

COLLECTIVE EFFICIENCY AND INCREASING RETURNS¹

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Summary

Recent research on industrial clusters in developing countries has unearthed some notable success stories of small local enterprises growing fast and competing in export markets. This paper focuses on some conceptual and theoretical points which help to explain them. The discussion is conducted with a view to building a bridge to current mainstream economics.

¹ Valuable comments on a previous draft were provided by Edward Anderson, Martin Bell, David Evans, John Humphrey, Khalid Nadvi, Raphie Kaplinsky, Judith Tandler, Hermine Weijland and Adrian Wood. This paper arises out of a research project on collective efficiency and industrial development which is financed by the Overseas Development Administration, London. Responsibility for the views expressed in this paper are the author's alone.

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1. INTRODUCTION

There has been a major shift in the small scale industry literature over recent years: it has shaken off the previous export pessimism. Case studies have emerged from various parts of the world showing that clusters of small enterprises have broken into international markets. The best known cases are the Italian industrial districts and similar cases come from other advanced countries. But perhaps the most interesting come from less developed countries. For example, Brazil is today a major shoe exporter, a position it owes to a cluster of local enterprises most of which were small when they began to export in the early 1970s. Similarly, Pakistan is today one of the world's main exporters of surgical instruments, made by a cluster of manufacturers in and near the town of Sialkot. Both are cases of fast industrial growth, based on local enterprises which export most of their output to North America or Europe. The enterprises were small a decade or two ago; since then some have grown into medium or even large enterprises.

This paper is concerned with their ability to grow and to export. More precisely, its purpose is to present some conceptual and theoretical ideas which help to analyse and explain their success. It also seeks to build a bridge with mainstream economics which, with few exceptions, has ignored the connection between clustering and growth.

Since my empirical examples come mainly from developing countries, it is worth stressing from the start that differences in factor endowments are not sufficient to explain the exports from the South to the North. Low wages have helped the clusters in the South, but increasing returns to scale and product differentiation are essential to explain their exports to the North.

In order to develop this argument the unit of analysis needs to be made clear. Most economic investigations use the country or the individual enterprise as the unit of analysis. This paper focuses on groups of enterprises, in particular on clusters of enterprises. A cluster is defined as the geographical *and* sectoral concentration of enterprises. Such clustering opens up efficiency gains which individual enterprises can rarely attain. These gains are captured in the concept of collective efficiency, defined as the competitive advantage derived from local external economies and joint action. The relevance of this concept and its two components will be discussed in the course of the paper.

The paper is structured as follows: Section 2 gives a brief introduction to industrial clustering in the South and a description of two export oriented clusters. Subsequent

sections are concerned with their growth and competitiveness. Section 3 reminds us that the idea of there being gains in clustering is not new. The idea goes back to Alfred Marshall and has recently been revived by Paul Krugman and others. Section 4 explains why their analysis is insufficient to explain the growth of the clusters mentioned earlier. Sections 5 to 7 enlarge the canvas and engage in bridge building. They show how engaging with the mainstream economics³ literature on increasing returns helps to correct a deficiency in recent industrial cluster⁴ research. Then I turn the tables and ask what mainstream economists can learn from the new industrial cluster research. The objective is more one of prompting debate, than resolving issues. Some of the issues raised matter not just for clusters but industrial growth more generally.

2. EXPORTING CLUSTERS IN THE SOUTH

This paper explores how clustering furthers competitiveness and growth. The first point to make is that economic gains do not necessarily result from clustering. A group of small producers making the same or similar things in close vicinity to each other constitutes a cluster, but such concentration in itself brings few benefits. It is, however, a major facilitating factor for a number of subsequent developments (which may or may not occur): the division of labour and specialisation amongst the small producers; the emergence of suppliers who provide raw materials or components, new and second-hand machinery, and spare parts; the emergence of agents who sell to distant national and international markets; the emergence of specialised producer services in technical, financial and accounting matters; the emergence of a pool of workers with sector-specific skills; joint action of local producers, which can be of two types, individual firms cooperating or groups of firms joining forces in business associations or consortia.

Later sections seek to conceptualise the competitive advantage derived from clustering. The purpose of this section is to register that such advantages seem to have materialised not only in advanced countries (Pyke and Sengenberger 1992) but also in developing countries (Nadvi and Schmitz 1994). There is now a small but growing body of literature which shows that:

³ 'Mainstream' refers to neo-classical economics. The connection to transaction cost economics is not discussed in this paper; for useful contributions see Knorringa (1996) and Lundvall (1993).

⁴ The literature often uses the term 'industrial district' instead of 'industrial cluster'. For the purposes of this paper, they can be used interchangeably. There are, however, circumstances in which distinguishing between the two matters (Schmitz 1995b:536).

- Clusters matter in developing countries - they are common in a wide range of countries and sectors.
- Clustering has helped small firms to overcome well-known growth constraints and sell to distant markets, nationally and abroad.

