

## **The transport and economic development debate in Poland and the United Kingdom: a review from 1960 to the present**

*Debata nt. transportu i rozwoju ekonomicznego w Polsce i Zjednoczonym  
Królestwie: przegląd dokonań od 1960 r. do współczesności*

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**Abstract.** A review of transport and economic development in Poland and the UK, from 1960 for UK, and Poland from 1989 to the present. The paper traces the main theoretical phases and research, considering how these affected policy and practice. The development of the New Economic Geography and its effect on practice is traced, with the application of CGE models in Poland and hybrid approaches in the UK. The findings are similar: improved accessibility may be a necessary condition for helping depressed regions, but it is no guarantee, and policy makers must ensure that the conditions exist for a region to benefit from transport investment. Poland is a latecomer to research in this field, and the paper concludes that the results of research from elsewhere such as UK may not necessarily be applicable, and more home grown research is needed.

**Key words:** transport, economic development, project evaluation, New Economic Geography, Poland, UK.

### **Introduction**

The debate about the relationship between transport and economic development has been a continuing one in the post-war period. With every resurgence of infrastructure planning, arguments flare up again, and past experience is looked at. Poland and the United Kingdom (UK) have been no exception.

Starting in the early 1960's in the UK, with the re-emergence of the "regional problem" in peripheral areas, motorways were built because of their supposed regional development effects, and there has been subsequent research to assess whether transport investment in a region produced indirect or additional benefits not accounted for in a conventional direct user cost-benefit analysis. Up to

the 1980's most research failed to show a strong relationship – or often any relationship at all – between inputs of transport infrastructure (especially motorways) and increments in regional economic growth. However, matters changed in the 1990's with the emergence of the New Economic Geography (NEG), which argued again for the existence of additional economic benefits to direct transport benefits. This generated a new area of research and reappraisal of past results. Over the period considered, however, it would be fair to say that the issues were debated in the UK in a relatively politically neutral framework.

At the same time, Poland emerged from its Communist past, and began to update plans for motorway development. Government studies were published in 1993 on the expected economic impact of the proposed motorway system. These studies provided the basis for claims by the first reformed Socialist government (after the initial 1989 Solidarity government) that the new system would bring great economic benefits, especially to peripheral regions. Unlike in the UK, the rotating Polish governments had until about 2000 rather different views on the relation between transport and economic development.

This paper reviews the relative experience of Poland and the UK. The next section considers the UK experience during approximately 1955–2005, linking through to the emergence of the theme in Poland during approximately 1990–2005. This section also justifies the choice of these two countries for comparison. The third section considers recent developments in the UK, roughly during 1990–2005. The fourth section considers Poland, starting with the planning and development of the motorway system after 1990, outlining the policy framework, and the early research. The fifth section looks at recent research up to 2013 in Poland. The sixth section does the same for the UK. The seventh section concludes.

The literature is extensive, and so the references are selective, but they provide links to more material if desired.

### **Transport and economic development in the UK, 1955–2005, and the link through to transport and economic development in Poland, 1990–2005**

In the 1960's, the UK had a persistent regional problem. The idea that transport investment might help regional economic development grew with the new motorway programme which developed from the late 1950's onwards (Judge and Button, 1974). Proposals that road construction could be accelerated in certain regions, and hence reduce unemployment, were first expressed in the Tothill Report on Central Scotland, and the Hailsham Report on the Northeast. Simultaneously, the encroachment of motorways into urban areas generated anti-road protests and concern with environmental evaluation techniques. There was thus the consideration of environmental and developmental effects of road construc-

tion alongside direct user costs/benefits in the “General Appraisal Framework” put forward by the SACTRA Report in 1977 (HMSO, 1977), which also summarized past research on the indirect economic effects of road construction. This concluded that there was little evidence of such effects, and if they were suggested the justifications should be strong.

Combining the environmental and economic development effects of transport into a single evaluation framework in this Report took place without any recognition that these effects could be in direct conflict with one another at an aggregate level. This came a decade later with debates about sustainable development, and subsequently there emerged in policy terms the drive for “non transport dependent economic growth”. If there was no relationship between transport investment and economic growth, then it could be argued that road construction could be reduced to protect the environment, without any cost to economic growth. In fact, environmental lobby groups in Eastern Europe, and especially Poland, using Western research, argued this to counter demands for new motorway networks after 1989 (Judge, 1996). But the theoretical scenery had moved. The late 1980’s saw the development of the New Economic Geography. Developed initially by Krugman, this approach suggested that, under certain conditions, transport investment could produce gross benefits greater than direct user benefits. This re-opened many areas of argument which had been considered as settled. As the 90’s progressed, with a New Labour Government coming to power committed to introducing an integrated transport policy, and reining in road construction, the conflict between the environmental and developmental effects of road investment seemed stronger than ever. The result was a further study on Roads and the Economy (SACTRA, 1999), the interim results of which allowed the Government to publish its White Paper on Integrated Transport (HMSO, 1998).

A further aspect of the debate emerged after 1989. The newly ‘liberated’ Eastern European economies wanted to catch up with Western Europe in terms of vehicle ownership and road investment, including motorways. The same arguments about transport, economic development and environment started to emerge as in the West, but with a difference (Judge, 2000, 2002). Whereas the political only emerged with a small ‘p’ in a country like the UK (Vigar, 2002), in Eastern Europe the arguments in the 1990’s were often somewhat political, and reflected fault lines carried forward from the Communist era (Judge, 2002; Judge et al., 2004b). But they faded away with approaching EU accession in 2004.

Thus, the situations of UK and Poland are both sufficiently similar, and different, to make realistic and interesting comparisons. Looking at the topic of transport and regional development in the UK is obvious, given the research which has been done there. But unless one knows the country, the choice and suitability of Poland is less obvious. Poland, by contrast to the other CEE countries which joined the EU in 2004, was a country which historically had much

stronger links to Western Europe than the others (before 1989 up to a million Poles a year travelled abroad). There was a sharp awareness of intellectual developments abroad, and a desire to tap into them. Hence, the transport changes after 1989, and the policy response to them, evoked easily in the mind of an external observer (as in that of the writer) the parallels and contrasts in relation to the theme of this paper.

Hence, looking back over fifty years, an interesting feature initially is the differing political significance of the theme in the two countries. The relation between transport and development (and environment) was not a contentious party political issue in the UK (e.g. Vigar, 2002). On the other hand, environmental issues were used in Poland as a way of attacking the Communist government before 1989 (Hicks, 1996), and continued to be a differentiating feature between the main political blocs in the immediate post-Communist years after 1989.

