

#### **4.4. Autonomy or fragmentation?**

The rise in the relative scarcity of tacit knowledge and also transforming the knowledge output into commercial products brings to the fore the critical input of entrepreneurship and the notion of autonomy in the work process. And this critical input, although remains largely unexplained, determines the responses of firms to risks and uncertainty. These responses define the amount of irreversible investments the firm would like to incur and is critically influenced by the nature of capital engaged in the production, their short and long run interests, social embeddedness and so on. The rise and expansion of small enterprise clusters in India might be viewed as a nursery of such entrepreneurship and proliferation of autonomy in the production process. In many of the clusters the number of small firms is increasing but this might be because of different reasons altogether. In knowledge intensive sectors, especially in sectors such as information technology, the contribution of the worker who might be a programmer or an inventor is the largest contribution to the production of output. But the input in this case is highly intangible and non-standard. In such sectors, as the argument goes, if the gap on expected return occurring from the potential innovation between the inventor and the corporate decision-maker is sufficiently large and if the cost of starting a new firm is sufficiently low, then the employee might decide to establish a new enterprise (Audretsch and Aldridge, 2009). In the case of knowledge intensive industries, the proliferation of new start ups could be explained by such dynamism in the mismatch in expected returns but the reasons for spawning of tiny firms in traditional clusters are largely linked to the production organization that exist in such clusters.

The dynamics of growth in any of the small enterprise clusters in India producing footwear or surgical instruments is conditioned by the exchange relationship between traders and small producers. A large number of small producers depend on a few buyers. The parent firms or the traders although face a competitive market in selling their products, however, while buying intermediate goods or final products they behave like oligopsonists. The power relation involved in the governance of the value chain gives rise to a situation where the producer can only get access to the final market by mediation of the trader. The trader-producer relationship in these clusters is a *contested exchange*, where the trader has the power over the small producer to impose sanctions affecting the future stream of revenue while the latter lacks the capacity with respect to the trader (Bowles and Gintis, 1990). To the small producer the objective function is not to maximize profits as they can hardly access the market independently. Rather, the producer's goal of maximizing sales and increasing the revenue in that case is subject to paying a greater premium of profit to the trader, be it directly or indirectly. More the degree of imperfection, the less will be the margin of profit for smaller units as the pressure for reducing costs cannot be transferred to the workers whose wage level has already touched the level of reservation wage. The only space left for an owner of a small unit is to restrict the upward mobility of labour, by refusing to recognize the skill accumulation, and thereby claims for increased wage. And if the wage increment after a certain period is not remunerative to the skill and productivity that the worker attains, the skilled worker would be inclined to establish a new unit if the initial capital required is relatively low and enjoy the 'freedom' of self-exploitation. The tiny producer in that case might earn more than what s/he earned earlier as wage worker because of having the option of working for longer hours. Thus, the expansion of clusters in most of the traditional sectors is the result of some sort of 'forced autonomy' driven by the dynamics of self-exploitative fragmentation.

#### **4.5. 'Fluid' labour and 'footloose' industry**

Finally, I draw attention to the process of creation of space as a 'spatial fix' to the problem of accumulation. Although in the literature on clusters we find the underlying importance of social embeddedness defined by the cumulative interaction between firms and institutions. The meaning of institutions in this discourse is not limited to the context of transaction costs relevant to technological interface; it rather includes those cultural and political interactions which increase the predictability of repeated transactions. The notion of 'trust' in industry district literature is such an institution that grows in a cumulative manner; it might be originally built upon ascribed characteristics such as caste, linguistic homogeneity or other sociological identities but it could gradually be transformed into acquired characteristics over time due to increasing predictability in transactions. These intangible inputs are often captured in the nebulous term 'social capital' since 1990s, which in so many words tries to factor in the complex interaction between economic and non-economic elements as essential to understand the production process. In the context of geographical clusters this brings back the 'place' once again,

where people live and work; the social and political milieu in which the cluster is embedded. However, the drive towards profitability in reference to concrete situations might give rise to contradictory determinations.