These general conclusions need to be qualified because the growth experiences have been diverse. At one end of the spectrum, clustering has had only a limited impact in Africa; at the other end, there are clusters in Latin America and Asia displaying fast growth and competitiveness in international markets. Two such cases were mentioned in the introduction. Shoe manufacturing in the Sinos Valley (South of Brazil) developed over two and a half decades from a cluster of small enterprises producing only for the internal market to a cluster with enterprises of all sizes exporting around 70 per cent of their output (Schmitz, 1995a). Their growth and competitiveness cannot be understood by analysing enterprises individually. The 500 shoe manufacturers draw on over 1,000 suppliers of specialised inputs and services and on a range of self-help institutions. However, there is not just complementarity and cooperation but also fierce local rivalry confirming that the two do not exclude each other. The Sinos Valley is not the only shoe producing cluster in Brazil but it is largely responsible for the country's export performance. Between 1970 and 1990, Brazil raised its share of world exports in *leather* shoes from 0.5 to 12.3 per cent. More recently the industry faced new challenges which will be elaborated upon later.

The second case to be used for illustrative purposes in the course of this paper is the surgical instrument cluster of Sialkot in the Punjab of Pakistan. The instruments are made from stainless steel by over 300 manufacturers who farm out work to 1,500 small enterprises specialising in particular stages of the production process. Alongside these manufacturers and their sub-contractors, there are an estimated 200 suppliers of inputs and over 800 units providing various types of services. As in the Brazilian case, there is intense competition in all stages of the local value added chain but there is also cooperation both of the vertical and horizontal kind. Over 90 per cent of Sialkot's output is exported and around 90 per cent of these exports go to Europe and North America. This cluster which has been studied by Nadvi (1996) is estimated to account for over 20 per cent of world exports, making Pakistan the second largest exporter of surgical instruments after Germany.

The remainder of the paper asks how to analyse and explain such successful experiences (or conversely, failure). The objective is *not* to provide a comprehensive

account of industrial clusters⁵ but to concentrate on a small number of conceptual and theoretical issues which I consider key to understanding such industrial growth.

3. EXTERNAL ECONOMIES

There is a lively debate on how to analyse and explain the growth of industrial clusters. The recent upsurge of interest comes from various strands of social science:

- a) The critique of Fordist mass production. The most influential work was that of Piore and Sabel (1984) who presented industrial districts as the small firm variant of flexible specialisation.
- b) The literature on local industrial systems and regional science in developed countries (for example, Becattini 1990, Brusco 1990, Cooke and Morgan 1993, Courlet and Soulage 1995, Garofoli 1993, Pecqueur 1996, Saxenian 1994, Scott 1992, Sengenberger and Pyke 1991).
- c) The work on small-scale industry in developing countries (for example, McCormick 1994, Mead 1994, Pedersen et al. 1994, Rabellotti 1995a, Sandee 1995, Schmitz 1989, Tandler and Amorim 1996).

One could add further strands, such as network analysis (for example, Powell 1990, Grabher 1993), or subdivide the strands, but this would detract from the cross-fertilisation which has occurred between them. Authors and papers often cut across the above distinctions.

In contrast, contemporary mainstream economics has largely ignored industrial clustering. The main exception is Paul Krugman (1991, 1995) who aims to bring economic geography back into mainstream economics. His concern with the localisation of production takes him back to Alfred Marshall. For this and other reasons, Krugman is useful to the concerns of this paper and worth referring to in some detail.

⁵ The term 'cluster' is also central to Porter's (1990) analysis where it is sometimes used, as in this paper, to refer to a sectoral and geographical concentration of firms; for example, the ceramic tile industry of Sassuolo, Italy (chapter 5). In most of Porter's work, however, 'cluster' is a much broader term referring to a group of industries with strong vertical ties and located within one country, but not always geographically close; see, for example, the cluster charts of USA, Germany and other countries (chapters 7 and 8).

(Krugman 1991) seeks to explain the localisation of industrial production. Following Alfred Marshall (1920), he identifies three reasons for localisation.

- Labour market pooling: sectoral and geographical concentration creates a pool of specialised skills benefiting both workers and firms.
- Intermediate inputs: where enterprises cluster they can support more specialised local suppliers of inputs and services.
- Technological spillovers: clustering facilitates the rapid diffusion of know how and ideas.

Krugman's subsequent discussion can be summed up in two points, one analytical and one empirical. First, the above three factors remain the key forces which explain clustering today, but they need to be modelled to sharpen the analysis (which he does)⁶. Second, the relevance of doing so is underlined by the fact that clustering is common in both high-tech and low-tech sectors of the United States and other advanced countries. One could add that the same applies to developing countries.

This is not, however, my main point. While agreeing with much of what Krugman says, his analysis remains essentially Marshallian. And this is the main problem. The above three causes of clustering are essential but not sufficient to explain the strength of clustering firms. In what follows I explain why.

The above three reasons for clustering are instances of local external economies. Indeed, the concept of external economies is introduced by Marshall in order to explain (a) why and how the location of industry matters, and (b) why and how small enterprises can be efficient and competitive.⁷ At this point it helps to go back to basics and recall what external economies are. The essential idea is that the economic agents cannot capture in the price of their product all the benefits of their investment. The seepage is of benefit to other agents. It is involuntary, it is incidental and herein lies the limitation of a theory which rests entirely on external economies. As stated by Mishan (1971), 'the essential feature of an external effect is that the effect produced is not a deliberate creation but an unintended or incidental by-product of some otherwise legitimate activity'.

⁶ The formalisation is undertaken separately for two of the three factors, labour pooling and intermediate inputs (Krugman 1991). The latter, for example, is analysed by focusing on the interaction between economies of scale, transportation costs and demand.

