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Regions, competitiveness and competitive regions: a critical look at recent debates

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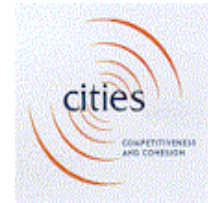
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Regions, competitiveness and competitive regions: a critique of ‘geographical economics’

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Introduction

Since the late 1980s, Paul Krugman has rapidly established himself as amongst the most prominent of economists. Samuelson in the preface to Krugman's 1994 book *The age of diminished expectations*, refers to him as "the rising star of this century and the next". The prolific and often controversial Krugman has clearly made a major impact both within his own discipline and beyond, in economic geography and regional science. In part this is because he has explicitly set out to incorporate geography and space into formal economic models of trade and competitiveness - revisiting in the process a range of standard 'models' of economic geography and spatial science.

In particular he has challenged the conventional concept of trade as reflecting primarily comparative advantage emphasising instead the role of increasing returns to scale. He has vigorously challenged the popular notion of competitiveness in global markets as the key to national prosperity. Linked to this he has also dismissed the threat to 'developed' nations posed by cheap labour in developing countries - arguing that this simply reduces the costs of goods consumed in the developed nations and is therefore to their advantage.

He has also addressed questions around the clustering and agglomeration of economic activity at a variety of spatial scales including that of the region and the city or urban agglomeration (Krugman, 1993; 1995). He has set out to account for the clustering of economic activity in space on the basis of scale economies. These, he argues, arise in two main forms. *First*, pure scale economies generated by larger scale, more efficient production based on the greater market size generated by clustering in space. *Second*, from a version of Marshallian external economies generated by the clustering together of individual enterprises - external economies, as he observes, are again generated essentially by scale effects. The degree and form of clustering, he argues, then depends on the balance between the costs of transport and communication on the one hand, and scale economies on the other.

He has addressed these issues from a formal economic perspective deriving models of clustering and agglomeration in highly abstract terms. Krugman's overall approach turns on a critique of formal economic models based on perfect competition. The trade-off between the costs of transport and communications on the one hand and increasing returns to scale and external economies on the other. This, however, violates a key assumption of mainstream economic models which assume perfect competition and equilibrium. In the absence of perfect competition, it is impossible using what had been conventional, mainstream economic models to derive a unique equilibrium outcome. Market structure under conditions of imperfect competition depends not simply on the interaction of supply and demand, but on the decisions, including location decisions of producers. So locational outcomes cannot be derived, uniquely, from the interaction of supply and demand in the market place.

The solution as Krugman saw lay in the development of a new set of models which could, successfully in his terms, incorporate imperfect competition and hence cope with increasing returns, the effects of geography and location: "The reason why space has finally made it into the economic mainstream is therefore obvious: imperfect competition is no longer regarded as impossible to model." (Krugman, 1998a, 164) He, himself, set out, therefore, to develop such

models both in relation to international trade and development and as the basis for understanding agglomeration and the clustering of economic activity in space.

Krugman effectively demonstrates that agglomeration can be derived from the interaction of increasing returns and transaction costs. Using simple formal models he can derive single cluster and multi-cluster outcomes. Having said that - and despite his own insistence on the importance of formal modelling, he also provides more discursive accounts of processes of agglomeration and regional development. These are generally consistent with his formal models but are based essentially in verbal reasoning together with at times simplistic empirical material drawn on as corroborative evidence.

The argument

To summarise Krugman's argument in relation to spatial agglomeration, increasing returns and external economies:

