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Date deposited: 26 November 2009

Version of file: Final published

Peer Review Status: Peer reviewed

Citation for published item:

Wren C. [Onward the Spatial: An Essay on the Nature and Relevance of Regional Economics](#). *Spatial Economic Analysis* 2009,4 4 467-85.

Further information on publisher website:

<http://www.tandf.co.uk/journals/titles/17421772.asp>

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Onward the Spatial:

An Essay on the Nature and Relevance of Regional Economics

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Abstract

Regional economics appears to be losing its currency in academic discourse, with a clear preference over recent years for the term ‘spatial economics’. This essay examines the nature of the developments in order to explore their implications for regional economics, focusing on four key aspects: empirical methods and the ‘tools’ of regional economics; theory and the appropriate spatial scale; the ‘regional problem’; and regional policy. It finds reasons to suggest that the ‘region’ is of less importance, but argues that the use of the term ‘spatial’ does not reflect dissatisfaction with regional economics, but it signals the reinvigoration of the subject from its formal connection to mainstream Economics. This is primarily in the form of the new economic geography model, although limitations of this can lead to an unsatisfactory form of regional policy based on growth theory.

Keywords: regional economics, spatial economics, new economic geography, growth theory.

JEL classification: R50, A11, B29.

Acknowledgements

The author gratefully acknowledges financial support from the ESRC Spatial Economic Research Centre (<http://www.spatial-economics.ac.uk>). The essay is based on a paper originally presented to a special meeting of the Urban and Regional Economics Seminar Group held at Glasgow University in January 2008. Gratitude goes to John Parr for his encouragement and detailed comments on an earlier draft of the paper. The paper has also benefited from conversations with Jim Taylor, Geoff Hewings and Jonathan Jones, but author remains solely responsible for content. The author also thanks a referee of this journal and comments from one of the Editors.

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Onward the Spatial:

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1. Introduction

Advances in spatial analysis, embracing both economic theory and applied work, have fundamentally altered the way in which the economy is being understood, and they have served to reinvigorate and introduce a whole range of specialisms, including the *new* trade theory, the *new* economic geography, the *new* growth theory, the *new* economics of urban and regional growth and the *new* regional science. There are many critiques of these developments from different disciplinary viewpoints, such as Barnes (2004) and McCann (2007) on regional science, Roberts and Setterfield (2007) on regional growth, Neary (2001) on new economic geography and Martin and Sunley (2001) on economic geography.¹ But what is noticeable is that apart from a recent short paper by Behrens and Thisse (2007), they make little reference to regional economics, while by and large regional economists have felt no compulsion to enter this debate. This is surprising, not least as in the face of these developments regional economics is losing its currency.

The loss of currency is illustrated by numerous recent examples, and doubtless there are many more. They include the launch of the *Spatial Economic Analysis* journal in 2006, but which makes little explicit reference to the ‘tools’ of regional economics or to the notion of a ‘region’. Likewise, the *Spatial Economics Research Centre*, which was established by the UK Economic and Social Research Council in 2007, makes implicit reference only to the ‘region’, which contrasts with earlier initiatives.² It has also filtered through to policy, so that Fothergill (2005) describes the UK *new regional policy* as a framework with which economic geographers were “previously unfamiliar” (p. 660),

and doubtless regional economists also. Further, in the foreword to the recent textbook on *Regional Economics* by Capello (2007), Fujita mentions spatial economics up to ten times, but just two references to regional economics, and each time qualified.³ Finally, Brakman *et al* (2001) introduce the field of *geographical economics*, with its roots in international economics, trade and growth theories, coupled with location analysis, but as we see these are precisely *the* founding pillars of regional analysis.

Underlying spatial economics are developments in theory, most notably the new economic geography and endogenous growth theory, and in empirical methods that have accompanied the availability of large and spatially-referenced datasets. These appear to have led to doubts about whether the ‘region’ is the appropriate spatial scale and about the usefulness of regional economics itself. Of course, it is not surprising that these new developments will render earlier theory and methods redundant or irrelevant, except that international trade and location analysis form the original basis for regional economics. Further, the loss of currency could just reflect the changing nature of the core concern of regional economics – the ‘regional problem’ – except that the ‘region’ has always been an elastic concept “defined in different ways for different purposes” (Armstrong and Taylor, 1985, p. 1), and varying between “a small population centre and its environs to a massive sub-region within a continent” (Richardson, 1970, p. 223).

The purpose of this essay is to investigate the developments in spatial economics in order to explore their implications and relationship to regional economics. The aim is to assess whether the developments represent a kind of paradigm shift, or whether they are just part of a continuum in the evolution of regional economics more broadly. If it is the latter then regional economics has relevance, although it may best be viewed through the lens of spatial economics. In this case, the term *spatial economics* may merely serve to carve out distinctiveness in the same way as the new trade theory, etc. However, if it

is the former then it not only delineates a new discipline, but perhaps suggests regional economics no longer has relevance. Either way, it is worthy of investigation.

In the next section, the nature of regional economics is set out, and in Section 3 the developments underlying spatial economics are examined. Implications for regional economics are then explored in Section 4, focusing on has four key aspects: the ‘tools’ of regional economics; theory and the appropriate spatial scale; the ‘regional problem’; and regional policy. Finally, conclusions are drawn in Section 5.

2. Regional Economics

2.1 The Origins of Regional Economics

According to Overman (2004), geographical economics seeks to answer three questions: What are the causes and consequences of the unequal distribution of economic activity across space? Can empirical observations be explained by general rules? What locational specificities explain the exceptions to these rules? Given that regional economics is a product of location theory and regional growth and development theory (Capello, 2007), then clearly these questions also have interest to regional economists.