⁷ The notion of external economies also helped Marshall to reconcile increasing returns with competitive equilibrium (Prendergast 1994:46, Papandreou 1994:14).

In summary, the main point of this section is that local external economies are not sufficient to explain the strength of clustering firms. The next section focuses on what is missing from such explanations.

4. JOINT ACTION

Incidental external economies are of importance in explaining the growth of contemporary industrial clusters, but there is also a deliberate force at work, namely consciously pursued joint action. This is what emerges from research on industrial clusters in advanced countries (Brusco 1990, Pyke 1992, Pyke 1994, Trigilia 1989, Rabellotti 1995, and others), and in developing countries (Humphrey and Schmitz 1996a, Nadvi 1996, Tendler and Amorim 1996). Such joint action⁸ can be of two types: individual enterprises cooperating (for example sharing equipment or developing a new product) and groups of firms joining forces in business associations, producer consortia and the like. Cutting across this distinction one can distinguish between horizontal cooperation (between competitors) and vertical cooperation (between producer and user of inputs or between producer and seller of outputs). Table 1 brings the two dimensions together.

Table 1 : Forms of joint action in clusters

	Bilateral	Multilateral
Horizontal	e.g. Sharing Equipment	e.g. Sectoral Association
Vertical	e.g. Producer and user improving components	e.g. Alliance across value added chain

Some examples from a contemporary cluster might help to stress the point that (incidental) external economies are not sufficient and that joint action is the second critical element to explain growth and competitiveness. The examples are from the Brazilian shoe cluster - mentioned in section 2. Holding trade fairs was critical to the cluster's ability to conquer distant national markets. It was multilateral horizontal cooperation in the early 1960s that gave rise to these trade fairs. They continue to be held twice yearly, organised by FENAC, a professional trade fair organisation which

⁸ The choice of 'joint action' as umbrella term is deliberate. 'Collective action' would not capture bilateral ventures. The term 'cooperation' has other pitfalls. In game theory it is equivalent to not cheating and the examples used are often not cheating in market transactions. This is not the way it is meant here. Where the term 'cooperation' is used in this paper it should be read as synonymous with 'joint action'.

is owned by the local municipality. FENAC and the local Business Association also played a major role in the late 1960s/early 1970s, in bringing foreign buyers to the Sinos Valley and taking local manufacturers to fairs abroad. Once channels for exporting were opened up, joint action in marketing was less critical and indeed declined. Current joint action concentrates more on production. Low-cost competition from China has forced Brazil to move up-market and compete on quality. Simultaneously, American and European buyers have enforced faster delivery in smaller batches. Quality and speed cannot be obtained by individual enterprises. The 'new competition' - to use Best's (1990) term - requires vertical cooperation between manufacturers and suppliers. Such joint action has increased significantly in the Sinos Valley. The initiatives range from accords between individual manufacturers and suppliers helping each other to raise efficiency and quality to an alliance between various associations (those of tanners, component makers, equipment producers, shoemakers and export agents) trying to overcome internal differences and promoting a strategic approach vis-à-vis external competitors (Schmitz 1995a and ongoing research).

The concept of collective efficiency tries to put across in one term what has been said above, namely:

- that economic viability can neither be understood (nor fostered) by focusing on individual enterprises;
- that incidental external effects are not sufficient explanation and that the effects of purposeful joint action are an essential second component.

Put more briefly and positively: collective efficiency is the competitive advantage derived from local external economies and joint action.

These thoughts have led me in earlier work to distinguish between unplanned and planned collective efficiency. Nadvi (1996) prefers the term passive and active collective efficiency. This distinction expresses neatly that clustering can bring two advantages: those which will fall into the producer's lap and those which require joint efforts.

Pairing the passive and active components also helps to theorise. How do we explain that some clusters do well and others stagnate; that within clusters there are segments which grow and others which just survive; that clusters which were thriving in the 1980s are struggling in the 1990s? These are the kind of questions which come out of the recent case material. In short there are differences between clusters, within

clusters and over time and finding systematic explanations is not easy. The pair of passive and active effects can help us in this task. For example, Rabellotti (1995b) has found it useful in her comparison of shoe clusters in Mexico and Italy: she found that 'external economies emerge in both Italy and Mexico' but 'cooperative effects are definitely more common among the Italian firms than the Mexican ones. The main differences are in the relationship with suppliers and process-specialised firms, which are based on cooperation in Italy and mostly on market rules in Mexico' (p.174). She also found enormous differences within the clusters, especially in Mexico. Many firms, especially small ones, were in the survival mode relying largely on the generic and freely available external economies. In contrast the more dynamic enterprises, mainly medium-sized, engage more in explicit cooperation for specific purposes. Further insights come from a comparison of the gem and jewelry clusters of Los Angeles and Bangkok. Scott (1994) attributes the greater dynamism of the Thai cluster to 'remarkable collective activism' ... 'significant resources have been mobilized to create an infrastructure of supporting services, ranging from training and educational programs to international marketing and information providing agencies' (p.260). Scott emphasises in particular the work of the trade association which - with the support of government agencies - seeks to 'leverage the industry into a developmental pathway characterized by rising skills and product quality' (p.261). This contrasts with the collective inaction in the (less dynamic) American cluster.