1. The striking feature of economic activity is its spatial concentration. In order, therefore, to understand how the international economy works or to understand differences in national growth rates, a good place to start is by looking at differences in regional growth and at local specialisation.
 2. Increasing returns of one form or another affect economic geography at a range of different scales including the location of particular industries, the existence of cities themselves and development at the broader regional level of US states or European countries.
 3. The spatial concentration of economic activity at a broad regional level (US states, European countries) can be derived from formal models which combine scale economies related to market size, and transport costs. Economies of scale encourage concentration of production. Transaction costs across space encourage location where demand is large and/or the supply of inputs is particularly convenient. Such models demonstrate that, depending on the value of the parameters either a single agglomeration or multiple agglomerations may be derived - a range of different equilibrium points being possible.
 - 4.
 5. Scale economies are at least as important as comparative advantage in explaining trade between territories. Much of international trade represents arbitrary specialisation based on increasing returns. Such scale economies reflect both backwards linkages whereby efficient-scale suppliers are supported and forward linkages to markets.
 6. The lower the transaction costs across space (including transport costs and tariffs) and the greater the economies of scale the greater the tendency towards agglomeration and the smaller the likely number of clusters.
 7. External economies play a key role in the clustering of industries in a particular location. These, however, include not only the 'pure' or 'technological' externalities of conventional mainstream economics (which do not violate assumptions of perfect competition) such as flows of knowledge in a localised cluster of firms. They also include - as Marshall had argued earlier - the role of market size in supporting efficient-scale specialist suppliers of
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goods and services, and labour market pooling. The effects of both depend on increasing returns to scale and therefore imply imperfect competition - this being the reason why they were previously sidelined by mainstream economics.

8. The agglomeration of economic activity in space in part reflects processes of cumulative causation - activity tends to cluster where markets are large and markets tend to be large where activity clusters. This is reinforced by, for example, the concentration of transport infrastructure to serve such clusters, such infrastructure itself being subject to increasing returns.
9. Externalities as a source of clustering of economic activity are evident historically and across different industrial sectors. They are by no means confined to modern, high technology industry as typified by Silicon Valley or Route 128 and where "knowledge spillovers" are commonly seen as dominant.
10. Much of the localisation of economic activity within countries reflects historical accident and seemingly trivial initial events, coupled with cumulative causation. Cumulative processes tend to "lock in" patterns of uneven development. Patterns of economic development are subject to "path dependence" or QWERTY economics. This also means that expectations and the anticipation of change can become self-fulfilling. Local boosterism, for example, may therefore be justified.

Towards a critique

Having summarised, briefly, the key elements at least of Krugman argument, a number of questions and issues can be raised.

Scale

First, Krugman identifies the role both of pure scale economies based on market size and also of Marshallian externalities. The latter include Marshall's trinity of labour pooling, specialist inputs and knowledge transfer or spillovers. While both, however, are assumed to operate, the relationship between them is not clear. There is some suggestion that the pure increasing returns/spatial transaction costs model with market size a key factor operates at a broader regional scale, at the level of US states or European countries, generating inter-regional centre-periphery patterns. Localised external economies on the other hand operate at a smaller spatial scale, generating local clusters. He suggests, for example, that: 'the key aspect of regional specialisation is the dependence of regional economies on export clusters held together by Marshallian external economies.'. This suggests, perhaps, that pure increasing returns operate at a broader inter-regional scale while Marshallian externalities are somehow the glue holding together industrial clustering at a more localised level. This is not, however, made explicit nor elaborated. Krugman may have set out to incorporate space more effectively into mainstream economics but he is yet to address the issue of scale convincingly.

Knowledge-based externalities

Second, in looking at Marshallian externalities, Krugman criticises mainstream economics for ignoring these on the grounds that they could not be modelled. Krugman attempts to rehabilitate the first two forms identified by Marshall and others - labour pooling, and scale effects which support specialist inputs and suppliers. The effects of these he demonstrates by means of simple economic models. The third, knowledge transfers, he largely ignores and he does so effectively on the same grounds - they leave no visible trace and their effects can only, therefore, be assumed rather than modelled.

While this may be grounds for writing off the effects of knowledge transfer from the perspective of formal modelling there is a considerable and growing body of work in regional science, economic geography and social economics focusing on spatial aspects of knowledge transfer, the process of innovation and role of both formal and tacit knowledge. The idea that knowledge transfer leaves no visible trace has itself, increasingly, been questioned - work based on patents and awards is one such area. Other work has focused on inter-firm linkages based on both qualitative and quantitative studies.