Of course, the three questions could be addressed at any spatial scale, but what distinguishes the ‘region’ from the national economy is its ‘openness’ (Armstrong and Taylor, 1985). It results in a high degree of interdependence between regions in national space in terms of the trade in goods and services and factor flows in capital and labour, which is facilitated by common legal, political, linguistic, institutional and cultural arrangements, and by weak barriers to trade and mobility. Regional economic systems are also characterised by common fiscal and monetary arrangements, such as currency,

interest and external exchange rates, while at a national level there may be interregional transfers and inducements, e.g. regional policy or other budgetary arrangements

As a discipline, regional economics is relatively young and the product of a post-war generation, which Richardson (1969) attributes to conservatism in the Economics profession. Traditionally, he argues, economists were reluctant to accept any regularity in the spatial organisation of the economy, for which non-economic factors were deemed important, while when Economics moved beyond the static it saw time rather than space as the key dimension. There are several factors that seem to have been important in this. Starrett's *Spatial Impossibility Theorem* implies that a competitive market breaks down when factor mobility is combined with transport costs between regions, making space uninteresting from the point of view of economic theory (see Behrens and Thisse, 2007). Indeed, in a uniform space agglomeration cannot be explained without increasing returns to scale, but which is only relatively recently been formalised in analytical models.⁴ Parr (2009) attributes it to the lack of a clear-cut division of space into regions, unlike time. From a practical viewpoint, there seemed little intrinsic value to sub-national analysis, as classical notions of price flexibility and factor mobility meant market forces would always correct regional imbalances. Of course, what decisively changed this view was the Great Depression, and which sparked the initial interest in regional analysis.⁵

The original interest of Isard was in addressing the failure of trade theory to pay attention to the cost of overcoming spatial separation, from which he and his colleagues were later to produce the first major textbook in the field (Isard *et al*, 1960), which was then known as *regional analysis*. From developments in the 1940s, the major theoretical roots or 'tools' of regional analysis were set out, and these are location theory; multiplier theory; input-output analysis and mathematical programming (Meyer, 1963).⁶ Of these, location analysis is important to *urban economics* and *regional science*, where the latter

is the “use of formal neoclassical economic theory and rigorous statistical techniques in representing and explaining a space economy” (Barnes, 2004, p. 107).⁷ The other tools, and developments therein, found application in what we today understand as *regional economics*. This has an emphasis on development policy and on the ‘regional problem’, or what Needleman (1968) describes as the “great and lasting differences in prosperity between different areas” (p. 8), i.e. why disparities arise and persist.

2.2 *Nature of Regional Economics*

The nature of regional economics is evident from Armstrong and Taylor’s *Regional Economics and Policy*, one of the principal textbooks on the subject over the last twenty years or so. Part II of this book is devoted to policy, but Part I has chapters that reflect the origins of regional economics (interregional trade) and the tools of regional analysis (i.e. multiplier and input-output analysis), but little on location theory. The Contents for Part I is reproduced in Table 1 for the 1985 edition, although there is a similar structure for the third edition, published in 2000. It shows the concern with openness (chapters 5 and 6) and the regional problem (chapters 7 and 8), while the underlying theory is not purely neoclassical in nature (chapter 4), reflecting the origins of the discipline. Similar emphasis is evident from other texts, such as McCann (2001) and Capello (2007).⁸ In the case of older texts on regional economics, Richardson (1970) illustrates the evolution of regional analysis with the first two parts devoted to location and the urban economy, and only the third part on the region, comprising the above kinds of material.

What is clear from Table 1 is that there is little intrinsically spatial about regional economics. The theory derives from the parts of mainstream Economics that reflect the concerns of regional economics, and are applicable at the level of the ‘region’, i.e. small, open economies. These are economic growth, international trade and Keynesian macro-

economics, which represent much of the core material of regional economics. However, as mentioned, parts also represent dissatisfaction with Economics in explaining certain observed phenomenon, including models of cumulative causation and localisation.

Of course, Economics is not the only subject to take an interest in regional issues, and as far back as 1963 Meyer acknowledges that “*the distinguishing characteristic of regional analysis has almost seemed to be its interdisciplinary aspect*” (p. 21). This has made it difficult for regional economics to carve out a distinctive character in terms of conventional economic disciplines. The publication that has best reflected the character of regional analysis is *Regional Studies*, the journal of the Regional Studies Association. It does not give a complete account of publication in the field of regional economics, as many other journals have a record of publishing such work.⁹ Conversely, not all articles in *Regional Studies* may be construed as regional economics. Nevertheless, like regional economics, since its inception in the 1960s, the journal has sought relevance and policy engagement (Pike *et al*, 2007). While it has a multi-disciplinary focus, an analysis of its contents offers a useful indication of the changing nature of regional analysis.

First of all, there is growing interest in regional issues, which is reflected in the increased number of articles in *Regional Studies*, from 30-40 a year in the late 1980s to about 60 now. Further, like many other journals, there is a greater internationalisation of contributions, as whereas the vast majority of articles were initially from the UK, half are now from mainland Europe but relatively few from elsewhere (see Pike *et al*, 2007). Table 2 give a sense of the changing nature of regional analysis, based on all the main articles published in *Regional Studies* in 1987 and for the same number from the start of 1967 and 2007. In carrying out such an exercise judgement is inevitably involved (see notes to table), but several trends are apparent. First, the analysis has become far more sophisticated over time, and regression analysis is now the main technique, although this

is relatively recent. Second, the scale is more intrinsically regional in nature, whereas much of the early analysis was local (in fact, the early studies had a strong Planning and Geography bias). Finally, the ‘regional problem’ continues to be important, although it has never been a central concern (early ‘growth’ studies include many planning-related papers), while as Table 2 shows that the ‘tools’ of regional analysis are relatively little used, such that early studies often relied on relatively simple analyses.

3. Spatial Economics

Underlying spatial economics are developments in theory and empirical methods, which are well captured by the *Spatial Economics Analysis* journal in the range of areas in which seeks to publish. In the case of the empirical methods the advances have occurred in statistical techniques in both economic and geographical analysis (McCann, 2007), such as spatial econometrics and exploratory spatial data analysis. In fact, these have been around for some considerable period of time (Anselin and Hudak, 1992), although it is only relatively recently that they have found greater application (Anselin, 2007). It is partly related to the availability of spatially-referenced datasets in both the US and in Europe and to improved computational power (Roberts and Setterfield, 2007), as well as the greater recognition of spatial econometrics within mainstream Econometrics.

Likewise, the term ‘spatial economics’ has been around for a considerable time (Fujita, 2005), but meaning the application of economic theory to issues in location, land use or spatial competition. It is the developments in theory that underpin the resurgence of interest in spatial economics, of which there are in fact two main branches: the new economic geography and endogenous growth theory. As yet there is no theory unifying these, and according to Baldwin and Martin (2004) the link is relatively little explored.