In my own work, I have been particularly interested in changes over time. Even the successful clusters go through crises. Success is not a state but a process of taking advantage of opportunities and coping with crises. What determines whether clusters have the capacity to respond to opportunity and crisis? This is hard to answer, but the concept of collective efficiency with its passive and active component may give us a handle on it. The hypothesis which emerges from my empirical work in Brazil is that responding to opportunities and crisis requires 'shifting gear' from passive to collective efficiency. External economies are important to growth but are not sufficient to ride out major changes in product or factor markets: that requires joint action (Schmitz 1995b). Nadvi (1996) draws a similar conclusion for Pakistan. Further confirmation comes from a recent study on Italy which (using a different 'micropolitical' approach) tries to explain differences in industrial growth between and within regions. Locke (1995) concludes that industries situated in localities with well-developed associations and interest groups capable of aggregating diverse interests, mediating industrial conflict, and diffusing information adjusted more successfully to changing world markets.

To conclude this section, some words of caution are in order. First, the argument is not that the combination of passive and active collective efficiency explains everything. If producers concentrate their individual and joint efforts on the supply side and neglect the demand side the cluster will fail.⁹

Second, both the passive and active component can be disaggregated. Rabellotti (1995) distinguishes between static and dynamic external economies and static and dynamic cooperation effects. Or take the above-mentioned distinction between bilateral and multilateral joint action (also stressed in Humphrey 1995). Such disaggregation can be useful but industrial cluster research is currently in need of recomposition rather than decomposition.

Third, Nadvi (1996) while endorsing the collective efficiency argument, warns that disentangling external economies and benefits of joint action can be difficult because joint action itself can give rise to external economies. This is an important point but - as his own analysis shows - it does not imply that one need abandon the two basic categories.

Fourth, collective efficiency is difficult to measure as are its two components. It is in the nature of external economies that they are hard to quantify since they represent unpriced benefits.¹⁰ As regards joint action, some gains can be measured, but comprehensive measurement is often difficult. Indicators which show how much joint action occurs are easier to construct.¹¹

⁹ The advantages of clustering are typically seen to lie in production (easy access to skilled labour, technology, and intermediate inputs), but they arise equally in distribution. Again the distinction between passive and active collective efficiency is relevant. Clustering attracts buyers and thus facilitates access to distant markets. Sometimes producers can simply use the marketing channels which arise (external economies). But at other times they need to take joint action, for example, organise a trade fair, or the certification of their products. Recent case material underlines the importance of customer orientation and joint action in marketing (Humphrey and Schmitz 1996, Tandler and Amorim 1996).

¹⁰ On proxies for measuring external economies or measuring the potential for generating external economies, see Stewart and Ghani, 1991:585-587 and Weiss 1988:101.

¹¹ Gains from joint action which can be measured include, for example, discounts arising from joint purchasing or the shared costs of marketing. The incidence of joint action can be measured with data on the forms of cooperation which firms engage in and the intensity with which they do so. By weighing such data a composite cooperation index can be constructed.

5. INCREASING RETURNS

The introduction states that this article seeks to build a bridge with mainstream economics. Building such a bridge seems important because mainstream economics and the industrial district literature find themselves at opposite ends of a methodological problem. The latter, with its typically multidisciplinary approach,¹² takes too many factors into account, finds it difficult to distil the critical causal relationships and is often stuck in morphology. (This applies also to some of my own work). The former, with its unidisciplinary modelling approach can posit clear causal relationships but remains too abstract for those interested in explaining the real world. The implication is not that the solution lies in the middle but that the two would benefit from challenging each other.

Krugman himself is frank about the failure of mainstream economists to investigate industrial clustering. Such 'geographic concentration of production is clear evidence of the pervasive influence of some kind of increasing returns. And there is the problem. Increasing returns are simply harder to model than constant or diminishing returns. ... Economics tends, understandably, to follow the line of least mathematical resistance. We like to explain the world in terms of forces that we know how to model'. (1991, p.6). This is, of course, a long-standing criticism of neo-classical economics. The preoccupation with equilibrium models and the resulting avoidance of increasing returns issues made the mainstream less relevant for those concerned with economic development.

This has begun to change. Since the mid 1980s economists have found a way of modelling increasing returns which has led to a new body of growth theory (e.g. Romer 1986, Murphy, Shleifer and Vishny 1989)¹³. Being able to model economies subject to increasing returns seems to have freed mainstream economists to return to long neglected questions of economic development. A good example is Krugman's work on trade and geography. In turn, the new growth and trade theory makes the mainstream more interesting for those who focus on economic development. There is new scope for dialogue. Such rapprochement is most meaningful if it concentrates on particular issues. In what follows I pinpoint some mutual challenges which arise from a concern with industrial clusters. The points made are simple, if not basic, but go to the heart of how clusters grow and compete.

¹² This multidisciplinaryity is not so much visible from what is said in this paper but it is a major feature of the industrial district literature (see references at the beginning of section 3).

¹³ For a useful assessment, see Pack (1994).

The successful industrial districts represent growth based on increasing returns. Yet in the debate on industrial districts there is little explicit concern with increasing returns. Putting them centre stage is an essential step in order to draw mainstream economics into that debate. But my point is not just about bridge building but substance. In order to elaborate let us recall what increasing returns are about. They arise when an increase in all inputs leads to a more-than-proportional increase in output. Hence the more complete term is 'increasing returns to scale'. In what follows I explain why the recent industrial district debate has neglected the question of scale (and returns therefrom) and why this needs reversing. There are two reasons why scale was neglected. First, the message from the literature on new programmable technology was that the previous trade off between scale and efficiency was significantly reduced (Ayres and Miller 1981-82, Kaplinsky 1984). Second, the message from the literature on flexible specialisation was that mass markets are breaking up and that catering for highly differentiated and ever-shifting markets has more growth potential (Piore and Sabel 1984).

