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Spatial Economics Research Centre

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On the road to recovery?

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This morning the Government unveiled "[the biggest road-building programme in 40 years](#)", as part of a package of infrastructure schemes intended to drive the UK's long-term economic development. Road-building is often [opposed on environmental grounds](#), and those costs are clear. But does it produce any economic gains? Surprisingly, we have very little robust evidence - until now.

SERC's research suggests that roads can produce economic benefits – at least locally. In the first rigorous studies to look at the effects of UK road transport improvements [employment, output and wages](#), we find that road-related accessibility improvements between 1998 and 2007 increased local employment and raised wages. Back-of-the-envelope calculations suggest that £1bn of road improvements could create around 2000 jobs in the affected areas.

Road networks dominate transport infrastructure in most countries, including the UK. According to [official transport statistics](#), in 2010 91% of passenger transport and around 68% freight transport was by road. Road traffic has increased steadily since the 50s, up to around 240 billion vehicle miles in 2011. And most of this traffic is concentrated in the major roads network. So it's not surprising that a [substantial amount of UK public spending](#) is devoted to roads: around £1 billion, or 44% of total transport spending in 2010/11. An important slice of this expenditure is for new road links (since 2000, over [300 kilometres of new roads](#) in England alone).

In theory, transport improvements decrease transportation costs, improve access to markets, foster economic integration, stimulate competition, generate agglomeration economies and a number of other 'wider' economic benefits. This is why transport improvements are [frequently proposed](#) as a strategy for economic growth, integration and local economic development. But for economies with well-developed transport networks like the UK, there is little good evidence on the extent of the gains that result from additions to the existing network. Although road improvements are routinely subject to appraisal - predicting the economic benefits before the roads are built - they have not historically been subject to rigorous evaluation in order to work out whether these benefits actually materialised!

SERC's research provides some of the first hard evidence. We link data on 31 major new road construction schemes between 1998 and 2007 to administrative data on businesses and workers. There are major challenges when evaluating the economic effects of road construction.

The first one is how to capture the effect of new roads. We do this using an index of employment 'accessibility' that estimates the number of workers that can reach a location, in a unit of travel time, using optimal routes along the major road network. When new links are added to the network, optimal travel times decrease and employment accessibility increases, but by different amounts according to where a place is in relation to the existing road network, the new road links and major centres of employment.

The second major challenge comes from the fact that new roads are not placed randomly, but are targeted specifically to improve traffic flows, decrease congestion or improve connectivity. For this reason, to measure the effects of increases in accessibility we cannot simply compare places that had new links to places that did not. Instead, we look only at places which are close to a new road scheme, estimating the effects from the subtle local changes in accessibility that occur within a 20km radius.

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Linking these accessibility changes to firm level data on employment and output allows us to estimate how transport affected local production and employment. Firstly we find that places (electoral wards) that experienced accessibility improvements saw employment gains. A 10% increase in accessibility leads to a 3-4% increase in plants and employment.

These gains come about through an increase in the number of businesses, particularly in the service sector, though surprisingly firms already operating in the area shed workers. An explanation for existing firms cutting employment is the observed wage increases in response to the accessibility changes (evident in [other results](#) based on worker data), coupled with improvements in productivity (output per worker). These wage and output effects are of a similar magnitude to the effects on employment: a 10% increase in accessibility results in an increase in labour productivity and average wages of around 2.5-3%.

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So will road-building set the UK on the 'road to recovery'? Overall, the economic benefits are relatively small. We also need to be careful in interpreting these changes as gains to the national economy. To some extent, jobs may be displaced from other areas, although our evidence indicates this is not the primary channel. Also, we are learning about the potential impacts of transport improvements from very localised changes, and abstracting from changes induced by local road schemes in more distant places. Given how much political attention infrastructure projects attract, though, our work opens the way for more research in an area where proper evaluation is badly needed.

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