In what follows these two branches of theory are briefly outlined, which helps form the basis for considering their limitations and relationship to regional economics.

3.1 The New Economic Geography

The new economic geography arose out of the new trade theories developed in the late 1970s and early 1980s, partly in response to the dissatisfaction with the Heckscher-Ohlin model's inability to explain certain real-world phenomena, such as intra-industry trade. However, it was not until Krugman (1991) that the new economic geography (NEG) was formalised. Its contribution is to offer a decentralised model of the economy that in an equilibrium framework accommodates the fundamental trade-off between the forces of agglomeration and dispersal. Its key underlying feature is the Dixit-Stiglitz model, i.e. a traded sector that exhibits monopolistic competition and increasing returns to scale. In overcoming the deadlock of Starrett's theorem, Ottaviano and Thisse (2004) argue that it has planted economic geography in the mainstream of Economics. In not relying on the neoclassical framework it can also be seen as breaking with regional science. Brakman *et al* (2001) describe it as the core model of geographical economics.

An early result of the NEG is the market access or 'home market effect' (HME) (Krugman, 1980), which in essence says that an area with the greatest home demand will relative to endowments have the greater share of the traded sector. It arises from the fact that imports incur transport costs, whereas home-produced goods do not, so that firms locate in the larger market and export to smaller ones. The HME is able to explain why small permanent shocks lead to large permanent disparities in location, but according to Ottaviano and Thisse (2004) not why small temporary shocks do so, so that it is devoid of any agglomerative force. This is introduced in the NEG in either of two main ways: either labour mobility (Krugman, 1991) or intermediate inputs (Venables, 1996).

There are variants of the NEG, but broadly from an initial equilibrium, in which the traded sector is produced in each of two identical areas (a *diversified economy*), the stability of this equilibrium determines whether activity agglomerates or not, such that all traded activity locates in a single area (a *core-periphery economy*). Thus, Puga (1999) considers a firm relocating between areas, but which has opposing effects on the output price, causing firms to exit (a *competition effect*), and on nominal and real wages, which makes the host area economy more attractive to firms (*demand and cost effects*).¹⁰ The relative strength of these determines whether the traded activity agglomerates or not. An implication is that if transport costs fall below some threshold firms locate at the ‘core’ to take advantage of increasing returns, so that transport costs determine location rather resource-based explanations. This means location may be an ‘accident of history’, while the equilibrium is ‘non-ergodic’ (i.e. the agglomeration is not undone by a restoration of initial conditions), reinforcing the view that ‘history matters’.

By integrating transport costs into a theory of international trade the NEG has in effect responded to the concern of Isard (i.e. the failure of trade theory to pay attention to the cost of overcoming spatial separation), although in its sub-national guise it may be more properly described as the *new regional analysis*. This is because it has little to do with the traditional discipline of economic geography, pursued by geographers (Martin, R., 1999), while like the developments in empirical methods many of its ideas have been around for some time (Ottaviano and Thisse, 2004). Nevertheless, the NEG accounts for phenomena of interest to regional economists, although it is subject to criticism.

Chief among these is that the NEG is a highly stylised theoretical model, while even on its own terms Behrens and Thisse (2007) argue that the underlying Dixit-Stiglitz model lacks the generality of other models. Further, according to Neary (2001), some of the implications of the basic core-periphery model are just “too stark to be true” (p. 556),

while in fact its policy implications are difficult to grasp. Thus, the proponents of the NEG argue that an agglomeration is unambiguously ‘good’ for all, although compared to a diversified economy Neary (2001) finds that it is ‘bad’ for the periphery as living costs are higher. Others, such as Martin, P. (1999), find that it can reduce regional inequalities but only if there is sufficient labour mobility. Finally, from a theoretical perspective, Kind *et al* (2000) find that fiscal instruments have no effect once agglomerative forces have taken hold. This is for tax competition across countries, although others find that the opposite is the case for national policy; thus, Jones and Wren (2009) find that fiscal inducements shift the distribution of inward foreign investment across British regions.

3.2 *The New Growth Theory*

The other branch of theory of interest is the new growth theory (NGT), otherwise known as endogenous growth theory. In addition there is the Porter cluster approach, which has its roots in the business strategy literature, but outside of mainstream Economics. As its transmission mechanism the NEG relies on pecuniary external effects (Parr, 2002), but the NGT relies on technological external effects or externalities (see Scitovsky, 1952), which are primarily in the form of knowledge spillovers. Both the NGT and the cluster approach originated around the same time, and at about the same time as the NEG.

Starting with a labour-augmented production function $Y_i = F(K_i, A_i L_i)$, where Y is output, F is the production function, K and L are capital and labour, and A is an index of the knowledge available to the firm i , Romer (1986) supposes that knowledge arises as the unintended by-product of a firm’s capital investment through learning-by-doing. Since knowledge is non-rival, A_i depends on the *total* level of capital K in the economy, i.e. $A_i = K$. Assuming that the production function exhibits constant returns to scale, the

theory reconciles endogenous growth with competitive markets, as there are constant returns to scale at the *firm level* with respect to K_i and L_i , and at the *economy level* with respect to total capital, K_i and K , but which gives endogenous growth.¹¹

A feature of this model is that there are increasing returns to capital and labour for the economy *as a whole*, which means that the growth rate increases with the size of the labour force, L , but for which the evidence is weak (Barro and Sala-i-Martin, 1995). The contribution of Lucas (1988) is to eliminate this scale effect by assuming knowledge depends on the economy's *average* capital per worker, so $A_i = K/L$ in (1).¹² This simple change in the model set-up is described by Roberts and Setterfield (2007) as the origins of the *new economics of urban and regional growth*.¹³ It is because knowledge depends on the capital per worker, i.e. it is embodied in human capital, so that human interaction is necessary for learning, for which *proximity* is taken as a prerequisite.

The NGT has promoted a resurgence of interest in the nature of externalities, and several well-known traditions have emerged. One is the Marshall-Arrow-Romer (MAR) externality, which is internal to an industry, and another is the Jacobs externality, which is associated with diversity and occurs across industries. Others arise from density in the form of urbanisation economies (Duranton and Puga, 2004). The significance of these is that they suggest different kinds of industrial configuration are optimal for growth.