The owners would not be inclined to horizontal cooperation if there are no proper institutions in place to protect the property rights of designs and developments they produce. As a result, localization would not necessarily lead to knowledge spillovers and cooperative efficiency. Moreover, many units often prefer to employ migrant workers and discourage employing local workers for the following reasons: a) migrant workers normally do work on lower reservation wage; b) they normally do not have the social clout to raise their claims. On the other side, there is an increasing trend of choosing and creating new sites of production in order to get rid of the rising rents in established cities as well as to take advantage of low paid workers in far away sites. Industries are looking for new 'space' creating new areas of production, denying the role of 'place' and the social embeddedness talked about in the context of cluster. In such situations we find a combination of 'fluid labour' and 'footloose industry' and, of course, neither the capital nor the labour participates in the production process from a long term perspective (Roy, 2009). What follows is a typical 'spatial fix' that reflects the conflicts between mobility and fixity in the course of spatial organization of production and at the same time underlines the fact that in competitions heavily dependent on labour costs the availability of critical inputs embodied in social milieu hardly matters.

## **5. Towards a Regional Policy**

The primary aim of this paper was to focus on the contesting themes that confront the existing literature on spatial organization of production. It is neither to say that such distractions invalidate the broader perspectives, nor does it aim to propose an alternative set of generalizations that could be applicable to all the industrial clusters. Nonetheless the limited hypothesis one could draw is that policies need to be contextualized, appropriate institutions need to be built and authorities be empowered at a more disaggregated level. Industrial structures across the world are undergoing significant changes. Participation of developing countries in global manufacturing and exports shows a decisive rise, although share in trade in manufacturing is increasing much faster than the growing share in output. Moreover, scale and specialization bottle-necks that primarily emerge because of limited domestic market could also be released to a great extent, as expected, through globalization. But integration of markets on the other side gives rise to a situation in which howsoever big few firms might be, they would not really be capable of supplying the required amount. The optimal size becomes indeterminate and the point at which diseconomies of scale sets in is determined by political, cultural and social aspects of organization of production.

In the case of goods for mass consumption the Fordist structure was sustained by appropriate policy regimes that created enough employment and hence generated

demand for such goods. In the process of globalization such policies are no more in place. On the other side, integration with the global market has driven large enterprises into a process of competition that primarily depends on the ability of generating innovation-rents and the same process, as a result, involves more capital-intensive technologies and hence lesser employment elasticities. The 'small' in this context has been traditionally considered as 'absorbing sponge', but absorption by default does not imply gainful employment and hence needs to be looked at in reference to its contribution in the process of generating economic surplus. This primarily calls for promoting modern enterprises that could be linked either to the global value chain or could cater to domestic demands for higher valued goods. Promotion of modern small enterprises is not just a supply-side issue; rather it involves significant intervention in policies that affect income distribution. The demand needs to be propped up by a shift in distribution of income that reduces both the high and low segments of the income spectrum implying a gradual reduction of demand of very high quality luxury commodities on the one hand, and low-end products on the other.

Given the fact that the premise of policy intervention is increasingly getting blurred at the national level, it is even more difficult in a space such as a region that is relatively more porous and open ended. Because of the nature of the space, policies at the regional levels have to be more oriented towards supply-side mechanisms that are targeted towards increasing capabilities and creating institutions appropriate for an upward spiral of growth. However, retaining capabilities also needs generating a virtuous circle where idiosyncratic skills and knowledge are required in the production of high-valued goods. Only such skills that are context specific could be relatively more sticky and hence promotion of such skills and specialized production could be one of the major considerations for regional intervention. Even if few firms in the cluster grow at a faster rate, this higher growth path has not been diffused at large since most of the dynamic firms get linked to higher value added markets, and so it becomes imperative to break all sorts of subcontracting linkages with household enterprises that hardly suffice to provide a standard norm of quality. As a result, there seems to be little diffusion of the incremental value added and the small firms remain caught in the lower end of the market. Policies on small enterprise clusters should evolve tools to codify quality and enhance capabilities of tiny enterprises such that most of them could be integrated to a larger value chain through subcontracting.