The other area of political fault line is on the economic boost to the economy expected from motorway development. The Solidarity based groups included several environmental activists who were aware of Western research in this area, and used it when out of power to attack reformed Socialist governments who promoted the expected economic boost from motorway development. But the pro-motorway arguments were expressed in general terms, and which region would be helped by which motorway was not spelt out. This expressed the reality that the expected pattern of construction (from west to east), on the basis of logical traffic demand grounds, would be more likely to help the better off western regions of the country first. To an extent, this aped the situation of the UK. Though the political parties held similar views, it was still the case that the early development of the motorway system was in the most prosperous regions, and regional development arguments only came later (Judge and Button, 1974). Later research demonstrated that it was the more prosperous areas which received the greatest jobs boost from the motorway system and not the less prosperous ones (Botham, 1983). However, these arguments in Poland took place mainly in the 1990's when there was, for various reasons, little actual construction taking place, and one could say they were theoretical rather than practical arguments, while in the run up to EU accession in 2004 they simply slipped into the background.

### **Transport and economic development in the UK: developments in policy, practice and research, 1990–2005**

There were few major developments in the 1980's after the SACTRA Leitch report (HMSO, 1977). The later SACTRA report (SACTRA, 1999) was a milestone. It took on board all the new work on NEG in the previous decade. Generally it stated that in a perfectly competitive economy the standard cost benefit analysis will capture all relevant effects and there will be no additional benefits to count. However, if the economy is imperfectly competitive, or if there are

productivity gains to be captured by increases in agglomeration or scale economies made possible by the transport improvement, then there is the possibility that total benefits could exceed (or in certain circumstances, be less than) the measured direct benefits. The Report acknowledged that economic growth could be associated with transport growth, but that the two could be decoupled by appropriate pricing and management policies, and there could be situations where this might actually produce gains. It noted that the distributional effects of transport were the critical ones to assess. It recommended that where a proposal was sufficiently large, then an "Economic impact report" (EIR) should be done to take account of potential additional benefits. However, it cautioned: "generalisation about the effects of transport on the economy are subject to strong dependence on specific local circumstances and conditions" (SACTRA, 1999, p. 3). It also recognised that the DfT would have to undertake further research to provide the basis for the new EIR's. One particular recommendation was that a computable general equilibrium (CGE) model be set up (CGE models being the practical implementation of NEG theory). The Government in its response was lukewarm (DfT, 1999), citing the data and technical requirements that would be necessary. Such views were not uncommon:

"The [CGE] models are, however, highly technical, and it can be difficult for non-specialists to understand their basic structure, and even for technical economists to get a feel for how far particular conclusions are dependent on specific assumptions made in the construction of particular variants of the models" (Dodgson, 1999, p. 7).

CGE models were also rejected later (Gunn, 2004) on the basis that regional accounting data available was inadequate. Accordingly, the period up to 2005 saw the commissioning of various research studies, plus the development of guidelines for EIR's (Steer Davies Gleave, 2003; Ove Arup, 2005). The Department for Transport also commissioned a study to look at CGE models from the RAND Corporation (DfT, 2005a), but maintained a wary stance.

One of the problems with CGE models seldom mentioned, and also with certain types of impact research, is that there is sometimes a confusion between predicting what additional effects are likely to be, and actually observing them *ex post*. There are a wide range of values of the likely size of total benefits in GDP terms to direct benefits, though there seems to be an average of 1.4 emerging from a range of studies (e.g. Quinet and Vickerman, 2005). Knowing whether this is a theoretical estimate derived from running the model with given parameters, or from making a prediction and seeing if what is actually observed is significantly different, is often not clear. Even Dodgson's often quoted study (1974) is a prediction, not an actual measurement, of the effect of the M62 Lancashire–Yorkshire Motorway based on a cross-sectional estimate of the relationship between employment growth and accessibility. But the problem with CGE models, apart from their complexity, is that they lack statistical diagnostics

(Preston and Holvad, 2005), while they have not been around sufficiently long for predictions to be checked empirically.

Examples of research studies undertaken in this period are those on the impact of rail access and employment in London (Gibbons and Machin, 2003), and that on the link between agglomeration effects and productivity (Graham, 2005). This and other research fed into a report by the Department for Transport (DfT, 2005b) on assessing the contribution to GDP of transport projects.

### **Transport and regional development issues in Poland, 1990–2005**

Much of the discussion here is given in more detail elsewhere (Judge, 2000, 2002). Most discussion has taken place in relation to motorway development. Figure 1 illustrates the current motorway network, both complete, under construction, or planned. Originally put forward in 1993, it consisted then of two main east–west routes (A2 and A4), and two north–south routes (A1 and A3), plus a few other sections. The system was proposed as private tolled motorways. In addition, an extensive network of expressways (existing roads upgraded to a high standard) was proposed which would be publicly financed. The originally envisaged implementation of the planned motorway system soon became unrealistic, and for many reasons, including substantial financing problems, only limited construction took place until well into the first decade of the millenium (except on the A4 which was not financed from tolls).

The problems of initiating construction may be considered alongside the developments in national transport policy, and the debate over economic development versus environmental issues. There have been seven elections in the post-1989 democratic period: 1989, 1993, 1997, 2001, 2005, 2007, and 2011 and political power has changed hands each time, except for 2011. The 1989, 1997 and 2005 governments were Solidarity based coalitions with a strong environmental protection emphasis (in transport terms rather anti-motorway and pro-public transport, e.g. *Polityka...*, 2001). The 1993, 2001 and 2007 governments were reformed Socialist based coalitions with a stronger economic development orientation, arguing the boost that motorway and road construction would give to the economy (e.g. *Polityka...*, 1995; *Infrastruktura...*, 2002). But in the October 2011 election for the first time power did not change hands.

Thus, *ab initio*, it was expected by the first post-1990 reformed Socialist government that the development of the motorway system would contribute significantly to Polish national and regional economic development. This expectation was based on research by the Institute for Research on Roads and Bridges (*Program budowy...*, 1992) forecasting increasing employment in construction firms, plus jobs in businesses established along routes and in motorway maintenance

after construction. The indirect benefits were expressed in aggregate terms for the whole country, with no spatial breakdown.