Finally, it is useful to briefly consider the Porter model, in which the economies arise from a 'cluster', i.e. a group of "interconnected firms, suppliers, related industries and specialized institutions in particular fields that are present in particular locations" (1998a, p. *xxii*).¹⁴ Porter (1998a) argues that this differs from other growth theories as agglomeration is related to firm strategy, although it is knowledge that promotes growth and which can arise from access to specialised labour and inputs, so it is closely allied to the localisation economies of Marshall (1890). It plays down classical location factors,

which is like the NEG, although the transmission mechanism is non-pecuniary, so it is sometimes known as a social network (McCann and Sheppard, 2003). It reflects the fact that in some guises personal and community relationships, patterns of ownership and common goals are all important to the notion of a 'cluster' (Engelsoft *et al*, 2003).

4. The Implications for Regional Economics

Having briefly reviewed the developments in spatial economics the implications of these for the discipline of regional economics are now examined. It is considered in relation to the four key elements of the discipline, comprising: the nature and 'tools' of regional economics; the 'region' and the appropriate spatial scale; the 'regional problem', and the nature of regional policy. From this, conclusions are then drawn.

This analysis is supported by a summary description of recent articles published in four of the journals in the broad areas of regional and spatial analysis. This is on the basis that the research currently being published helps to define the nature of a subject. The journals are *Regional Studies (RS)*, *Spatial Economic Analysis (SEA)*, the *Journal of Economic Geography (JEG)*, *Regional Science and Urban Economics (RSUE)* and the *Journal of Regional Science (JRS)*. As mentioned above, *RS* reflects the character of regional analysis, while out of all the journals *SEA* perhaps best captures the character of spatial analysis. *JEG* has a strong inter-disciplinary nature, although few papers actually straddle disciplinary boundaries, *RSUE* has a multi-disciplinary tradition in regional and urban economics, while *JRS* covers mainly empirical papers in the broad area of spatial analysis. The results are presented in Table 3, which is constructed on the same basis as Table 2. The table separately identifies three of the above four main elements of regional

economics. The articles relate to 2007 and adjacent years, so that in the case of *Spatial Economic Analysis* at the time of writing it is a more or less complete coverage.

4.1 *The Nature and 'Tools' of Regional Economics*

With regard to the techniques, Table 3 shows that the 'tools' of regional analysis are little used in empirical work, since while they find some application in the *RS* and *SEA* journals, they hardly feature at all in the other journals. Again, the main technique is regression analysis, which in some form (including logit analysis, panel data methods, duration analysis, etc) features in about half of the articles published in each journal. Regression analysis lends itself to causality and statistical testing, but Table 3 shows that many other techniques are used, particularly in *SEA*. The high proportions in the 'other' category reflect the inter-disciplinary nature of *JEG* and the theory papers in the *RSUE*, while in the case of *JRS* contributions are primarily empirical in nature.

Of course, the central contribution of the new theory is to give micro-foundations to phenomena and processes that are of interest to regional economists, as well as others. Thus, the NEG has clarified the microeconomic underpinnings of both spatial economic agglomerations and regional imbalances (see Fujita and Thisse, 2009), and the NGT has helped cement the role of proximity in the growth process. The theories are essentially microeconomic in nature, and so it is perhaps not surprising that the 'tools' of regional economics have to some extent been sidelined. This is because these 'tools' operate at a sub-national macroeconomic level (e.g. input-output analysis), providing an aggregate-level view of the region or regional system, but without a strong foundation in choice theory. All the same, despite the focus of current research, from a practical standpoint it is necessary to adopt these approaches to understand the region or regional system.

4.2 *The 'Region' and Appropriate Spatial Scale*

Important to regional economics is the notion of a 'region', and so it is useful to consider this, both from the standpoint of theory and empirical work. Of course, it is difficult to know what constitutes a 'region', which is not just because of imprecision in the way the term is used (Parr, 2009), but because it depends on the notion of similarity that is used to group different entities into a region (Behrens and Thisse, 2007). In practice, Meyer (1963) identifies three approaches to defining an economic region: *homogeneity* with respect to some characteristic, such as unemployment or an activity; a *core-periphery* relationship with an urban centre and surrounding area; and a *policy-orientated* approach that is concerned with the institutions implementing policy, but which has administrative coherence (see Richardson, 1970, chapter 9, for an extended discussion on this topic). Of course, not any old area satisfying any of the above three criteria will necessarily do, as it must be something larger in scale than purely the 'local', e.g. a neighbourhood.

As regards the new theories, neither of these offers much support for the region as the relevant spatial unit of analysis, although neither do they offer much support for any other scale. Neary (2001) finds that there is nothing intrinsic to the NEG to identify the appropriate scale, save for assertions about the level at which an agglomerative force works. Thus, in Fujita *et al* (1998) the labour mobility transmission mechanism is taken to coincide with the 'region' and intermediate inputs to coincide with the 'nation', but scant support is offered for these, and it is relatively easy to think of counter-examples. Further, the NEG proffers a core-periphery relationship, but offers little or any guidance on the appropriate division of space into sub-national units. Similar ambiguity permeates the growth literature. Knowledge is a pure public good in Romer (1986), which could include the whole world (Kremer, 1993), and while embodied in human capital in Lucas (1988), proximity may be unimportant if knowledge is codified or is rapidly diffused.

Likewise, proximity seems inessential for clusters, which are “present in large and small economies, in rural and urban areas, and at several geographic levels (for example nations, states, metropolitan regions, and cities)” (Porter, 1998b, p. 204).

In general, the pecuniary effects of the NEG suggest a greater geographical reach than do the technological external effects of the NGT, which rely on human interaction and tacit information, rather than impersonal markets (Lamorgese and Ottaviano, 2002; Anselin *et al*, 1997). However, Gertler (2001) argues that even tacit knowledge can be transmitted between spatially distant agents. It suggests that the appropriate spatial scale is an empirical matter, but even here there is no agreement. Döring and Schnellenbach (2006) survey the literature and find “a wide-spread consensus that spatially confined knowledge-spillovers are an important empirical phenomenon” (p. 383), but that the “majority of studies refuse to quantify the range at all” (p. 384). In fact, not only is there is little agreement on the distance over which they occur, but uncertainty over the nature of the externality itself (see Roberts and Setterfield, 2007). Glaeser *et al* (1992) favour Jacobs externalities, but regression analysis tends to support the MAR economies (e.g. Henderson, 2003; Rosenthal and Strange, 2003; Devereux *et al*, 2007). Further, these are not a purely local phenomenon as Parr (2002) draws attention to the long tradition in the literature of the regional agglomeration economy.