The subsequent neglect of scale of production and market size was a fallacy. The typical manufacturer in a successful industrial district (the epitome of flexible specialisation) is very specialised and relies for some components or parts of the process on other specialised suppliers who in turn require other specialised inputs and equipment. The inputs are not necessarily all made locally, but are available at the right specification and at short notice from specialised traders. Where needed, specialised transporters make a fast connection to distant suppliers or customers. Without scale, such specialisation would not occur. The importance of scale is hidden by the enormous product differentiation and the staggered way in which orders are placed with the individual enterprises (especially where just-in-time delivery is practised). However, once the cluster becomes the unit of observation, it is easy to recognise the connection between scale and specialisation.

One is reminded of Adam Smith's theorem that the division of labour depends on the size of the market. But, as stressed by Allyn Young (1928), Smith told only part of the story. Increasing returns come not just from the splitting up of the labour process and the development of specialised crafts and tools. In the intermediate processes and the production of tools there is a further division of labour which in turn depends on the size of the market. Young referred to them as 'roundabout methods of production'. The principal economies which manifest themselves in increasing returns are the economies of roundabout methods of production ... In fact, these economies lie under our very eyes, but we may miss them if we ... look too much at the individual firm or even ... at the individual industry'. (p.531).

It is hard to make the point clearer than Young did, even though we no longer use the term 'roundabout methods' and he was not specifically concerned with clusters. Clustering propagates successive layers of specialisation *provided* that the *overall* scale of demand grows. The main addition I would make to Young is that increasing returns come not just from roundaboutness in *production* but also in *distribution*. Recent cluster studies show an impressive range of handling agents, transport specialists and marketing agents (Knorringa 1996, Nadvi 1996, Schmitz 1995a).¹⁴

All this may seem elementary, but the multidisciplinary industrial district literature has not been sufficiently concerned with market size and overall scale of orders. The emphasis on product differentiation and rapid delivery of small batches has led to neglect of scale and returns to scale.¹⁵ Making them more central is important for further research on industrial districts. It will also help to connect and interact with mainstream economics - which itself has only recently found its way back to investigating increasing returns.

6. ENABLING AND DISABLING EXTERNAL ECONOMIES

Having pointed out a missing dimension of the current industrial district research, I now ask what mainstream economics could learn from it. The message in the earlier section was that collective efficiency goes a long way in explaining how clusters grow, become competitive and remain competitive (or conversely fail to do so). I define it as the competitive advantage derived from external economies and joint action. The former are incidental, the latter is consciously pursued, and the combination of the two varies between clusters and over time. The proposition is that by working with these two categories and differing combinations we can begin to build theory. This and the next section discuss both categories further because they have been neglected in mainstream economics and they are essential to the bridge to be built.

In the words of Krugman (1995:51): 'While the ideal of external economies has always been respectable - indeed recognised as essential by any sensible economist who thought about it - it has been surprisingly neglected in our economic tradition'. Of concern in this paper is particularly the *neglect* - within mainstream economics - of

¹⁴ Gereffi's (1996) work on buyer-driven commodity chains is particularly important in reversing the productionist bias in the industrial organisation literature.

¹⁵ For an exception, see Storper (1989) and Scott and Storper (1992).

the enabling features of external economies. The roots of this problem are conceptual and worth setting out.

In spite of controversies over what external economies are (see Papandreou 1994), there is a definition which is widely accepted and adopted in most economics text books: external economies exist when private costs or benefits do not equal social costs or benefits. When social costs are higher than private costs, we speak of external diseconomies (of central concern to, for example, the environment debate); when social benefits are higher than private benefits we speak of external economies (which are of central concern to this paper). This is a good definition which concurs with my earlier characterisation of external economies (Section 3). It is at the next step that differences in view begin to unfold. The mainstream regards the divergence between social and private benefits as a source of market failure: it leads to under investment. In *Economics*, the world's most successful text book, the concept of external economies is introduced as a 'type of inefficiency' (Samuelson and Nordhaus 1995:32). The message is that external economies have a disabling effect on the working of the market and its outcome. This is not compatible with what one observes in industrial districts where external economies often have an enabling effect.

How can one reconcile this difference? To some extent it arises because there are two types of external economies: pecuniary and technological.¹⁶ The former occur when, for example, the investment of enterprise X leads to an increase in orders for supplier Y whose increase in output leads to a lower unit price for all Y's customers. In contrast, technological external economies are not mediated through the market and not reflected in relative prices. An example is enterprise X training workers who then move on to employers Y and Z. This distinction helps because there is no disagreement over the enabling effect of pecuniary external economies. The dispute arises over technological external economies. Mainstream economics is categorical that they constitute a market failure in that they cause under-investment. Industrial cluster research suggests that this is not necessarily the case: whether they cause under-investment or not is a matter of research.

Take the external economies which arise from investment in new technology. Let us assume that the enterprise which acquires the new equipment obtains a good return on the investment. Nevertheless, some of the gains from this investment often escape.

