

Public debate continues to rage about the decision to build a new high-speed rail line from London to Birmingham (and possibly beyond). In the latest in our series on policies of the coalition government, **Henry Overman** considers some of the arguments for and against the scheme – and indicates why it has been so controversial.

# HS2: assessing the costs and benefits

**W**hen governments try to make a decision on big transport projects, the most desirable starting point is a cost-benefit analysis, which carefully assesses whether, and by how much, the benefits to the country will outweigh the costs. Traditionally, these analyses have taken a rather narrow focus, looking at the direct user benefits – that is, the benefits to people making journeys.

In the case of the HS2 high-speed rail link between London and the North, these benefits – faster journeys, less disruption, more capacity – are potentially large. Unfortunately, so are the costs – and both the costs and benefits are highly uncertain.

Supporters of the scheme think that

the costs of HS2 are being overstated by focusing on the total costs and ignoring the split between revenues and subsidies. They say that fares would reduce the costs to the government from around £30 billion to £17 billion.

Opponents of the scheme think that the benefits – estimated at around £47 billion – are being overstated because they are partly calculated by turning time savings on HS2 into money by ‘valuing’ the time that people would save. The problem with this, they argue, is that the number used to value time savings is too high because it assumes that people are unproductive on trains.

Some supporters don’t disagree on this point, but they think that the benefits

are understated because the number of passengers will be higher than predicted. They argue that HS2 uses conservative numbers for passenger growth. There are railway experts, however, that think that HS2 has overstated passenger growth by using projections from more recent years, when the growth of passenger numbers has been high.

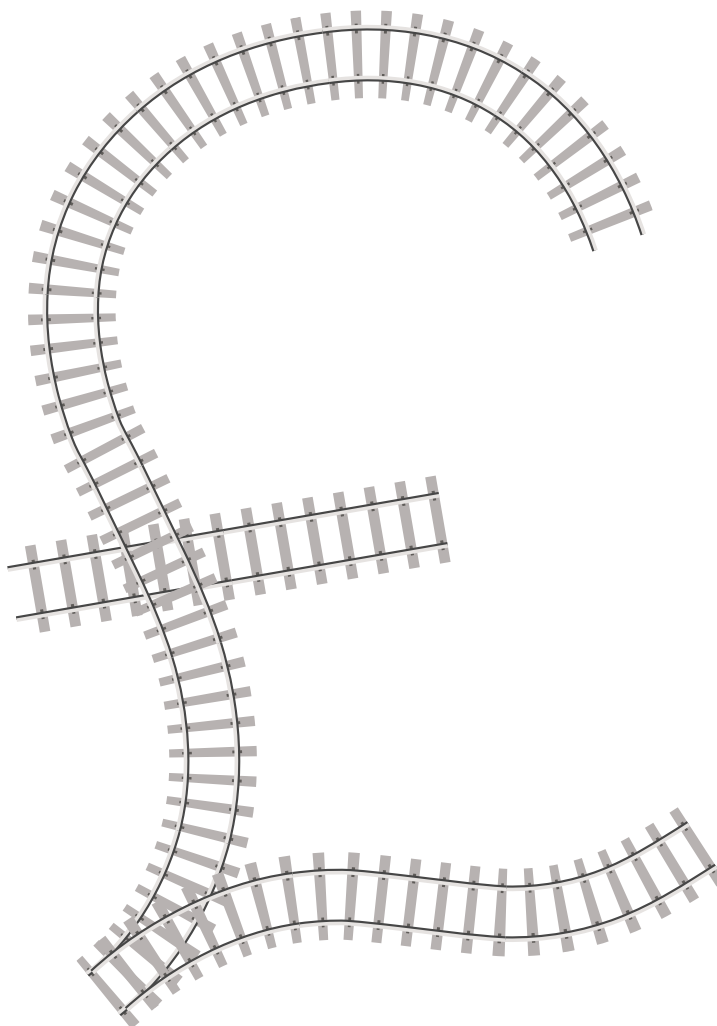
In short, there is plenty to argue about even if one focuses narrowly on these direct user benefits and costs. But as anyone who has been following the debate will know, the arguments do not just focus on these narrow issues. Unfortunately, the wider costs and benefits of HS2 are, if anything, even more uncertain.

Take, for example, the claim by the transport secretary, writing in the *Telegraph* to mark the end of the public consultation, that high-speed rail is 'the fast track fix for bridging the North-South divide'. This is a clever, but completely misleading, headline. The article itself is more tempered – 'tackling a divide that has lasted for generations is no easy task' – but it still makes big claims for the potential impact of high-speed rail.

These claims rely on the assumption that reducing journey times (and increasing capacity) will help firms and workers in the North to compete more effectively for market share in the South (or encourage firms and workers to relocate). But HS2 will also give firms in the South better access to markets in the North. In line with this informal intuition, Nobel laureate Paul Krugman and other researchers working on the so-called 'new economic geography' have shown that reducing transport costs between 'core' (the South) and 'periphery' (the North) may actually increase disparities, not reduce them. Certainly the evidence on the direct benefits suggests that these flow disproportionately to London and the South East.

What about the environmental impact? In terms of carbon emissions, the impacts are not large and could well be negative. Most of the journeys on high-speed rail will be additional (or transfers from other lines). Extra journeys and faster journeys generally require more energy not less (especially if people drive to the train station). There will be some savings on long distance car trips and domestic air travel – but the latter will be offset if freed

## Reducing the costs of transport between the South and the North may actually increase disparities not reduce them



up slots are used for other flights or if HS2 makes getting to Heathrow easier and so generates additional numbers on other routes.