The uncertainty over the appropriate spatial scale seems partly to rest on the methodology, of which three broad approaches can be identified, the first two of which rely on econometrics. The first involves counts of business units over different spatial distance from a firm. Rosenthal and Strange (2003) find that “localisation economies attenuate rapidly in the first few miles but slowly thereafter” (p. 385), and Henderson (2003) gets a similar result, while Baldwin *et al* (2008) find that knowledge spillovers affect productivity in a range of 10 to 50 km. The second approach involves tracking

knowledge flows through the effect of R&D expenditure on the innovative activity of surrounding areas, e.g. patents. These studies often find larger ranges for the knowledge spillovers, which can be up to 300 km (Döring and Schnellenbach, 2006), although for OECD countries, Keller (2002) finds it is 1200 km for the half-life distance of R&D spending! The third approach is based on case study, but where the distance is found to depend on the nature of the activity being studied (Cumbers and Mackinnon, 2004).

Overall, theory offers little support for the region as the appropriate spatial unit of analysis, although neither does it offer much support for any other spatial scale. When taken as a whole similar uncertainty is apparent in the empirical literature. Nevertheless, Table 3 shows that the ‘region’ features prominently in the (mainly empirical) literature, especially in *Regional Studies* and *Spatial Economic Analysis*. The representation in the other journals is weaker, partly because of the increased availability of large datasets at a fine level of spatial disaggregation. Nevertheless, it suggests the ‘region’ continues to be of considerable interest to researchers in the broad field of spatial analysis.

4.3 *The ‘Regional Problem’*

The spur to the original interest in regional analysis, and the core concern of regional economics, is the persistent disparities in economic well-being across regions, known as the ‘regional problem’. In fact, the third part of Table 3 shows that this and economic growth continue to be a major concern for *RS*, and to some extent *SEA*, but much less important to the other journals with very few of the articles directly addressing the issue. While the ‘regional problem’ continues to be of interest, a possible reason for the loss of currency of regional economics is that the ‘region’ is no longer the appropriate scale for these disparities. Again, there are difficulties in examining this, not least as the ‘regional problem’ is contingent on how space is divided (Parr, 2009). Further, inevitably, there

are issues at the European Union level about the functionality of regions (Magrini, 1999) and about the quality of the data itself (Combes and Overman, 2004).

One way to examine this is to look at the nature of spatial disparities, and at the European Union (EU) level several facts have emerged about inequality for the pre-2004 EU membership. Puga (2002) finds that “most regional income inequalities in Europe are within rather than across member states” (p. 376), which suggests the inequalities are sub-national for the EU-15 prior to the 2004 enlargement. However, when conceived in terms of unemployment, Overman and Puga (2002) find that inequalities emerge at the NUTS II level, which extend across national boundaries. These areas are intermediate to the Government Office regions and counties in England, but all the same suggest that the ‘region’ helps form the basic building block for analysing spatial inequalities.

It can also be examined for the post-2004 EU-25 countries, which is after Eastern European enlargement. For this, we adopt a ‘decision-maker approach’, and look at how the policymakers define the areas for intervention. Again, there are difficulties, as the designation of the areas may reflect considerations of political economy and ceilings on expenditure and areal coverage, but it nevertheless proves informative. The geographical coverage of the regional policy areas at the European level is shown in Figure 1 for the 2007-13 Regional Aid Guidelines. Coverage is defined in population terms, and there are two kinds of area: ‘a’ areas that reflect disadvantage in relation to the EU as a whole (i.e. EU-25 per capita GDP), and ‘c’ areas, which are defined relative to the respective national average. Some ‘statistical effect’ ‘a’ areas are defined relative to the pre-2004 EU-15 countries (see note to Figure 1), and are transitional in nature (Wishlade, 2008). The ‘c’ areas are defined by Member States within a population quota or are earmarked by the Commission (currently about two-thirds is earmarked). Overall, about 43 per cent of the EU-25’s population is designated for regional policy aid.

The pattern to emerge from Figure 1 is that ten of the 25 countries have at least half their population designated as part of an 'a' area (likewise if the statistical effect 'a' areas are included), but of the remainder eleven have no more than five per cent of their population designated. Clearly, there is a sharp distinction between the new-accession countries of the East, which are lagging in economic development and constitute most of the former group, and the EU-15 countries, which basically comprise the latter group. In the case of the latter, for the 'a' and 'c' areas combined three countries (Greece, Portugal and Spain) have more than 50 per cent of their population designated for aid, although otherwise the coverage averages about only 25 per cent. Overall, this suggests a mixed picture, as some are *lagging countries* relative the rest of the European Union and other countries have *lagging areas* whether defined relative to the EU-15 or the EU-25.

Of course, it does not tell us if the lagging areas are regional or local in nature, and this can be explored in relation to a single Member State, the UK. Under a new map that came into force in January 2007, the Assisted Areas now comprise 24% of the UK population, of which 19% is 'c' areas (15% is non-earmarked) and 5% is 'a' areas (1% is statistical effect). At one time the Assisted Areas covered more than half the landmass and 40% of the working population, but under the 2007-13 Regional Aid Guidelines in the choice of 'c' areas the Government selected areas that either had per capita GDP less than the EU-25 average or an unemployment rate higher than 115% of the UK average. The areas were then selected according to criteria such as employment rate, adult skills, number of incapacity benefit claimants and manufacturing employment share.¹⁵ As a result, the 'c' areas cover mainly urban areas in England, Scotland and Wales, including parts of London and southern England. By contrast, the 'a' areas, which are defined as a per capita GDP of less than 75% of the EU-25 average, cover large regions at broadly NUTS II and III level (sparsely populated areas of the Highlands and Island of Scotland,

west Wales and south-west England). However, since the 'c' areas make up the bulk of the Assisted Areas in population terms (about 80 per cent) then it indicates that the UK 'regional problem' is conceived of as being primarily local in nature.