¹⁶ This distinction was introduced by Jacob Viner and set out more fully by Meade (1952) and Scitovsky (1954). In a more recent contribution Stewart and Ghani (1991) stress that technological external economies are more significant for industrial development than assumed by Meade and Scitovsky.

Knowledge of the strengths and weaknesses of the new equipment seeps out through multiple channels: workers who socialise with workers of other enterprises, workers who change employers, and suppliers or repairers who have multiple clients. Indeed, a typical feature of clusters is the speed with which information travels and successful innovations spread. The *diffusion* of innovation tends to be a strength of clusters. Success in adopting implies success in adapting. Piecemeal technical and organisational change is pervasive in competitive clusters. Such fast and effective diffusion is all about external economies inducing investment. However, external economies can also result in under-investment. *Generating* radical change seems to be a weakness of clusters (Silicon Valley being a notable exception). Radical technical change tends to require large investments which may not be forthcoming because in a cluster it is extra hard to appropriate the benefits.¹⁷

If factory walls in clusters are so porous, why do dynamic entrepreneurs not move out and invest where they can appropriate a larger share of the created benefits? The answer is simple: they are both recipients and providers of external economies.¹⁸ What they receive from being in the cluster outweighs what they provide. Hence they keep investing in training, introducing new organisational methods, introducing new machinery - but apparently shrinking back from the large investments in R & D. This sums up what can be observed in the Sinos Valley and Sialkot and is probably true for many other clusters.

These observations do not quite accord with the disabling view of external economies. The reason for the difference seems to lie in unit of analysis and method. *The view that external economies cause under-investment arises from mainstream analysis focusing on a single enterprise in a static fashion. Once we study interlinked enterprises in a dynamic way, the outcome is more open-ended and the enabling features of external economies become apparent. Having recognised that clustering enterprises are both recipients and providers of external economies, under-investment ceases to be the necessary or dominant outcome.*

A different way of cutting through these issues is to distinguish between one-way and two-way external economies¹⁹, the former being the type found in conventional economics text books and equated with market failure, the latter being the type

¹⁷ It could be that this impression arises because available cluster studies cover sectors which are in the category of "supplier dominated" of Bell and Pavitt's classification of industrial sectors and their sources of technical change. For details, see Bell and Pavitt (1993).

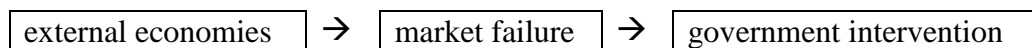
¹⁸ I am grateful to Khalid Nadvi for very helpful discussions of these points. See also Nadvi (1996:39-40).

¹⁹ This distinction, coupled with a good deal of scepticism, was suggested by Adrian Wood.

observed in industrial clusters and often enabling. This could prompt the question of whether the latter are external economies at all if what seeps out is balanced by what pours in. The problem is that focusing on the balance, if it occurs at all, would take attention away from the sequential nature of external economies and the cumulative process they give rise to.

7. GOVERNMENT INTERVENTION OR PRIVATE SELF-HELP?

The contrast between industrial cluster and mainstream conceptions can be taken one step further. The first disputed point was whether external economies constitute market failure. This section questions whether market failure requires government intervention. The sequence

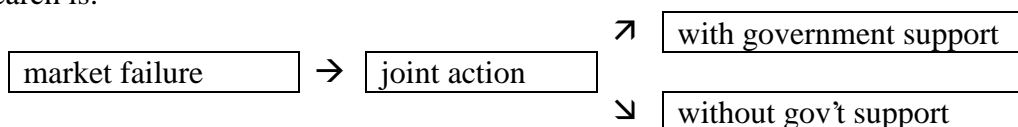


has almost become an axiom in economics. The industrial district experience leads me to question this quasi-automatic conclusion. It shows that where market failure does arise, government intervention is not the only and often not typical way of resolving it. Joint action seems more common.

In Sialkot, for example, the multitude of local manufacturers had a problem in getting their products dispatched quickly to their overseas customers. In order to remove this bottleneck they built a local 'dry port' which allows speedier and more cost efficient handling, custom clearance and transport to the distant air or seaports of Lahore or Karachi. Many other problems remain unresolved but where improvement in collective services have been made the initiatives have rarely come from government (Nadvi 1996). In the Sinos Valley, the shoe manufacturers and supply industries have given rise to an impressive range of local self-help institutions: six industry associations, a trade fair organisation and four centres which provide training and technical services with varying combinations of public and private sector finance. Again they have not resolved all market failures and their effectiveness has varied over time. Where government was involved the initiatives tended to come from joint action. To complete the picture, a review of the European industrial district experience showed less government intervention than expected. Where public intervention was evident it tended to work through local self-help organisations (Schmitz and Musyck 1994; see also Pyke 1992, 1994). Indeed, the conclusion is not

that public intervention and joint private action should be seen as opposed to each other, nor that government is redundant.²⁰

My main argument, however, is that joint private action has been more prominent than government intervention in resolving market failure.²¹ Some private self-help schemes have emerged and been sustained without outside help; others have enjoyed government support. Thus the sequence which comes out of the industrial cluster research is:



It is ironic that in an age when neo-liberalism triumphed, the sequence of external economies → market failure → government intervention remained unquestioned. Perhaps the main reason is that mainstream economics does not know how to handle joint action. The problem is both ideological and methodological. Starting with the former, economics has long recognised the importance of joint action but remained bedevilled by the worry about its abuse.

