

in brief...

## Road to recovery? Economic benefits of new infrastructure

New investment in transport infrastructure is seen as a key plank of a modern industrial strategy, and is central to many local economic growth strategies. Research by **Stephen Gibbons, Teemu Lyytikäinen, Henry Overman** and **Rosa Sanchis-Guarner** looks at the impact of UK road investment on jobs.

Back in 2013, the UK government unveiled 'the biggest road-building programme in 40 years', as part of a package of infrastructure schemes intended to drive the country's long-term economic development. Infrastructure investment remains at the heart of government plans to build the Northern Powerhouse and rebalance the UK economy.

But what impact does infrastructure have on employment and productivity? While we have quite a lot of good evidence for developing countries, we know surprisingly little about additional investment in more mature networks.

In theory, transport improvements decrease transport costs, improve access to markets, foster economic integration, stimulate competition, and 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 any evaluation to work out whether these benefits actually materialised.

Our research suggests that even in mature networks, new road investment can produce economic benefits – at least locally. In the first rigorous studies to look at the effects of UK road transport improvements on employment, output and wages, we find that road-related accessibility improvements between 1998 and 2007 increased local employment and raised wages.

New investment in roads can produce economic benefits, even in mature infrastructure networks



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% of freight transport was by road.

Road traffic has increased steadily since the 1950s, up to around 320.5 billion vehicle miles in 2016. 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).

Our research provides some of the first hard evidence on the economic impact of new road-building in the UK. We link data on 31 major new road construction schemes between 1998 and 2007 to administrative data on businesses and workers.

We capture the effect of new roads using an index of employment 'accessibility', which estimates the number of workers that can reach a location, per 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.

To get round the fact that new roads investment is 'targeted', we look only at places that are close to a new road scheme, estimating the effects from the subtle local changes in accessibility that occur within a 20 kilometre radius.

Linking these accessibility changes to firm-level data on employment and output allows us to estimate how transport affected local production and employment. We find substantial positive effects on area-level employment and the number of plants.

In contrast, for existing firms, we find negative effects on employment coupled with increases in output per worker and wages. A plausible interpretation is that new transport infrastructure attracts transport-intensive firms to an area, but with some cost to employment in existing businesses.

We should be careful in interpreting these changes as gains to the national economy: to some extent, jobs may be displaced from other areas. If we assume that the employment effects represent new jobs, our estimates imply that a year's expenditure on major roads (£1.8 billion in 2007/08) generated only 3,600 jobs – at a high cost of £500,000 per job.

Of course, there will be additional benefits from savings on travel times that are unrelated to employment. But even so, we cannot confidently say that road-building will set the UK on the 'road to recovery' since the national economic impacts seem small.

It would also be fair to say that our work is only a first estimate on the impact of new roads, but a number of important questions remain. Given how much political attention infrastructure projects attract, it's clear that improved evaluation of new schemes is badly needed.



## Improved evaluation of new road schemes is badly needed

This article summarises 'New Road Infrastructure: The Effects on Firms' by Stephen Gibbons, Teemu Lyytikäinen, Henry Overman and Rosa Sanchis-Guarner, SERC Discussion Paper No. 214 (<http://www.spatial-economics.ac.uk/textonly/SERC/publications/download/sercdp0214.pdf>).

**Stephen Gibbons** is professor of economic geography at LSE and director of the SERC and CEP's urban and spatial programme. **Teemu Lyytikäinen** is at the VATT Institute for Economic Research in Helsinki. **Henry Overman** is professor of economic geography at LSE and director of the What Works Centre for Local Economic Growth. **Rosa Sanchis-Guarner** of Imperial College London is a research associate in CEP's urban and spatial programme.