4.4 *Regional Policy*

Finally, it is possible to look at the role of Economics in informing the nature of regional policy itself. Traditionally, in many countries, regional policy has been about supporting capital formation through investment grants, which has a strong basis in the theories that underpin regional economics (see Table 1). However, more recently, at both European Union and national levels, regional policy has moved away from direct job creation to competitiveness policies that are aimed at securing long-term growth (see Wren, 2001). The issue is to what extent these developments reflect the new spatial theories.

In the case of the NEG it was noted that its policy implications are ambiguous, and indeed Puga (2002) finds that it has had a limited impact on policy precisely because "there is no general indication of the direction in which governments should push with regional policies when seeking efficiency" (p. 401). This is because firms and workers fail to fully account for the external effects of their actions *both* on those they join and those they leave behind, so that there may be too much or too little agglomeration. This applies to one of the main triggers of agglomeration, namely infrastructure and its effect on transport costs. The growth theories have had a much greater influence on policy and this is considered in relation to the UK new regional policy. This draws on the NGT and seeks to raise the productivity of firms, focusing on five productivity 'drivers', which are investment, innovation, enterprise, competition and skills (HM Treasury, 2001). It is of interest, as it points to generic deficiencies in the new spatial economics approach.

While drawing on the NGT, there are several critiques of the new regional policy that suggest it has little to do with regional economics.¹⁶ First, Fothergill (2005) believes that the emphasis on productivity is overdone, as it neglects the aspects of the ‘regional problem’ that are to do with industrial structure and the spatial division of labour within firms. Second, the aim of the new regional policy is to correct identified market failures, but regional economics came about because market forces could not be relied upon to correct the regional imbalances, i.e. too much rather than too little market. Thus, it is perhaps not surprising that the background evidence base for the policy is mainstream Economics and not regional economics (HM Treasury, 2000). Finally, the new regional policy fails to take a ‘systems view’ of space, and according to Roberts and Setterfield (2007) it simply transplants the closed-economy NGT model to the regions. Behrens and Thisse (2007) argue that these interactions are the substance of regional economics.

Overall, the policy implications of the NEG are weak, so that regional policy has come to rely on the new growth theories as a basis for intervention. However, this means the regions are treated as small-country macro-economies, whereas a key feature of the region is its openness. The policy also lacks an explicit redistributive dimension, which makes it akin to regional *development* policy rather than regional policy (Wren, 2005).

5. Concluding Discussion

Regional economics appears to be losing its currency in academic discourse, with a clear preference over recent years for the term ‘spatial economics’. This does not appear to be a catch-all phrase for what was earlier known as ‘urban and regional economics’, but rather it seems to reflect developments in theory and empirical methods (although in fact they are based on ideas or techniques that have been around for a while). The purpose

of this essay is to consider the nature of these developments, in order to explore their implications for regional economics. Do they represent a paradigm shift or are they just part of the continuum in the evolution of regional analysis? This is not about semantics, as it has implications for the relevance of regional economics. Four aspects of regional analysis are examined: empirical methods and the 'tools' of regional economics; theory and the appropriate spatial scale; the 'regional problem'; and regional policy.

To understand the new developments in theory it is useful to consider the origins of regional analysis, which arose from the inability of mainstream Economics to explain important observed phenomenon. Indeed, given the prevailing orthodoxy of competitive markets the *Spatial Impossibility Theorem* demonstrates that it was in effect impossible to *explain* uneven development using economics theory, rendering regions uninteresting and relegating their analysis to the margins of Economics. Of course, the new economic geography (NEG) changed this by offering a decentralised equilibrium model of spatial disparities, thereby putting spatial analysis in the mainstream of Economics. The NEG embodies spatial economics, as while proximity is important to some of the new growth theory (NGT), it is only implicit, and the spatial reach of the externalities is uncertain. Further, spatial econometrics was the preserve of regional science for some considerable time, and may have remained so but for the above developments.

So what does all this mean for regional economics? Well, first of all, increased inequality has meant that the spatial disparities seem to have become starker, such that in the more developed countries the 'regional problem' appears more localised. However, there continues to be a strong regional dimension to spatial inequality at the European level, such that this cannot solely account for the loss of currency of regional economics. Second, while methodology has become more sophisticated and regression analysis is now the primary technique used in regional analysis, it does not imply the redundancy of

the traditional ‘tools’ of regional economics, like multiplier theory, input-output analysis or mathematical programming. These are necessary to provide an aggregate view of the region or regional system, while regional economics should not be viewed as ossified. Thus, for example, the regional computable general equilibrium model can be viewed as a valuable addition, while regression techniques can be used to explore issues of interest to regional economics. Further, the NGT is a development of growth theory, but growth theory has always been a core element of regional economics

Of course, insofar as the NEG responds to the original concern of Isard, on the failure of trade theory to pay attention to the cost of overcoming spatial separation, this kind of reasoning can also be applied to spatial economics. Indeed, the NEG has little to do with the conventional discipline of economic geography, and in its sub-national guise it may be more accurately described as the *new regional analysis*. In this sense, spatial economics is less of a paradigm shift than a long overdue response of Economics to the initial concern of Isard. However, in providing microeconomic underpinnings to spatial economic agglomerations and regional imbalances the NEG has serious shortcomings. Unlike the neoclassical model, in which prices adjust to clear markets, the equilibrium outcome of the NEG’s core-periphery economy depends on the model parameterisation. This makes its normative predictions difficult to grasp, and helps to explain its limited impact on regional policy. Thus, the term ‘spatial’ does not reflect dissatisfaction with regional economics, but rather it signals the reinvigoration of a subject area from its re-connection to mainstream Economics, and with implications for regional economics.

Table 1: The Subject Matter of Regional Economics

Chapter Number and Title	Brief Description of Content
1: Output and Employment Determination in Regional Economies	The multiplier, economic base and Keynesian income-expenditure approach.
2: The Input-Output Approach to Modelling the Regional Economy	The input-output method.
3: Regional Growth Disparities: Neoclassical Models	One-sector and two-sector growth models.
4: Export-Led Models of Regional Growth	Export-base approach and models of cumulative causation. Localisation and urbanisation economies.
5: Interregional Trade	Heckscher-Ohlin theorem and other explanations.
6: Interregional Migration	Classical and human capital approaches to labour migration.
7: Regional Employment Growth	Shift-share and components of change analysis.
8: Regional Unemployment Disparities	Neoclassical, Keynesian and supply-side influences.