It is questionable, as well, whether knowledge transfer is, in fact, unaffected by scale economies, as conventionally assumed by mainstream economics and Krugman as well. A larger cluster of enterprises would seem to give more opportunities for useful transfers of knowledge and information. Spatial clustering translates into both lower transaction costs, wider opportunities for matching needs and capabilities and for the interchange of useful knowledge and information (Scott and Storper, 1992; Audretsch, 1995, 1998)

Local embeddedness

Third, Krugman neglects the role of local embeddedness and the influence of local infrastructure, institutional, social and cultural practices - the 'socio-institutional externalities' emphasised by the geographical literature and social economics of urban and regional studies - again on the grounds that these cannot be modelled.

Spatial proximity from this perspective is about more than simply minimising transaction costs. It fosters the transfer and exchange of formal knowledge and information (pure technological spillovers). It also, however facilitates the development of trust, shared values and conventions on which successful collaboration is based and it fosters the exchange of tacit information embedded in the knowledge and experience of the workforce and the everyday practices of enterprises - included in what Storper (1997, 80) terms untraded dependencies. Individual enterprises are 'embedded' in complex networks and relationships both market-based and non-market. This is reinforced by the development of institutional structures and infrastructure supportive of spatially concentrated clusters of enterprises and processes of learning and innovation.

Krugman only sees (and models) clusters of enterprises in space rather than regions and urban agglomerations in all their complexity. In effect by concentrating so hard on the trees he fails to see the wood. A key issue, linked to this, is the extent to which regional and urban structures contribute to economic competitiveness at the level of the enterprise, the region or nation states.

History

Fourth, Krugman also argues that History matters. He emphasises the role of history in the sense of initial location patterns which then become locked in by path-dependency generated by processes of cumulative causation.

'The long shadow cast by history and accident over the location of production is apparent at all scales, from the smallest to the largest ... this clear dependence on history is the most convincing evidence available that we live in an economy closer to Kaldor's vision of a dynamic world driven by cumulative processes than to the standard constant-returns model.' ((Krugman, 1993, 9) *ibid*, 9-10).

This focuses attention on the tendency for spatial clusters or the agglomeration of economic activity in cities and regions to persist and to consolidate over time (reflecting pure increasing scale effects together with localised externalities and, possibly, expectations or active policy).

However, it is a curiously abstract notion of history that underlies both his formal models and his more discursive accounts of the development of urban agglomerations or regional production systems. It is history in the sense of a seemingly chance event, necessarily exogenous to the formal model, which then becomes locked in by cumulative processes. The layering and reworking of successive rounds of investment over space emphasised by economic geography etc are in this sense ignored.

As Martin and Sunley have pointed out this also means that there is little attention paid to history in the sense of change and development:

'He claims that the same broad locational forces which explain the growth of nineteenth-century concentrations also underlie the continued tendency to agglomeration. Indeed, this is one reason why he is reluctant to emphasise technological spillovers as a key determinant of contemporary clusters.' (Martin and Sunley, 1996, 269)

As this also suggests, Krugman largely ignores processes of decline or 'downwards cumulative causation'. This seems to reflect his starting point with models of growth, trade and development. (Relative decline - as in the US for example - is put down to lack of productivity growth in the service sector which represents an increasingly dominant share of the economy in the most developed countries.)

Rigour mortis?

Finally, Krugman is widely acknowledged to have extended the boundaries of formal economic modelling. He also makes clear his support in this respect for the professional standards of the economics profession. Krugman demonstrates that formal economic models can, given appropriate simplifying assumptions, handle a range of situations in which increasing returns and hence imperfect competition are of central importance. As noted earlier, he claims affinity with Kaldor's belief in "the irrelevance of equilibrium economics". As others have also observed, this does not involve moving very far from mainstream rational

choice equilibrium models. It does not, therefore, make much in the way of inroads into the complexities of real-world situations. As Martin and Sunley observe:

'In his quest for economic rigor, Krugman's mathematical formalization of the processes of industrial agglomeration and uneven regional development has taken him away from the richness of Kaldor's original approach toward the limited abstract landscapes of regional science ... the ghosts of constrained maximisation and equilibrium solutions still haunt much of his analysis.' (1996, 287)