In the context of goods for mass consumption it is generally argued that although larger scale of operation would be appropriate for the production of standardized goods, in India we have small enterprise clusters involved in such activities. Quite often issues related to labour market regulations are drawn in saying that firms would go for higher scale employing more workers if they could be given the option of shedding excess labour during cyclical downturns. Apparently there can be two kinds of choices left to the firm: One, given there is no constraint in demand a firm would like to bear the costs of regulations including those related to labour only when such costs are outweighed by

the gains they make through scale economies and related economies of coordination. Two, a strategy quite suitable in the face of demand uncertainties as well as that of fragmented markets is to limit the scale of operations to a smaller establishment that might be operating within a larger network of subcontracting units and compete on the basis of low labour costs by taking advantage of the unregulated labour market. Both these strategies would not be sustainable for two separate reasons: First, the former strategy of large-scale employment based industries would gradually drive up the wages, as happened in the case of China, waning out the comparative advantages derived from margins on wage cost. Second, the strategy of remaining small and catering to relatively customized markets but at the same time deriving advantages from avoiding labour laws would not work for long. This is simply because catering to customized markets would increasingly demand more skills and that would obviously entail higher costs: either in the way of training workers or by employing skilled workers who would ask for higher premium. Hence it is always better to plan for a longer time horizon, create proper infrastructure and skills and move up the value chain such that value realized could be much greater than the cost borne. This is precisely suggesting a gradual transformation to a 'high road strategy' that of course requires a critical size and entails competing on the basis of quality and flexibility in place of 'low-road' where competition is primarily based on reducing labour costs.

Finally the regional dimension needs to be incorporated in policy discourse in a more effective way. For instance, evaluation of cluster development should be primarily based on collective efficiency using meso-level parameters such as total output of the cluster, size distribution of units in terms of output and employment, extent of horizontal and vertical linkages, collaborative efforts within the cluster and resilience to fluctuations in changing demand and so on. Facilities and subsidies given to firms at various levels should encourage clustering and cooperative competition. Within a cluster a firm participating in joint action, participating in bulk raw material purchase, introducing new technologies or contributing in workers' training should be preferred against those who do not. This helps in building the critical core, which becomes self-perpetuating and creates a different norm of performance and a structure of rewards and punishments. A process of regional planning should evolve primarily to take care of these issues specific to the region. This also involves a political process such that the voice of the cluster should be adequately represented in order to appreciate their claims in the public good not as individuals or households but with the defined identity of a cluster.

## References

- Abdel-Rahman, H. (1988), "Product Differentiation, Monopolistic Competition and City Size," *Journal of Urban Economics*, Vol.18, Pp. 69–86.
- Acs, Zoltan J. and David B. Audretsch, Pontus Braunerhjelm and Bo Carlsson (2006), "The Knowledge Spillover Theory of Entrepreneurship," CESIS, *Electronic Working Paper Series* No. 77.
- Audretsch, B. David and T. Taylor Aldridge (2009), 'Knowledge Spillovers, Entrepreneurship and Regional Development,' in Roberta Capello and Peter Nijkamp (eds.), *Handbook of Regional Growth and Development Theories*, Edward Elgar, Cheltenham, UK and Northampton, USA.
- Becattini, G. (1992), "The Marshallian Industrial District as a Socio-economic Notion," in F. Pyke, G. Becattini and W. Sengenberger (eds), *Industrial Districts and Inter-firm Co-operation in Italy*, International Institute for Labour Studies, Geneva.
- Belussi, F and L. Pilotti (2002), "Knowledge Creation, Learning and Innovation in Italian Industrial Districts," *Human Geography*, Special Issue, Vol. 84, No. 2, Pp.125–139.
- Bowles, Samuel and Herbert Gintis (1990), "Contested Exchange: New Micro Foundations for the Political Economy of Capitalism," *Politics and Society*, Vol. 8, No. 2, Pp. 165–222.
- Brusco, S. (1982), "The Emilian Model: Productive Decentralization and Social Integration," *Cambridge Journal of Economics*, Vol. 6, Pp.167–84.
- Coe, M. Neil, Peter Dicken and Martin Hess (2008), "Global Production Networks: Realizing the Potential," *Journal of Economic Geography*, Vol. 8, Pp. 271–295.
- Dixit, A.K. and J.E. Stiglitz (1977), "Monopolistic Competition and Optimum Product Diversity," *American Economic Review*, Vol. 67, Pp. 297–308.
- Fujita, M., P. Krugman and A. Venables (1999), *Economics of Agglomeration: Cities, Industrial Location and Industrial Growth*, Cambridge: Cambridge University Press.
- Gereffi, G. (1994), "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks," in Gereffi, G. and Korzeniewicz, M. (eds), *Commodity Chains and Global Capitalism*, Westport, Praeger, Pp. 95–122.
- Gertler, S. Meric (1988), "The Limits of Flexibility: Comments on the Post-Fordist Vision of Production and Its Geography," *Transactions of the Institute of British Geographers*, New Series, Vol. 13, No. 4, Pp. 419–432.
- Gianmarco, I., P. Ottaviano and J.F. Thisse (2001), "On Economic Geography in Economic Theory: Increasing Returns and Pecuniary Externalities," *Journal of Economic Geoghraphy*, Vol. 1, Pp. 153–179.
- Harvey, D. (1986), "The Geopolitics of Capitalism," in Gregory, D. and Urry, J. (eds.) *Social Relations and Spatial Structures*, Macmillan, London.