Thus the 1995 paper supported the motorway system as illustrated in Figure 1, but included also the A3 motorway parallel to the German border, whereas the 2001 paper reduced the A3 to expressway standard, and substantially delayed

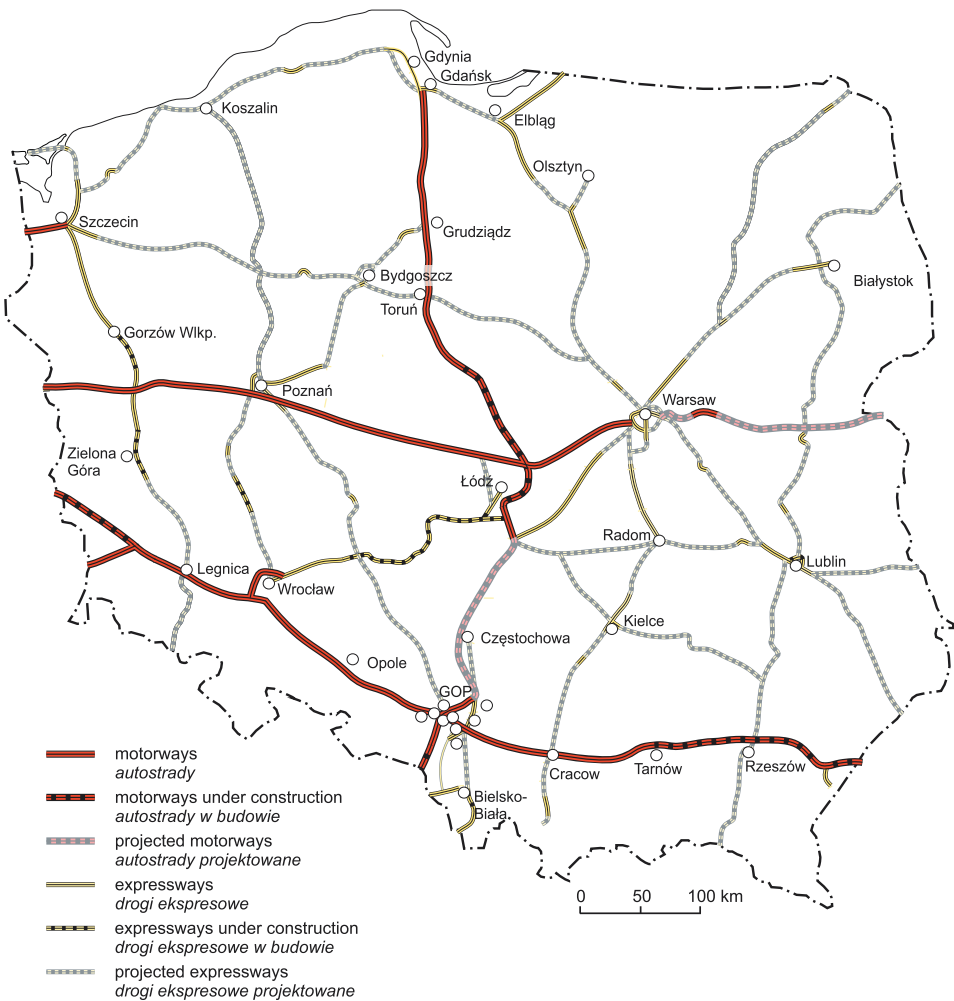


Fig. 1. Motorway and expressway system in Poland, in 2013 indicating completed, in progress and planned links

Source: data of Generalna Dyrekcja Dróg Krajowych i Autostrad, Warszawa (General Directory of National Roads and Motorways in Warsaw)

Sieć autostrad i dróg ekspresowych w Polsce w 2013 r. ze wskazaniem odcinków istniejących, w budowie i planowanych

Źródło: materiały GDDKiA.



the construction eastwards of the A2 from Warsaw and the A4 from Cracow. (Some might say that these decisions reflected simply resource shortages rather than environmental credentials, though they were consistent with the tone of the so-called "Alternative Transport Policy" published by the Institute for Sustainable Development in Warsaw (*Alternative...*, 1998a; 1998b), some of whose authors' in opposition became Ministers in this government). The defeat of the Solidarity coalition in the September 2001 election produced another Socialist led coalition, and meant that this new government was looking at the situation anew before the previous proposals could even be ratified, let alone acted upon.

The new Government published in January 2002 an infrastructure plan (*Infrastruktura...*, 2002) which effectively reversed the previous one, and proposed accelerating the programme, so that, using new financing proposals, between 2002–2005, 550 km of motorway would be built, plus 200 km of expressway. The accession of Poland to the EU in 2004 seemed to mark the end of the political policy differences. The change of government to a Solidarity oriented coalition in 2005 thus did not have the usual impact on transport policy of a change in government.

In fact, the divisions one might have perceived at government level were not evident in the same way at lower levels in the country. Judge (2002) carried out a large content analysis of the Polish press and media, and found there was not much discussion on the developmental aspects of motorway investment, while much more debate took place on environmental issues. On the other hand, a further piece of research looked at local authority attitudes to government motorway and road plans (Judge et al., 2004a, 2004b). All local authorities exceeding 10,000 population (about 400) were surveyed, giving a high response rate of 67%, or 258. While a high proportion of local authorities expected their areas to benefit economically from the motorway system, and this proportion increased for local authorities near a motorway, it was interesting that an even greater percentage of respondents expected significant benefits from the improved main road or expressway system. This is not surprising, as the Polish motorway network is quite sparse, and for the many local authorities located further away from it, local road improvements will be more significant in improving their economic prospects.

A different slant on the motorway debate appeared in a spatial strategy study begun in 2002 (Węclawowicz et al., 2006). The section on transport and motorway development saw a reordering of priorities which to some extent resurrected debates about whether the previously proposed motorway network – which effectively fans out from Western Europe to the east – is more oriented to European rather than Polish priorities. New motorway level links were proposed which strengthened the polycentric Polish urban system much more explicitly than the currently proposed network. As about half of all Polish road construction was then financed by Western/EU grants and loans (a varying proportion, but 47% in



2002), the entry of Poland to the EU in 2004 probably tied up the country even more with European priorities, so it remains to be seen how this study, carried out by the Polish Academy of Sciences (PAN), influenced priorities, if at all.

We now move on to consider the more recent Polish research, and EU research which covers Poland.