Note: Chapter contents of Part I of Armstrong and Taylor (1985).

Table 2: The Changing Nature of Regional Analysis

	2007	1987	1967
	(no.)	(no.)	(no.)
<u>Technique</u>			
‘Tools’ of regional analysis ¹	5	5	1
Regression analysis	18	3	3
Other statistical methods ²	4	2	5
Tabular or diagrammatic analysis	2	14	15
Other ³	5	10	10
<u>Spatial scale</u>			
Local (of which cross-local) ⁴	8 (7)	5 (3)	17 (12)
Regional (of which cross-regional)	20 (15)	17 (12)	11 (7)
National (of which cross-national)	2 (0)	7 (6)	4 (2)
Other ⁵	4	5	2
<u>Topic</u>			
‘Regional problem’ or regional policy ⁶	11	7	5
Growth ⁷	10	12	11
Other	13	15	18

Source: Analysis of the 34 main articles published in *Regional Studies* in 1987, and for the same number of papers from the beginning of 1967 (into 1969) and 2007 (into 2008).

Notes: Where a paper involves more than one ‘technique’, the category listed first in the table is selected. When conducted at different spatial levels the finer disaggregation is chosen. Most articles have implications for spatial disparities or growth, but Topic includes only those with a direct implication. Special issues not included.

1. Input-output, multiplier, location analysis and regional economic modelling.
2. Cluster, discriminant, factorial analysis, transitional matrices, indices, network and spatial analysis. Logit, tobit and survival data analysis included with regression analysis.
3. Mapping techniques and theory, possibly descriptive in nature, including case studies.
4. Includes NUTS I to III regions in EU, counties in US, but not urban or city studies.
5. Where spatial unit not specified or relevant, such as theory, industry or household studies. Also includes rural areas.
6. Uneven development, unemployment and convergence studies.
7. Includes regional planning.

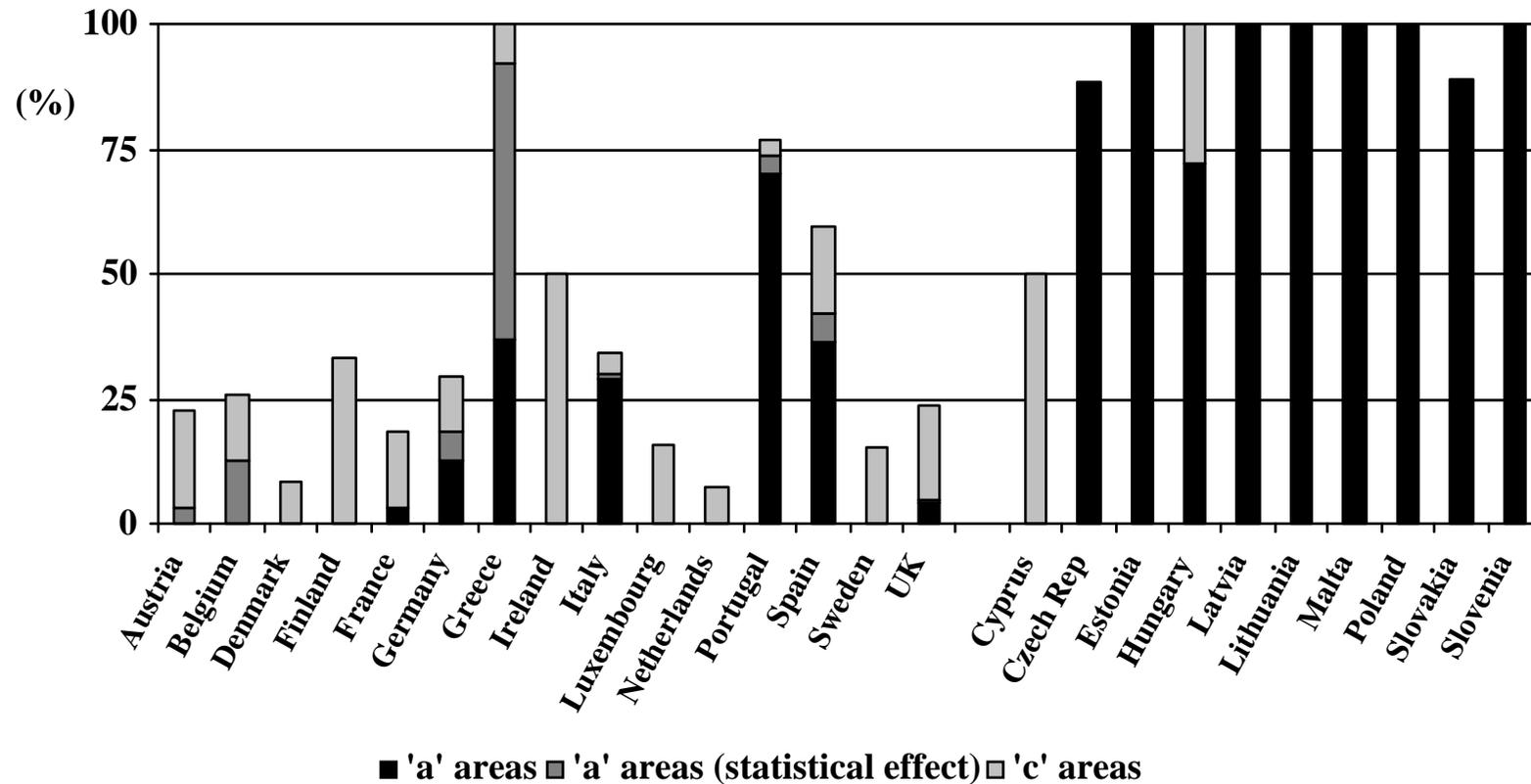
Table 3: The Comparative Nature of Spatial Analysis