- Harvey, D. (2001), "Globalisation and the "Spatial Fix"," *geographische revue*, Vol. 2, Pp. 23–30.
- Hashim, S.R., M.R. Murthy and Satyaki Roy (2010), 'SME Clusters in India: Identifying Areas of Intervention for Inclusive Growth', ISID.
- Hirschhorn, L. (1984), *Beyond Mechanization*, MIT Press, Cambridge, Mass.
- Hudson, Ray (1988), "Uneven Development in Capitalist Societies: Changing Spatial Divisions of Labour, Forms of Spatial Organization of Production and Service Provision, and their Impacts on Localities," *Transactions of the Institute of British Geographers*, New Series, Vol. 13, No. 4, Pp. 484–496.
- Hudson, R. (2004), "Conceptualizing Economies and their Geographies: Spaces, Flows and Circuits," *Progress in Human Geography*, Vol. 28, Pp. 447–471.
- Industrial Development Report (2009), "Breaking in and Moving up: New Industrial Challenges for the Bottom Billion and the Middle-Income Countries," UNIDO.
- Kaplinsky, Raphael and Mike Morris (2000), *A Handbook for Value Chain Research*, IDRC.
- Krugman, P.R. (1991), "Increasing Returns and Economic Geography," *Journal of Political Economy*, Vol. 99, Pp. 483–99.
- Lucas, R. (1988), "On the Mechanism of Economic Development," *Journal of Monetary Economics*, Vol. 22, Pp. 3-42.
- McCann, Philip and Alessandra Faggian (2009), "Human Capital and Regional Development," in Roberta Capello and Peter Nijkamp (eds.) *Handbook of Regional Growth and Development Theories*, Edward Elgar, Cheltenham, UK and Northampton, USA.
- McCann, Philip and Frank van Oort (2009), "Theories of Agglomeration and Regional Economic growth: A Historical Review," in Roberta Capello and Peter Nijkamp (eds.). *Handbook of Regional Growth and Development Theories*, Edward Elgar, Cheltenham, UK and Northampton, USA.
- Piore, J.M. and C.F. Sabel (1984), *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York.
- Pred, A. (1977), *City-Systems in Advanced Economies: Past growth, present processes and Future Development Options*, London: Hutchinson.
- Romer, P.M. (1990), "Endogenous Technological Change," *Journal of Political Economy*, Vol. 98, Pp. S71–S102.
- Roy, Satyaki (2006), "Do Minimum Wages Reduce Employment in the Small Enterprise Clusters?" *Indian Journal of Labour Economics*, Vol. 49, No. 4, Pp. 709–719.
- Roy, Satyaki (2009), "Garments Industry in India: Lessons from Two Clusters," *Working Paper 01/2009*, Institute for Studies in Industrial Development.
- Zenger, Todd R., William S. Hesterly (1997), "The Disaggregation of Corporations: Selective Intervention, High-powered Incentives, and Molecular Units," *Organization Science*, Vol. 8, No.3, Pp. 209–222.