### **Research on transport and economic development in Poland, 2005–2013**

The research published in this recent period is significant. One might reasonably, because of its comprehensive coverage, start with the study of Domańska (2006). The case study here looked at the construction and impact of the A4 motorway and was carried out in the early years after 2000. Planned from the German border at Jędrzychowice, to the Ukrainian border at Korczowa, this non-tolled section of motorway was completed during the time of Domańska's study from the German border to Katowice. The study, which "was intended to provide examples of the enabling potential for economic development of motorways at local and regional level" (p. 231) fell into two parts. First, a detailed interview-based study of the actual construction companies, local governments, and the investors' representatives i.e. local divisions of the General Directorate of Public Roads and Motorways, mapped out the detailed construction process, and the geographical involvement of materials and equipment supplying companies and the labour inputs. Second, a questionnaire/interview survey directed to local authorities in the region mapped out the impact of the motorway in terms of the attraction of new firms and development, and the creation of new jobs (the development at the Bielański Interchange near Wrocław was spectacular, as was that at the Katowice Special Economic Zone).

The conclusions tie in closely with concluding comments made at the end of this paper. First, the results showed that "greater economic benefits resulted in the provinces of Silesia and Lower Silesia, and are primarily due to their better starting endowment in human and material capital" (p. 231), while the less developed areas around Opole did much less well. Thus, the motorway provides opportunities, but you have to be able to exploit them. And, second, you must ensure that the conditions for exploiting the opportunities exist. Thus, as Domańska (2006, p. 231) says:

"...the transfer of benefits from investment in regional development depends to a large extent on the opportunity that a given area presents in an economic sense. The economic activation of disadvantaged regions is possible but only if favorable conditions are created for exploiting the potential benefits of the implementation of infrastructure projects, such as the granting of clear preferences for local businesses, and encouraging the use of local labor. One can declare

generally that without taking into account the need for a clear policy of granting local companies priority or preference in the undertaking of road projects, the effects of demand expansion from building roads in Poland will spill out over a larger area and there will not be a regional effect.”

After this study, the relevant studies identified fall into two main categories. Firstly, studies carried out for the EU or similar organisations which involve Polish issues relevant to this paper, and also involve Polish staff; and secondly, studies carried out by Polish organisations or government departments where issues of transport and regional development figure in some way.

There have been several EU transport projects but the most pertinent for this paper is IASON (*I*ntegrated *A*ppraisal of *S*patial economic and *N*etwork effects of transport investments and policies). The project’s model is described as:

“...a model of regional socio-economic development (...) applied to different scenarios of further development of the European transport networks in the enlarged European Union (...) to answer the question whether infrastructure improvements contribute to the reduction of economic disparities among regions and so the cohesion objective of the European Union” (Wegener et al., 2005).

The results provide evidence on the likely relationship between transport investment and regional development in Poland, as all the motorway routes planned/being constructed in Poland constitute parts of Trans-European routes.

There was an extensive modelling framework (Brockner et al., 2004), including a CGE model, allowing the impact of alternative network scenarios on regional economic aggregates (RGDP, employment, etc) to be estimated. Many scenarios were analysed (Tavasszy et al., 2004) covering 2001–2020, and were evaluated by reference to a “do nothing” scenario (Scenario 000), where no network improvements take place after 2001. Space precludes description of the scenarios except Scenario A3. This is the implementation of all TEN and TINA (Transport Infrastructure Needs Assessment) projects. So it is A1 plus the TINA projects which were defined as the priority transport projects required in the EU Accession States of CEE. Another was Scenario A62, which was Scenario A3 plus implementation of rather fewer projects than in the original TINA outline plan. Scenario A62 was one of the Scenarios elaborated by PAN representing a more realistic version of Scenario A3 (Komornicki and Korcelli, 2003).

The results of each scenario were presented in terms of: accessibility change compared to the Reference Scenario (000); change in Welfare (regional GDP) compared to 000; and change in GDP per capita compared to 000. The combined effects of all mode changes were incorporated in each scenario. The results overall, and for Poland, are described here only briefly as they are accessible in EU and Polish sources (e.g. Wegener et al., 2005). Overall, the results indicate that while A3, and especially A62, show substantial accessibility benefits for Poland,

the impacts in terms of change in regional GDP and GDP per capita over 20 years are quite modest, as this overall comment (not just on Poland) indicates:

“the overall effects of transport infrastructure investments and other transport policies are small compared with those of socio-economic and technical macro trends, such as globalisation, increasing competition between cities and regions, ageing of the population, shifting labour force participation and increases in labour productivity (...). If one considers that under normal economic circumstances the long-term growth of regional economies is in the range between two and three percent per year, additional regional economic growth of less than one or two percent over twenty years is almost negligible” (Wegener et al., 2005, p. 38).

Thus, even very large increases in accessibility seem to make little difference to regional economic growth. As far as Poland is concerned, different regions benefit at most between 0.5 to 0.8% in total, and some have negative impacts, in spite of quite large changes in accessibility. These effects over two decades are swamped by other socio-economic trends. So, there are regional economic effects due to transport investment but they are modest compared to other possible factors.

The overall conclusions are modified for particular regions to the extent that the magnitude of the effect seems to depend strongly on the initial accessibility level in 2001 (Wegener et al., 2005). In fact, the IASON Study has been criticised in Poland on the basis that the overall conclusions of the Study tend to underemphasise some very significant results. Of course, the problem with a study of the scale of IASON is that the focus is on the big picture and inevitably details can get smoothed over. But local Polish analysis of the IASON results highlights the fact that the overall IASON conclusion that the developmental impact of the TENS network is limited understates significantly the situation in Poland. Thus, focussing on the results as they apply to the accession states, Wegener et al. (2005, p. 42) state:

“For regions in the European core with all the benefits of a central geographical location plus an already highly developed transport and telecommunications infrastructure, additional gains in accessibility through even larger airports or even more motorways or high-speed rail lines may bring only little additional incentives for economic growth. For regions at the European periphery, however, which suffer from the remote geographical location plus an underdeveloped transport infrastructure, a gain in accessibility through a new motorway or rail line may bring significant progress in economic development”.

Therefore, as with any such aggregate study focussed on Europe as a whole, the results need careful interpretation on their applicability to specific areas.