Krugman himself is clear on the need for rigour in this sense. According to Krugman: 'there is no alternative to models'. Anything else, Krugman refers to variously as at best a metaphor, a heuristic device, potential material for building better models or an intellectual dead end. He is provocatively disparaging about economic geographers, sociology and the 'anti model backlash in economic geography'. Economic geographers, he argues: '... essentially settled for what they could do: schematic descriptions of the data or organising principles that made intuitive sense and/or seem to fit the facts fairly well, without having the deeply satisfying logic of, say, the von Thunen model.' Those who take issue with formal economic models and of the process of abstraction they entail are often, he suggests: 'politically motivated ... driven by values rather than analysis'.

Concluding remarks

The breakthroughs of Krugman and others in recent years may look like a significant extension to the boundaries of the discipline as seen from within the confines of professional economics. From the perspective of economic geography and urban and regional studies on the other hand, they do not appear to have made much of an inroad into the complexities of real world processes. Indeed from this perspective the specific advances in terms of formal modelling can look relatively trivial, an intellectual case, as suggested, of rigour mortis.

What Krugman provides us with are complex but nevertheless highly abstract models which satisfy the rigorous tenets of modern mainstream economics and which apparently capture some aspect of real world processes. The wider significance of his work lies, in part, in the extent to which we think that this provides useful corroboration or adds weight to what we think we know about such processes from other perspectives.

The highlighting of scale economies, externalities, and path dependency, in this sense, represent not just a counter to what Krugman saw as the failings of mainstream economics. The same is true of their role in explaining spatial concentration, agglomeration and the competitive advantage of cities and regions. The formal models clearly do not go far enough. There are clear gaps - as with knowledge transfer. But they do offer an understanding of the core processes around which other approaches can test and elaborate on.

Others working from an economic perspective, have drawn on and extended the sort of ideas set out by Krugman. Two examples are worth noting. First, Glaeser et al's work looking at the forces of agglomeration and congestion effects in explaining the growth and competitive advantage of cities. Second, Audretsch's work on the role of knowledge transfer in promoting the spatial agglomeration of high value added economic activity.

Krugman himself is not, in any case, the consistent purist which might be implied from his own discussion of method and his support for formal economic modelling. His approach is in fact more varied - and in fact the broader relevance and value of his work derives, in part, from this. In fact it is important to be aware of this and to recognise that his contributions and claims rest only in part and sometimes remotely on truth-claims grounded in formal models. As Martin and Sunley conclude: 'it is perhaps less the specific results of Krugman's analyses that are important for economic geography than the general stimulus they provide for further enquiry.' (1996, 285)

It is worth noting that the highly abstract modelling of Krugman is in some ways at the other extreme to the detailed empirical studies of a limited set of particular localities and regions such as (Silicon Valley, Baden Wurttemberg, the Third Italy etc) which have been held up as archetypes or precursors of more general processes. These studies have frequently focused on what are arguably highly atypical cases, selected more as examples of what researchers have sought to prove or as part of some ongoing academic fashion or bandwagon rather than any more systematic exploration of processes such as knowledge transfer or the nature of embeddedness. It is notable that more systematic, extensive studies of innovation and knowledge transfer - as opposed to intensive case studies of selected localities, have found little evidence for the importance of local linkages and networks. Not a very novel observation but one which points to the need for more in the way of systematic studies aiming to test out the relevance and validity of the conclusions from both these traditions.

Finally, something of a truism, but Krugman says little if anything about the distributional consequences of differential competitiveness - who gains who loses - other than on a broad, centre-periphery level. His potential contribution to issues around cohesion and exclusion, as opposed to competitiveness, are this very limited. One might also observe, however, that alternative approaches to the study of innovation, knowledge transfer and learning grounded in 'social economics' are similarly myopic. Recent published volumes looking at regional innovation systems and at networks and learning regions have similarly ignored issues of unemployment, polarisation, exclusion and cohesion (Braczyk et al, 1998; Simmie, 1997) There is little work from either perspective linking processes of competitiveness, cohesion and exclusion.

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