## List of ISID Working Papers

- WP2011/01** India's FDI Inflows: Trends and Concepts, *K.S. Chalapati Rao & Biswajit Dhar.*
- WP2010/12** On the Sustainability of India's Non-Inclusive High Growth, *Surajit Mazumdar*
- WP2010/11** Operation of FDI Caps in India and Corporate Control Mechanisms, *K.S. Chalapati Rao & Biswajit Dhar.*
- WP2010/10** Indian Capitalism: A Case That Doesn't Fit?, *Surajit Mazumdar.*
- WP2010/09** Big Business and Economic Nationalism in India, *Surajit Mazumdar*
- WP2010/08** Aligning with both the Soviet Union and with the Pharmaceutical Transnational's: Dilemmas attendant on initiating Drug Production in India, *Nasir Tyabji.*
- WP2010/07** The Arduous Route to ensuring some Minimum Public Shareholding in Listed Companies, *K.S. Chalapati Rao.*
- WP2010/06** Managing Finance in Emerging Economies: The Case of India, *Sunanda Sen.*
- WP2010/05** Social Science Research in Globalising India: Historical Development and Recent Trends, *T.S. Papola.*
- WP2010/04** Private Industry and the Second Five Year Plan: The Mundhra Episode as exemplar of Capitalist Myopia, *Nasir Tyabji.*
- WP2010/03** Trading in India's Commodity Future Markets, *Sunanda Sen and Mahua Paul.*
- WP2010/02** Industry and Services in Growth and Structural Change in India: Some Unexplored Features, *Surajit Mazumdar.*
- WP2010/01** Does the Current Global Crisis remind us of the Great Depression?, *Sunanda Sen.*
- WP2009/02** Footwear Cluster in Kolkata: A Case of Self-exploitative Fragmentation, *Satyaki Roy.*
- WP2009/01** Garments Industry in India: Lessons from Two Clusters, *Satyaki Roy.*
- WP2008/12:** Global Financial Crisis: A Classic 'Ponzi' Affair?, *Sunanda Sen.*
- WP2008/11:** The Analysis of Business Groups: Some Observations with reference to India, *Surajit Mazumdar.*
- WP2008/10:** Outward FDI and Knowledge Flows: A Study of the Indian Automotive Sector, *Jaya Prakash Pradhan.*
- WP2008/09:** South-South Investment in Infrastructure: The Operation of Indian Firms in Developing Countries, *Jaya Prakash Pradhan.*
- WP2008/08** Indian Direct Investment in Developing Countries: Emerging Trends and Development Impacts, *Jaya Prakash Pradhan.*
- WP2008/07** Investment and Growth in India under Liberalization: Asymmetries and Instabilities, *Surajit Mazumdar.*
- WP2008/06** Media the Key Driver of Consumerism: Macro-Micro Linkage and Policy Dimension—A Case Study of FM Radio, *Abhilasha Kumari.*

---

\* Already Published. Most of the working papers are downloadable from the institute's website:  
<http://isidev.nic.in/> or <http://isid.org.in/>

---

## About the ISID

The Institute for Studies in Industrial Development (ISID), successor to the Corporate Studies Group (CSG), is a national-level policy research organization in the public domain and is affiliated to the Indian Council of Social Science Research (ICSSR). Developing on the initial strength of studying India's industrial regulations, ISID has gained varied expertise in the analysis of the issues thrown up by the changing policy environment. The Institute's research and academic activities are organized under the following broad thematic areas:

*Industrial Development:* Complementarity and performance of different sectors (public, private, FDI, cooperative, SMEs, etc.); trends, structures and performance of Indian industries in the context of globalisation; locational aspects of industry in the context of balanced regional development.

*Corporate Sector:* Ownership structures; finance; mergers and acquisitions; efficacy of regulatory systems and other means of policy intervention; trends and changes in the Indian corporate sector in the background of global developments in corporate governance, integration and competitiveness.

*Trade, Investment and Technology:* Trade policy reforms, WTO, composition and direction of trade, import intensity of exports, regional and bilateral trade, foreign investment, technology imports, R&D and patents.

*Employment, Labour and Social Sector:* Growth and structure of employment; impact of economic reforms and globalisation; trade and employment, labour regulation, social protection, health, education, etc.

*Media Studies:* Use of modern multimedia techniques for effective, wider and focused dissemination of social science research and promote public debates.

ISID has developed databases on various aspects of the Indian economy, particularly concerning industry and the corporate sector. It has created On-line Indexes of Indian Social Science Journals (OLI) and Press Clippings on diverse social science subjects. These have been widely acclaimed as valuable sources of information for researchers studying India's socio-economic development.

### **Institute for Studies in Industrial Development**

4, Institutional Area, Vasant Kunj, New Delhi - 110 070, India

Phone: +91 11 2689 1111; Fax: +91 11 2612 2448

E-mail: [info@isid.org.in](mailto:info@isid.org.in); Website: <http://isid.org.in>

**ISID**