In this connection, the research carried out under the aegis of the European Spatial Planning Observation Network (ESPON) is relevant. The report (*Update...*, 2007) presents data on the actual change in potential accessibility by road for 2001–2006. The results for Poland and near states are presented in Figure 2. This shows that accessibility improvements have been concentrated in the western areas of Poland, with some areas experiencing up to a 25% improvement, as the impact of road improvements/investments spreads dominantly from west to east. Inward investment from abroad is concentrated in these regions: whether this reflects the effect of the improved accessibility, or the fact that

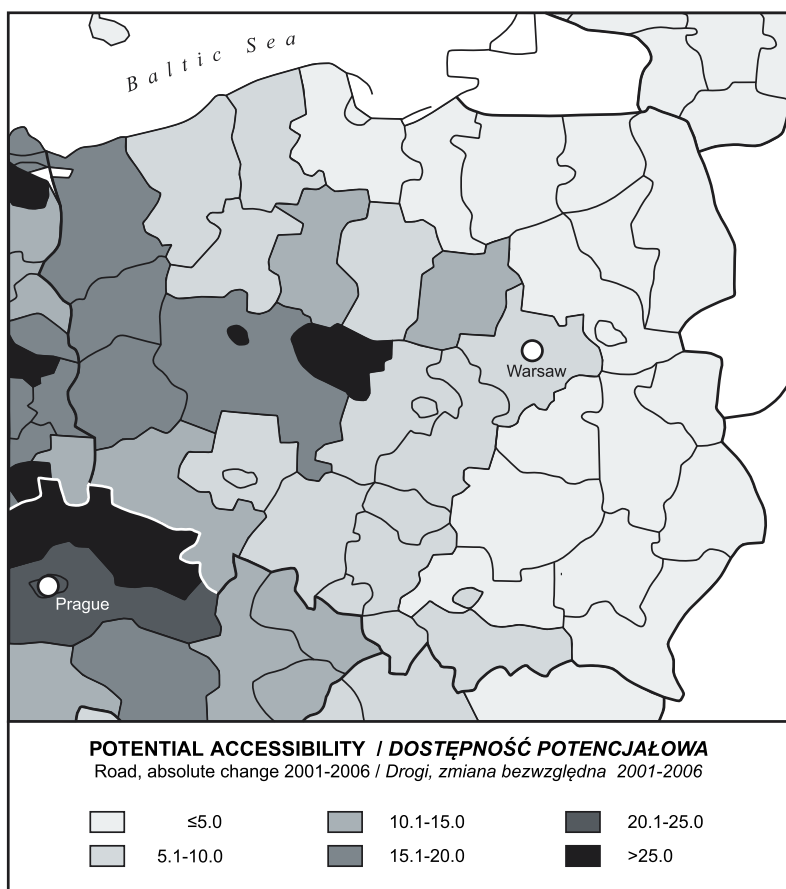


Fig. 2. Absolute change in potential accessibility by road 2001–2006  
(EU27 absolute average in 2006=100)

Source: extract from Figure 6, *Update...*, 2007, p. 18.

Bezwzględne zmiany dostępności potencjałowej w transporcie drogowym  
w latach 2001–2006 (przeciętne dla 27 krajów członkowskich UE, rok 2006=100)

Źródło: fragment ryciny 6, *Update...*, 2007, s. 18.

the largest and most dynamic urban centres are also located in these regions is not clear. There is some questioning within official Polish circles of the basis of these accessibility analyses. But it highlights the highly inferior position of the eastern regions of Poland. In this context, Bujnowski (2006, p. 112) questions whether, for the eastern border regions of the enlarged EU, the improvement of their accessibility by integration with the Trans-European Transport Network will make much difference to their ability to compete with more prosperous western regions. Good communications may be a necessary but not always sufficient condition for improving the economy of a peripheral region, and other measures are necessary as well (chiming in with the views of Domańska, 2006).

Reference to the road accessibility changes for 2001–2006 from ESPON suggests reference to a larger ESPON study of this time which looked at competitiveness and territorial cohesion issues in the new members of the expanded Union after 2004 in terms of its polycentric spatial structure. The study team included staff from PAN (T. Komornicki and P. Korcelli), but the results for Poland were dispersed throughout the substantial report (ESPON, 2006), as is so often the case with such EU-wide studies, so it is difficult to get a unified picture for Poland alone. There is a more recent ESPON study where the Polish component will be more readily identified (ESPON, 2011). This is the TRACC project (Transport Accessibility at Regional/Local Scale and Patterns in Europe) being carried out under the ESPON 2013 programme. One of its policy questions is: “What is the link between accessibility at the different levels and for different modes of European regions and their economic development? How has this link changed over time? Does the strength of this link differ across the EU?”. The case studies include four regions in Poland, and two staff from PAN are members of the study team (T. Komornicki and P. Rosik). However, there are no analytical results in this Interim Report, but the Final Report is due 16 months after the Interim Report, which would be about mid-2013. This is awaited.

Considering research by Polish organisations, many studies were carried out by the Ministry of Regional Development (MRD) analysing regional problems (e.g. *Strategia...*, 2008) and in certain regions, especially in eastern Poland, poor accessibility and communications are cited as significant factors holding back regional development, along with other factors. Instructive remarks may be noted, such as that concerning Warmińsko-Mazurskie voivodship:

“The region still remains in the group of the most poorly accessible regions in the European Union in terms of communication. Bad technical condition of current communicative infrastructure does not only influence the safety of travelling, accessibility of the region to tourists, but it also determines the behaviour of the entrepreneurs” (*Strategia...*, 2008, p. 17).

However, there is limited transport analysis in these reports suggestive of new research. So, we move on to look at recent and current research in the UK.

## **Research on transport and economic development in the UK, 2005–2013**

There has been much activity in this most recent period, both in the theoretical field, subjecting to test the underlying NEG theory itself, and the controversies surrounding some major infrastructure proposals. These include the London Crossrail scheme, the High Speed Rail Scheme from London to Birmingham to Leeds/Manchester, and the Northern Way (the Liverpool to Newcastle corridor), some of which involve colossal and contested expenditures, and are mentioned in greater or lesser depth below. But first we review some studies developing the ramifications of NEG.