The overall impact depends on what is assumed about how electricity is generated. Generous assumptions using average, not marginal, carbon figures make the numbers look better. The last time I looked at these numbers, HS2 was predicting a change in average annual emissions in a range from -0.41 to +0.44 million tonnes. This is equivalent to just +/-0.3% of current annual transport emissions (and ignores the carbon impact of construction). So the impacts are not large and could be negative.

Other environmental impacts arising from the need to bulldoze a straight high-speed train line through some beautiful countryside are harder to express in financial terms. These effects clearly explain much of the bitter local opposition from people on the route. Actions to mitigate them provide yet another illustration of how costly HS2 could prove to be.

For example, the final decision on HS2 was delayed while the transport secretary decided whether to spend an extra £500 million on another tunnel under the Chilterns. To put that figure in perspective, we should note that it is three times the amount allocated to local

**Both the costs and benefits of HS2 are potentially large – but they are also highly uncertain**

transport projects by the Autumn 2011 spending review.

Given all these uncertainties, it is not hard to see why public opinion is so divided. When the Department for Transport asked people about HS2 last year, 47% were in favour of HS2 and 9% against. That sounds like resounding support, until one notes that half of the respondents (50%) agreed that 'high-speed rail is £30 billion we cannot afford' while only a quarter disagreed with this statement. In short, the public are in favour of high-speed rail, providing that they do not have to pay for it.

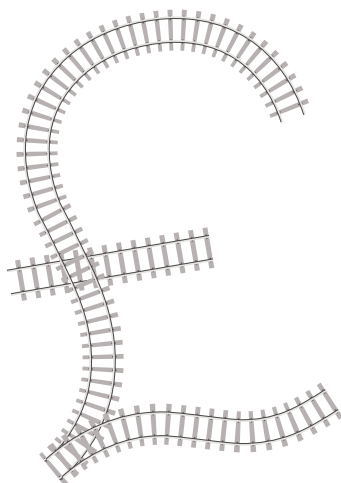
The poll is also interesting on the perceived benefits: 56% of adults agreed that high-speed rail would be better for the environment while 63% thought it would create jobs and growth. As I have shown, the evidence is fairly weak on the former claim. And just as with the effects on the North-South divide, the effects on jobs and growth, other than the direct impact of construction, are unknown. (What's more, construction jobs are part of the cost to the economy – a much misunderstood point.)

The fact that opinion polls highlight these two 'benefits' suggests that most people don't know much about the scheme – which turns out to be true: 42% say that they know little or not very much about the scheme, while 47% say they know nothing.

In short, the costs and benefits of HS2 are large and uncertain. I prefer instead to focus on the opportunity costs: are there things that we could be doing with £30 billion that would yield a higher return than '£47 billion'? I think the answer is almost certainly yes, in both the area of transport – more intra-city schemes, for example – and more widely.

On the basis of narrow cost-benefit analysis, this conclusion is backed up by the Eddington report, published in 2006. Comparing the figures for HS2 with those for projects that the Department for Transport had on its books at the time of Eddington suggests that HS2 is, at best, in the bottom quartile in terms of returns (and indeed, might be closer to being in the bottom 10%).

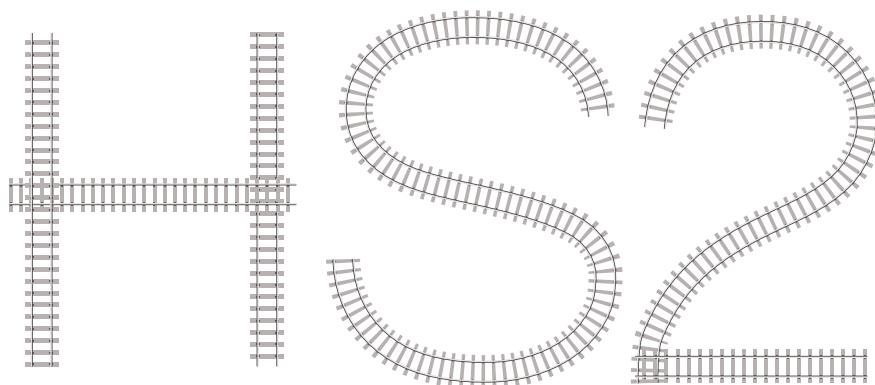
One could say that this is irrelevant because HS2 has a critical mass that will deliver wider benefits. But as I have argued, there is a little evidence to support this assertion. If critical mass is



important, then we could consider concentrating a large amount of investment in particular cities – for example, Birmingham, London, Manchester and Newcastle. To the best of my knowledge, no one has assessed what such a package would look like in terms of the wider impacts.

One final objection to my negative conclusion might be that 'we have to have HS2 because of capacity constraints on the west coast mainline'. Unfortunately, as the Eddington report showed, by the time HS2 is completed, there will be a great deal of congestion all over the transport network. Other schemes to tackle that congestion are likely to deliver much better returns because these aspects are well captured by traditional cost-benefit analysis and, as I have indicated, HS2 does pretty badly on that.

In short, the opportunity costs of HS2 are large. To me, this is the fundamental issue and the reason why I am personally sceptical about the merits of the project. Quite simply, I remain unconvinced that this is the best way for the government to spend money. Over the last few years, none of the assertions to the contrary has changed my mind that this remains the central problem with HS2.



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Further discussions of HS2 – and many other policy issues around cities, regions, transport, housing and the environment – are available on the SERC blog: <http://spatial-economics.blogspot.com/>

Disclosure: Henry Overman sits on the HS2 analytical challenge panel and has received funding from the Department for Transport to look at the wider impacts of transport investment.

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