

How to evaluate case study: Transport

Statistical approach (SMS level 4)

What was the programme and what did it aim to do?

This study examines the impact of road construction schemes carried out in Britain between 1998 and 2007. The 31 road projects considered ranged in cost from £20.5m to £900m and the total length of new links was around 320km. Theoretical models suggest that the reduced travel time associated with road improvements can offer various benefits to households and firms, such as higher wages, productivity and employment. For these reasons, transport improvements are often proposed as a strategy for promoting economic growth. This study assesses the extent to which these economic effects occur in response to road construction schemes.

What's the evaluation challenge?

Evaluating the effects of road construction schemes is challenging because roads are typically built to generate specific improvements for particular places. For example, road investment may be targeted to better connect places that are growing both economically and in population. As a result of this selection, if we compare differences in outcomes for firms in areas that benefit from investment to firms in areas that do not, these differences may not reflect the impact of the programme. Instead, they may simply reflect differences in the types of areas (and firms) that receive investment.

What did the evaluation do?

The study makes use of a source of randomness in accessibility improvements due to the fact some firms benefited from improved access because they happen to be close to road projects while others are further away. This helps with selection because the road improvements considered involved improvement to major highways, designed to help long distance travel between (rather than within) cities. Firms that happen to be close to the project (e.g. within a buffer of 10km around the new road) benefit from far greater improvements in accessibility simply because of the precise routing of the major road improvement. The study then compares changes in outcomes for firms very close to these improvements to changes for firms less close to the improvement. The technique used to do this is called an instrumental variables approach.

How good was the evaluation?

According to our [scoring guide](#), instrumental variable approaches receive a maximum of 4 (out of 5) on the Maryland Scientific Methods Scale (Maryland SMS). This is because such approaches do well to control for both observable differences (e.g. firm size) and unobservable differences (e.g. motivation) between the types of firms very close to roads projects and those that are less close. For the method to be well implemented the 'instrument' must identify a set of firms that experience improved accessibility but that do not differ in any other way. The study confirms this by presenting 'balancing tests' that show 'treated' firms (i.e. those very close to roads) are no different to the control group (i.e. those somewhat further away) in terms of a range of pre-road construction characteristics (e.g. employment, GVA, labour costs). For this reason we score it the study the maximum of 4 on the SMS.

What did the evaluation find?

The study finds that the road projects led to substantial area level increases in both employment and the number of plants. When breaking the area level results down by sector, the greatest effects are seen

in producer services, land transport, and 'other' sectors (these include "primary activity, public sector, rest of transport and other sectors"). The construction sector saw increases in plant count but not employment. There are insignificant effects for manufacturing and consumer services. However, when looking at the individual plant level, the study finds no effects on employment, but a positive impact on output, revenue and labour costs.

What can we learn from this?

The results suggest that road projects increase employment at the area level by affecting the entry and exit of firms, rather than by increasing the size of existing firms. Furthermore, it shows that this effect only occurs in certain economic sectors. The positive employment effects for land transport and producer services are consistent with the idea that these wider economic effects of road investment primarily occur through reduced transport costs for intermediate goods and business travel. Finally, the results suggest that whilst existing firms do not increase their employees, they do benefit in terms of other outcomes such as revenue.

Reference

Gibbons, Stephen, Lyytikainen, Teemu, Overman, Henry G. and Sanchis-Guarner, Rosa (2012) New road infrastructure: the effects on firms. SERC Discussion Papers, SERCDP117. Spatial Economics Research Centre (SERC), London School of Economics and Political Science, London, UK. [Study 1017 from our Transport review, available here: <http://www.whatworksgrowth.org/policy-reviews/transport/>]

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