Given the doubts of the Department for Transport (DfT, 2005b), and others, about CGE models, effort was made to experiment with extending the use of conventional transport models by building on to them land-use/transport interaction models which embody the prediction of agglomeration/competition effects to produce forecasts of wider economic benefits as part of the overall evaluation outputs of the modelling process. Feldman et al. (2008) describe one study undertaken on behalf of the Department for Transport. This focuses on the South/West Yorkshire counties and combines existing strategic transport and land-use transport interaction models to produce an overall forecasting evaluation model to estimate wider economic benefits. One finding is that agglomeration effects are a dominant part of the wider economic benefits, which include competition, labour market and exchequer effects. While the experience gained in this exercise was carried forward to other major projects described below, one area identified as needing further work was in the estimation of agglomeration economies, and there has been much research in this area.

To be brief, just one publication is discussed, as it reviews 35 other studies (Melo et al., 2009). This study finds that productivity gains from urban agglomeration economies are generally positive, but there is much variation in the size of estimates reported. Estimates can be affected by the countries from which they are derived, from the industrial coverage involved, how the agglomeration economies are specified, plus a range of other factors. It also finds that estimates derived from one empirical context cannot easily be applied elsewhere.

Along with work on developing and refining NEG, we see attempts to test its internal and temporal validity and robustness compared to competing explanations. So far, it appears to have fared robustly. Thus, on the first aspect (internal validity) Handbury and Weinstein (2011) point out that the agglomeration force behind NEG is based on the notion that larger markets should have a lower variety adjusted price index, but this idea has never been tested. The authors show that this is in fact the case, so that Krugman is right. On the second point (superiority to competing explanations), for example, Fingleton and Fis-



cher (2010) assess the relative ability of a neoclassical model, deriving from the work of Solow (1956), and the wage equation, deriving from the NEG work of Fujita et al. (1999) to explain cross-regional variation in economic development amongst 255 European regions in the period 1995–2003. The performance of the neoclassical model was inferior to the NEG model. On the third point (temporal validity), Brulhart (2009) suggests that manufacturing concentrations in the major metropoli of Europe and North America, which are the key sources of agglomeration economies, are gradually unravelling, so that the relevance of NEG is diminishing. But large-scale agglomeration forces are buoyant in the developing world. Krugman (2010) says the same thing in a very engaging way: the NEG expresses itself in a much more subtle way now in the advanced economies, but the NEG as Krugman developed it twenty years ago now applies much more exactly to developing countries like China, as recent writers suggest (e.g. Huang, 2010).

Before moving on to consider some recent projects, one may make reference to the transport appraisal review study recently (July, 2013) published by the Department for Transport (an overview report (Mackie and Worsley, 2013), and eight country case studies). These reports review an enormous field, so the discussion of wider economic impacts (WEI's) is limited, but they set the topic within the context of the overall appraisal process, and are also relevant to discussion to follow.

New projects continue to be evaluated and constructed. One project currently under construction is the London Crossrail project. This will overcome a quirk in the economic geography of the capital resulting from being first in the railway age. Railway termini were built in the mid-nineteenth century on what was then the urban periphery. But trains could not run through from one side to the other, so cumbersome journeys were necessary to cross London by public transport or taxi between termini. Crossrail will make such journeys unnecessary, and will also alter the transport geography of the capital to improve linkages and reinforce agglomeration economies. Thus, it is argued the inclusion of wider economic benefits (widely interpreted, but including agglomeration economies) increases the total welfare benefits by a factor of 3.26 over the conventional user benefits (Bhasin, 2007, Table 6.1, p. 24). While this estimate may be debated, other work by Graham (2007, p. 339) using the same source data suggests that the inclusion of benefits generated by agglomeration economies increases the conventional user benefits by 25% (hence bringing it within the range of 1.4 quoted above (Quinet and Vickerman, 2004, p. 51).

Another initiative (but with limited tangible outcome) was the Northern Way. This brought together partners across northern England to improve the economic performance of the North and re-balance the UK's economy. It was established in 2004 by the three Northern Regional Development Agencies – One North East, Yorkshire Forward and the North West Development Agency.

With the wind-up of the Regional Development Agencies the Northern Way's activities came to a close at the end of March 2011. While it existed, the Northern Way Transport Compact (NWTC) provided advice on transport priorities at the pan-northern level linked to productivity growth. Its 2011 report (NWTC, 2011) set out a programme for planning transport provision across northern England from Liverpool to Newcastle to boost the transport sector's contribution to the economic development of the region. Many reports were published on how transport investment could integrate several major nineteenth century industrial conurbations to create agglomeration economies.

The Northern Way is reminiscent of the A4 corridor in Poland. The latter, like Northern Way, is not connected to the capital, and it is often said that the fault in many transport initiatives to boost regional economies is that they too often start in the capital with the hope that development will spread outwards, but the capital simply attracts more development, and hence undermines regions. Thus, in terms of the next proposed development we consider, the HS2 High Speed Rail project, many say the best way it can be used to boost regional economies is to not build it at all, and use the resources to boost the northern regions directly (e.g. Ramchurn, 2013). We may mention just one analytical paper produced for the Northern Way initiative, as it comes up again later. A paper by SERC (2009) finds that commuting flows between Leeds and Manchester is 40% less than you would expect, and a reduction in travel time of 20 minutes could increase wages by 1.06–2.7% as a result of the benefits of increased agglomeration due to the consequent transport induced reorganisation of the labour market. Compared to a 40 minute reduction in journey times from Leeds and Manchester to London, this might produce larger overall gains, but a 20 minute journey time reduction in Leeds-Manchester links concentrates more benefit in the North, and generates a greater impact on the north-south economic differential. Of course, terminating Northern Way removes this possibility, but, as discussed later, the possibility of local authorities combining together like this constitutes the basis of a new area of theoretical development in the analysis of WEI's.

The most important project currently where NEG type benefits may be relevant is that just mentioned, namely, the proposed high speed rail line, initially London to Birmingham, but later extended to Leeds/Manchester. The high speed line from the Channel Tunnel to London is HS1, so this proposal is HS2. The Government stressed the need to expand rail network capacity on these key routes, and the wider economic benefits to spread prosperity throughout the country and help reduce the "North–South divide". Critics argue there are more cost effective ways of increasing network capacity.

A report by HS2 (2012), the government agency promoting HS2, estimated as follows for the London–Birmingham link (Table 15, p. 48). The cost was £16,280 mn. at 2011 prices (cost London to Manchester/Leeds about £30 bn.). The net transport benefits were £19, 800 mn. at 2011 prices, and the "wider economic

impacts" (WEI's) were put at £4,100 mn. This gave a poor benefit-to-cost ratio (BCR) of 1.4 without WEI's and 1.7 with.