	RS	SEA	JEG	RSUE	JRS
	(%)	(%)	(%)	(%)	(%)
<u>Technique</u>					
'Tools' of regional analysis	15	16	0	0	5
Regression analysis	53	40	44	53	63
Other statistical methods	12	22	13	0	9
Tabular or diagrammatic analysis	5	3	13	0	6
Other	15	19	30	47	17
<u>Spatial scale</u>					
Local (of which cross-local)	23 (20)	16 (6)	32 (32)	37 (30)	40 (31)
Regional (of which cross-regional)	59 (44)	52 (45)	23 (20)	23 (23)	29 (29)
National (of which cross-national)	6 (0)	10 (3)	25 (7)	7 (0)	0 (0)
Other	12	22	20	33	31
<u>Topic</u>					
'Regional problem' or regional policy	32	19	7	0	0
Growth	30	16	13	7	11
Other	38	65	80	93	89

Source: Analysis of main articles in *Regional Studies (RS)*, *Spatial Economic Analysis (SEA)*, *Journal of Economic Geography (JEG)*, *Regional Science and Urban Economics (RSUE)* and *Journal of Regional Science (JRS)*. Articles are for 2007, and where relevant adjacent years to give a similar number of observations in each case (i.e. 34, 31, 40, 30 and 35 respectively).

Notes: See notes to Table 2. Results for *RS* taken from Table 2. Special issues not included.

Figure 1: Population Coverage of Regional Policy Areas under 2006 European Union Guidelines



Source: Data taken from EC (2006) and Wishlade (2008).

Notes: 'a' areas are where GDP per head is less than 75 per cent of the EU-25 average; 'a' areas (statistical effect) are areas where the 75 per cent per capita GDP threshold is met for the pre-2004 EU-15; and 'c' areas are areas either designated by the EU or Member State (earmarked or non-earmarked) reflecting national disparities in GDP and unemployment. In addition, there were transitional 'c' areas (not shown) that ran until 2008, amounting to 3.8 per cent of the EU-25 population. Some statistical effect 'a' areas may be downgraded to 'c' status from 2010. The first fifteen countries shown are the EU-15.

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Endnotes

¹ As they crossed disciplinary boundaries so old controversies have resurfaced (see McCann, 2007) between the abstract, quantitative modelling approach of mainstream economics and the more qualitative approach of what Martin and Sunley (2001) call ‘economic geography proper’, pursued by geographers. Overman (2004) distinguishes the new developments by referring to it as ‘geographical economics’.

² An earlier ESRC initiative involved setting-up the *Centre for Urban and Regional Development Studies* in the 1970s, but making explicit reference to the ‘regional’.

³ Once it is qualified as “spatial economics or regional economics” and the other time as “regional economics or geographical economics” (Capello, 2007, p. xvi). There is a new regionalism strand in economic geography, emphasising the role of the region, but even this is controversial within Geography (Lovering, 1999).

⁴ To understand the spatial distribution of activity, the *Spatial Impossibility Theorem* reveals that at least one of the following must hold: space is heterogeneous; there are externalities; or markets are imperfectly competitive (Fujita and Thisse, 2009).

⁵ Writing in 1969, Richardson notes, “Events of the last fifty years have made it increasingly clear that market forces do not *inevitably* result in regional income equilization. Factor movements may be disequilibrating, and lagging regions may suffer from capital flight as well as out-migration. Agglomeration economies may favour a further build-up in prosperous areas” (p. 14).

⁶ The last of these can be seen a forerunner of regional economic models, such as the more recent regional computable general equilibrium (CGE) model in that it sought to determine market outcomes from underlying behavioural assumptions.

⁷ On taking up the editorship of *Regional and Urban Economics* in 1975, Isard and his co-editor changed the name to *Regional Science and Urban Economics* on the basis that regional science was an “interdisciplinary science” (Isard and Anderson, 1975, p. 3), although they wished to focus on contributions employing “formal methods from mathematics, econometrics, operations research and related fields” (p. 3). Likewise, Barnes (2004) notes that shortly after its establishment in 1965, the Regional Studies Association resisted pressure from Isard to *Regional Studies* as *Regional Science*, but by 1967 a British section of the Regional Science Association had been established, reflecting the dissatisfaction with the Regional Studies Association, which eschewed ‘high theory’ and was born more of practical planning concerns.

⁸ The McCann book on *Urban and Regional Economics* has a wider remit, but in relation to regional economics it has chapters on specialization, trade and multipliers; regional labour markets; regional growth; and regional policy. In the case of Capello, the *Regional Economics* book has a strong emphasis on theory and its four parts cover location, local development and the traditional and newer growth theories.

⁹ Most notably the *Journal of Regional Science* and *Journal of Urban Economics* in the US, *Urban Studies* and *Oxford Economic Papers* in the UK, and *Regional Science and Urban Economics*, with a stronger tradition in mainland Europe (Barnes, 2004). To these can be added several regional science journals, *Spatial Economic Analysis* in 2006 and the *Journal of Economic Geography* in 2001.

¹⁰ It supposes labour adjusts more quickly to market signals than do firms, otherwise the story is played out in the product market and the competition effect dominates.

¹¹ Constant returns is consistent with perfect competition at the firm level, while at the economy level endogenous growth follows as investment returns do not diminish as the economy grows, and growth is determined by technology and preferences.

¹² For the Cobb-Douglas form, $Y = K_i^\alpha (A_i L_i)^\beta$, divide both sides by L_i and impose the constraint $\alpha + \beta = 1$ to give average productivity as $Y_i/L_i = (K_i/L_i)^\alpha A_i^\beta$. Substituting for A_i under Lucas it depends on the capital-labour ratios only (i.e. K_i/L_i , K/L), but under Romer it also depends on L . Later R&D models view knowledge creation as intentional, and embodied in goods rather than human capital.

¹³ The new urban and regional growth literature draws on urban economics and new economic geography, but according to Roberts and Setterfield (2007) it is primarily empirical in nature, led by North Americans, commencing with Glaeser *et al* (1992), although Glaeser (2000) sees it as almost exclusively about cities.

¹⁴ The cluster is derived from Porter's (1990) 'diamond theory' with four determinants of competitive advantage: enhance productivity; demand conditions; firm strategy, structure and rivalry; factor conditions; and related and supporting industry.

¹⁵ The building blocks are electoral wards, which were aggregated to construct areas with a minimum 100,000 population, consistent with EU Guidelines. Similar criteria were used for 2000-06, but prior to this time unemployment was the main criterion.

¹⁶ A critique is given in Regional Studies Association (2001).