The best known expression of this fear comes from Adam Smith (1776:232): 'People of the same trade seldom meet together, even for merriment and diversion, lest the conversation ends in a conspiracy against the public, or in some contrivance to raise prices'. Alfred Marshall was also sceptical about the merits of joint action,²² but in one of the early chapters of his *Principles* entitled 'The Substance of Economics', he stresses the importance of studying collective action (1920:20-21).

The reason this has not occurred in his work and that of his neo-classical disciples is presumably due to the problems of method and theory. It is hard to build economic theory involving joint actors.²³ As long as one goes along with methodological individualism, mainstream economics is powerful and elegant. In contrast, joint

²⁰ Tendler and Amorim (1996), for example, show how government was instrumental in getting private self-help off the ground in the case of a Brazilian furniture cluster.

²¹ Market failure is not the only reason for joint action. Stewart (1996) suggests that the purposes of group action can be categorised into enhancing efficiency (resolving market failure) and advancing claims.

²² More so in the *Principles of Economics* than in *Industry and Trade* where he acknowledges that cooperation can be constructive in industrial research, standardisation and export trade (Marshall:1919). However, as emphasised by Wilkinson and You (1992), joint action does not play an important role in Marshall's analysis of industrial districts.

²³ Transaction cost economics played into the hands of the mainstream when Williamson (1975) argued that forms of governance tend towards either 'market' or 'hierarchy' thus contributing to the neglect of intermediate forms.

action is messy. One cannot even assume its existence. Where individuals pursue short run gains it will not occur - even if all involved stand to gain.

Game theory can contribute to understanding the conditions under which joint action occurs. Thus it provides a bridge to other attempts of researching the occurrence and outcome of joint action - some of them coming from other disciplines (for example, Locke 1995, Putnam 1993, Streeck 1992). This debate is increasingly driven by the proposition that the capacity of voluntary cooperation is critical to economic performance. The industrial district experience supports this proposition. But it also warns us not to get carried away. Collective efficiency is the outcome of both the incidental external effects of individual action and consciously pursued joint action.

So as to avoid misunderstanding, the argument in this section is not that joint action is always positive. Just as there are enabling and disabling external economies, one can distinguish between enabling and disabling joint action. This distinction mirrors the conflicting positions in the literature regarding the relationship between joint action and growth. On the one hand, there is the view that joint action harms growth, a view which is fuelled by the mainstream focus on rent-seeking and Olson's proposition (1982) that collective action has contributed to, if not caused, economic decline. On the other hand, there is Putnam's (1993) thesis that the capacity of private voluntary cooperation enhances institutional and economic performance. This view is also reflected in recent work on the synergy between private self-help organisation and public policy (Esser *et. al.* 1995, Evans 1996, Messner 1995, Tandler 1997).²⁴ The research on industrial clusters tends to support the latter view.

8. RISKABLE STEPS

This paper has concentrated on conceptual and theoretical points. The weight they carry depends on the success of industrial clusters. With regard to advanced countries, the record of industrial clusters has been questioned. Harrison (1994), for example, suggests that the success of small enterprise clusters has been overrated and the strength of the large corporation underrated; in his view, the dominant form of industrial organisation is the large company controlling networks of (often small) suppliers.

²⁴ See also Sabel's (1994) discussion of developmental associations and Moore and Hamalai (1993) on why some associations are developmental and others not.

Clearly research which compares clusters with other forms of industrial organisation is important but it is equally important not to construct false dichotomies. Successful clusters are unlikely to remain populated only by small firms. In the Brazilian and Pakistan cases referred to earlier, some large firms have grown from within, occupying powerful positions vis-à-vis local suppliers. Some are even seeking new roles outside their cluster.

This is not an argument against comparing clusters with other forms of industrial organisation.²⁵ On the contrary, such research is an important part of the assessment of clusters. However, comparisons of current performance would probably miss the significance of clustering in the industrialisation process. Understanding this significance requires a process approach. The points to be made are again simple (and implicit in the previous sections).

For poor regions seeking to industrialise there are two ways of doing so: on the basis of local (generally small) enterprises or by attracting outside (generally large) enterprises. In practice one often finds a combination of both. This section is mainly concerned with the former, that is industrialisation from below.

In order to industrialise from below two things need to occur: the mobilisation of unused local resources (financial and human) and the effective use of these resources. In the early stage, both the mobilisation and use of resources occur in small amounts at a time. This is where clustering becomes significant because it facilitates specialisation and effective investment in small steps. Producers do not have to acquire equipment for the entire production process, they can concentrate on particular stages leaving other stages to other entrepreneurs. Specialised workshops which can repair and upgrade existing machinery further help to reduce technological discontinuities. It follows that investment capital is needed in small rather than big lumps. Also working capital requirements are affected by clustering. Where specialised suppliers of raw materials and components are close by, there is less need to store inputs. Similarly, small amounts of human capital can be made to count. One producer's investment in a specialised skill renders returns because others have invested in complementary expertise. However, specialisation does not mean isolation because without interaction no one can sell their products or services.