However, these cost estimates had to be revised during summer 2013: the cost of the scheme to Manchester/Leeds was updated to about £42.6 bn., plus £6 bn. for rolling stock, which had been forgotten. Boris Johnston, Lord Mayor of London, thought the overall cost could exceed £70 bn. The National Audit Office in May (NAO, 2013) expressed doubts about the project, saying it was unclear how HS2 would transform regional economies.

Public opposition is enormous: the line will inflict environmental costs, and cause massive disruption during construction. The housing market near the projected route is frozen. As few of the planned stations connect with the existing rail network, the limited time savings (only 30 minutes between London and Birmingham) will be lost connecting to city centres. The analysis seems based on dubious assumptions, such as that time spent on trains is dead time unusable for anything (such as working).

Recently a new study was published (HS2, 2013). This adopted a new approach to estimating the WEI's which rejects the established appraisal procedures of the Department for Transport reviewed in July 2013 (Mackie and Worsley, 2013). The new report estimated that HS2 would generate £15 billion a year in productivity gains for the UK economy in 2037 (at 2013 prices). This is an increase of around 0.8% in GDP (HS2, 2013, p.13). Regarding regional development, the report asserted (p.14) that the productivity benefits brought about by the improved connectivity would benefit all regions, with strong gains in the Midlands and the North.

But critics believe HS2 will suck development to London and away from the regions. The report immediately attracted criticism. Professor Graham of Imperial College, a Government adviser on HS2 and internationally recognised expert on WEI's said that the report needed to be looked at carefully (Odell, 2013). Professor Glaister, also of Imperial College, criticised the report's methodology, and the failure to discount 2037 benefits back to the present to compare with alternatives (Odell, 2013). Professor Overman of SERC at London School of Economics compared the report with his own work on the Northern Way (SERC, 2009), saying the methodology was simply wrong (Overman, 2013). But the government must have an argument, and what is better than one which cannot be compared with existing ways of evaluating projects? However, the Government insists that a credible and updated cost benefit analysis will be published shortly. Why does the Government stick to the project? Theories abound, but it may just be another example of the vulnerability of governments to get entangled in disastrous projects (King and Crewe, 2013).

Before concluding, we reiterate how research on transport and regional development was opened up by NEG and CGE models (with alternative approaches in UK to model WEI's). A new phase of development is possible looking at transport

and competitiveness. The idea that agglomeration economies and WEI's which may be captured by transport infrastructure investment suggests that regions may combine to exploit such possibilities, and that regional groupings may develop competitive positions vis a vis one another. A Workshop on Transport and Competitiveness was held at Leeds University Institute for Transport Studies on 10 September 2013 to review research in this area (details from Caroline Mullen at A.Mullen@leeds.ac.uk).

## **Conclusions**

As Banister (2012) said, there are "many issues arising from the potential link between transport investment and economic growth, namely as to whether there is an implied causality, whether any economic development is new or merely a transfer from elsewhere" (p. 1). Expressed similarly, Quinet and Vickerman (2004, p. 51), after reviewing many studies, say that they: "provide a certain justification for the frequent claims made by local politicians in favour of the beneficial effects of transport improvements. However, they also suggest that these effects are not guaranteed, and typically involve some redistribution between different zones".

We see these points in the discussion of both Poland and UK. Evidence suggests that at national level major infrastructure projects make limited differences to national GDP, but the redistributive effects may be quite significant. But regions which might be expected to benefit from such effects may not do so if they do not have the potential to exploit them. So improved accessibility is necessary, but not sufficient. At the same time, some redistributive effects may be unwelcome. Arguably, much transport investment in the UK has benefitted London, and disadvantaged the regions. Warsaw does not have such a dominant position as the capital of Poland, and is in some ways slightly peripheral to other main economic centres clustering along the A4 corridor which have received their motorway boost sooner.

A clear difference between Poland and UK is in the volume of research. There are historical reasons for this, and research in Poland has been building up. But this has not always focussed on Polish interests, much being conducted within an EU framework. There is some debate in Poland as to whether Trans-European networks are best oriented to serve Polish needs, but resources are required to do your own thing. EU priorities figure less obviously in a UK context: being an island helps. But while Poland can draw on the prior research carried out by countries such as UK, this review has pointed to the limitations on the extent to which results are transferable. The benefits which may be conferred by a new transport investment are affected by many local circumstances, and these effects may not be predictable from other studies, and these studies themselves may become outdated by events.

Poland is a large country occupying an unusual position vis a vis its neighbours. More internally generated empirical research is needed on the geographical impact of its transport system development: EU priorities have seemed to dominate. Funding of course is an issue. There is a need for more locally based case studies such as Domańska's (2006), and for more studies generally which interpret Poland's particular position in relation to the changing significance of key factors in this area.

Thus, the discussion of NEG and CGE models is one where Poland has shared in the EU work (and the UK followed its own methodological path), but judging by the views even of Krugman (2010) himself, the scope for its application in the mature economies may be slowly slipping away as the importance of agglomeration economies diminishes. How does this affect Poland? One may say that apart from the A4 corridor the main urban centres of Poland were too far apart to capture significant agglomeration economies by transport investment. But advances in computing are probably diminishing the advantages of clustering. The ability to do such things as "print on demand" is an initial example, but the consequences of the recent availability of 3-D printing at acceptable cost are incalculable. We cannot here even start speculating how this might affect locational patterns and the relative consequences of transport investment in Poland and UK, but it is reasonable to expect it to start affecting research, especially in Poland.

Finally, the paper has referred to the significance of politics in this area: not significant in the UK, but significant in Poland. But this applied for historical reasons to Poland in the 1990's, and while it may have appeared significant to external observers at the time, this phenomenon faded away after 2000, and probably made no difference to what happened on the ground. On the other hand, while one may say that political parties in the UK had similar views on transport and economic development, one senses that the turmoil created by HS2 may be changing the political landscape. Along with other controversies like shale oil extraction, political parties are finding it more difficult to maintain a hold over their traditional political constituencies across the country when major developments like HS2 and fracking raise widespread conflicts between development and environment.

One senses that the debates in this paper may carry on in Poland and UK for some time into the future.

\*

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EAMONN JUDGE

DEBATA NT. TRANSPORTU I ROZWOJU EKONOMICZNEGO  
W POLSCE I ZJEDNOCZONYM KRÓLESTWIE:  
PRZEGLĄD DOKONAŃ OD 1960 R. DO WSPÓŁCZESNOŚCI

W artykule dokonuje się przeglądu badań, praktyki i polityki dotyczącej transportu i rozwoju ekonomicznego w Polsce i w Zjednoczonym Królestwie (Wielkiej Brytanii i Irlandii Północnej)<sup>1</sup>, od roku 1960 do współczesności (w Polsce od 1989 r.). W opracowaniu zarysowuje się ważniejsze ujęcia teoretyczne i rezultaty badawcze, równoległe z ich wpływem na politykę i praktykę w obydwu krajach. Dyskusja skupia się głównie na rozwoju sieci autostrad, ale w pewnym zakresie także na inwestycjach kolejowych. Śledzi się rozwój tzw. nowej geografii ekonomicznej i jej wpływ na praktykę w obydwu krajach, równoległe z zastosowaniem obliczeniowych modeli ogólnej równowagi (*computable general equilibrium models*, CGE) w Polsce i podejść hybrydowych w Wielkiej Brytanii.

Po 1990 r. P. Krugman rozpoczął swoją działalność w ramach tzw. nowej geografii ekonomicznej (NEG), podnosząc argumenty dotyczące powiązań między inwestycjami transportowymi a rozwojem gospodarczym. Badania koncentrowały się na roli inwestycji transportowych w indukowaniu szerszych korzyści ekonomicznych – nie tylko dla użytkowników transportu, lecz i w pobudzaniu gospodarki aglomeracyjnej i promowaniu wyższych poziomów konkurencji w gospodarkach lokalnych. Rozwijane najpierw na poziomie teoretycznym i wykorzystujące modele małej skali podejście stopniowo było włączane do międzyregionalnych modeli nakładów-wyników integrowanych ze strategicznymi modelami transportowymi. Te modele CGE były szerzej stosowane od roku 2000, a ich zastosowanie w Polsce było częścią projektu IASON. Wnioski dotyczące całej Europy sugerują, że o ile znaczące są regionalne efekty jako rezultat budowy sieci, o tyle ich szerszy wpływ jest bardzo umiarkowany, a znaczniejsze efekty wywierają inne tendencje demograficzne i ekonomiczne. Polskie prace prowadzone w ramach projektu IASON wskazują jednak, że wpływ sieci transeuropejskich na słabiej rozwinięte regiony Europy Wschodniej może być bardziej znaczący niż gdzie indziej w Europie.

I odwrotnie, w Wielkiej Brytanii po 2005 r. wysiłek teoretyczny i modelowanie poszły w zupełnie innym kierunku niż modelowanie CGE. Rozwój nowej geografii ekonomicznej został zintegrowany z istniejącymi modelami interakcji użytkowania ziemi/transportu i strategicznymi modelami transportu, poczynając od prób rozwojowych w południowym i zachodnim Yorkshire, które następnie stosowano na szerszą skalę w ważnych nowych projektach, takich jak Crossrail w Londynie oraz HS2 – projekt kolei wielkich prędkości Londyn–Birmingham–Leeds–Manchester (omówiony w artykule dość szczegółowo, a który staje się coraz bardziej kontrowersyjny). Równoległe pojawiły się nowe badania dotyczące rozwoju komponentów gospodarki aglomeracyjnej w ramach NEG. Niestety, analizy te sugerują, że wpływy determinujące wielkość takich gospodarek są mocno zróżnicowane, trudno więc porównywać rezultaty różnych badań. W artykule opisuje się rezultaty testowania wiarygodności i znaczenia teoretycznego NEG. Warto zauważyć, że o ile NEG nadaje się dobrze do testowania, o tyle jej zastosowanie w gospo-

<sup>1</sup> Dalej stosuje się, zgodnie z konwencją polskich opracowań, określenie „Wielka Brytania”.

darkach rozwiniętych, takich jak brytyjska i amerykańska, stopniowo zmniejsza się, rośnie zaś w gospodarkach rozwijających się – takich jak chińska.

W artykule przewija się myśl o upolitycznieniu debat prowadzonych w obydwu krajach. Zdaniem autora, w Wielkiej Brytanii relacje między transportem a rozwojem gospodarczym raczej nie są politycznie kontrowersyjne, natomiast w Polsce zaznacza się różnica podejść w zależności od ekipy będącej u władzy. Podczas lat 1990. miało to w Polsce małe znaczenie praktyczne (ze względu na niedobór środków), ale sytuacja zmieniła się po akcesji Polski do UE. I odwrotnie, obecnie w Wielkiej Brytanii, między-partyjny consensus nt. transportu i rozwoju regionalnego kruszy się w związku z kontrowersjami wokół projektu HS2.

Autor dokonuje przeglądu pełnego wachlarza badań od 1960 r. w Wielkiej Brytanii, a badań tych jest wiele. Okres po 1989 r. w Polsce jest oczywiście znacznie krótszy, dlatego badań jest mniej. Początkowo dokumenty nawiązywały do rezultatów projektów zagranicznych, ale po 2000 r. liczba oryginalnych polskich badań znacząco wzrosła. Poza projektami takimi jak IASON i innymi projektami UE, w których Polska uczestniczyła pod szyldem ESPON/INTERREG, podejmowano liczne krajowe projekty, w tym jeden dotyczący wpływu autostrady A4. Z artykułu wynika, że rezultaty badań pochodzących z innych krajów (np. z Wielkiej Brytanii), niekoniecznie muszą sprawdzać się w warunkach polskich, i potrzeba zdecydowanie więcej badań, aby określić wpływ inwestycji transportowych, gdyż zależą one od specyficznych warunków lokalnych. Odnosi się to zwłaszcza do przypadków, w których debata dotyczy zaspokojenia przede wszystkim krajowych, a nie europejskich priorytetów.

Generalna konkluzja płynąca z artykułu jest taka, że korzyści z inwestycji transportowych są szersze – aczkolwiek umiarkowane – niż korzyści bezpośrednich użytkowników. Wnioski trzeba jednak wyprowadzać z dużą ostrożnością, zwłaszcza kiedy inwestycje wiążą się z redystrybucją działalności gospodarczej (tj. aktywnością zlokalizowaną w innym miejscu), szczególnie z regionów uboższych do bogatszych. Ogólnie mówiąc, poprawa dostępności przestrzennej (poprzez inwestycje transportowe) może być warunkiem koniecznym, lecz niewystarczającym do zmiany na lepsze sytuacji regionów opóźnionych.