To complete the argument, the mobilisation and use of entrepreneurial talent needs to be considered. Truly visionary entrepreneurs with large amounts of capital and/or

²⁵ For the case of developing countries such comparisons are virtually non-existent. An exception is Levy's (1991) comparison of transaction costs in Taiwan's and Korea's shoe industry.

willingness to take large risks are rare. Clustering also draws out the less exceptional, and more common 'ordinary' entrepreneurs. This occurs because clustering makes it possible to advance by taking small and calculable - rather than wild - risks. The steps are smaller and more riskable due to the division of labour (focus on a particular span of manufacturing capability) and due to the enabling local external economies stressed earlier on.

This emphasis on riskable steps is supported by observations on the industrial structure in developing countries. A frequent feature of their industrial structure is the 'missing middle': some large enterprises at the top and many small enterprises at the bottom unable to graduate into the medium sized category. They cannot grow because of 'informational and other market failures associated with the provision of financial, technical and market support to SMEs' (Levy 1994:2). One of the most striking features of clusters is that they consist of enterprises of all sizes, including a strong middle segment. This applies not just to the Sinos Valley and Sialkot but to many other clusters (for example, Knorringa 1995, Rabellotti 1995b, Das 1996, Tewari 1996). It seems that the growth constraints faced by individual small scale manufacturers are less severe in clusters.

In summary, the argument is that clustering facilitates the mobilisation of financial and human resources, that it breaks down investment into small riskable steps, that the enterprise of one creates a foothold for the other, that ladders are constructed which enable small enterprise to climb up and grow. It is a process in which enterprises create for each other - often unwillingly, sometimes intentionally - possibilities for accumulating capital and skill.

This is precisely what has happened in the Sinos Valley and in Sialkot. To use a term of Levy and Kuo (1991), they are examples of the 'bootstrap strategy'. Both cases show how clustering facilitates this strategy. It is not the only way to industrialise but it is particularly important for developing countries. The relevance of engaging with the earlier discussion on external economies and joint action needs to be assessed in this light.

9. CONCLUSION

Recent research on industrial clusters in developing countries has unearthed some notable success stories of small local enterprises growing fast and competing in export markets. The growth experiences which come out of this new body of research vary a great deal but they do not support the earlier pessimism on the growth prospects and export potential of small enterprises in developing countries. The purpose of this paper was not to provide a full account of the success stories. It has focused on a few conceptual and theoretical points which are essential to explain them. This has been done in the spirit of prompting further debate, not of resolving issues. The exposition was conducted with a view to building a bridge to mainstream economics. Extending the bridge to transaction cost economics would be useful but would require a separate paper.²⁶ The conclusions can be summed up as follows:

- The observed growth and competitiveness cannot be explained by focusing on individual enterprises. Clustering was essential to their success. Such clusters are manifestations of increasing returns, a subject which has over the last ten years returned to the top of the mainstream agenda.
- Industrial cluster research on advanced and less developed countries has been carried out largely outside mainstream economics, by socio-economists, economic geographers and other social scientists. Their work has neglected the question of scale and market size.
- In mainstream economics, Krugman is one of very few authors concerned with industrial clusters. His work contributes to understanding the growth of clusters but is incomplete. It is essentially an extension and formalisation of Marshall's analysis which rests on the importance of local external economies, that is on incidental benefits which producers provide for each other.
- Recent research on industrial clusters in advanced and developing countries confirms the importance of external economies, but stresses joint action as the second critical factor for explaining growth and competitiveness.
- The two factors can be brought together in the concept of collective efficiency defined as the competitive advantage derived from local external economies and joint action. The former are incidental, the latter is consciously pursued and the combination of the two varies between clusters and over time. With these two

²⁶ Knorrninga's (1996) study of transaction regimes in an Indian cluster is particularly useful. On the question of trust in exporting clusters, see Humphrey and Schmitz (1996b).

building blocks one can begin to build theory (on growth and decline) but much work remains to be done.

- For progress to be made, more attention needs to be given to the enabling features of external economies. The mainstream conceptualisation of external economies as a source of market failure or type of inefficiency leads to a preoccupation with the disabling features.
- Further research also needs to reconsider responses to market failure. The mainstream position is statist in assuming that market failures require government intervention. Industrial cluster research suggests that where such failures are resolved it is more often due to joint private action than public intervention. Where government needs to intervene it tends to be more effective when it works through private self-help schemes.
- Some of these conclusions could have relevance beyond industrial clusters. The principles observed in clusters are at work - in a diluted form - in the economy in general.
- This applies in particular to the connection between external economies and growth. Small industrial enterprises fail to grow and markets tend to fail them where external economies are weak or absent. The denser the external economies, the better markets tend to work. They make it easier to progress in riskable steps and thus induce investment - often from sources which would otherwise remain un(der)utilized. External economies can lead to under-investment but it is not as automatic a consequence as assumed in mainstream economic doctrine.
- The relevance of joint action which comes out of the industrial cluster research also has a wider resonance. Research on the link between inter-firm cooperation and growth or competitiveness has grown fast over recent years. It shows in the burgeoning literature on industrial networks - which is mainly about bilateral joint action. It is also reflected in the literature on collective action which is about multilateral joint action, and which has poured out of various specialisms of political economy.
- Finally, the importance given to self-help organisations in clusters is reflected in the recent literature on how to make the economy governable and industry promotable. The mainstream economics literature which provoked a focus on rent seeking and bad government is slowly giving way to a literature on good government which emphasises the synergy between public support and private self-help.

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