

The UK government is planning to construct a high-speed rail between London and the northern parts of the country.

Introduction

HS2 is a high-speed railway project that will connect England from north to the south and reduce travel time. The railway will allow people to commute from midlands and northern cities, such as Birmingham and Manchester, to London at high speed. The idea is to improve transport links in the UK and therefore improve productivity and bridge the so-called “power gap” between London and the North. It is estimated that the construction of this railway will cost £50 billion and a further £7.5 billion for the trains. If HS2 goes ahead it will be the most expensive infrastructure project in the UK’s history.

In political debates, with the upcoming election, the building of HS2 has become a contentious issue. The three main parties, Labour, Conservatives and Liberal Democrat support the building of HS2, but UKIP and The Green Party are against the idea. Public support on the issue is also split. A YouGov survey showed that 48% of people were against and 30% supported it.

The fundamental justification for the HS2 project is to increase economic output by making the travel time between different markets smaller (economics of agglomeration). There are two factors that explain the source from which the output might increase: economies of scale and network externalities. For instance, Graham and Melo (2010) point out that labour market pooling, knowledge spill overs, and efficient production mechanisms are some of the sources of agglomeration externalities from which the firms benefit.

Investments in improving transport and reducing travel times allow economies of agglomeration, so that firms benefit from sharing knowledge, experience and efficient production mechanisms.

However, diseconomies of agglomeration create the opposite effects: too much competition may reduce pricing power and lead to a brain drain in rural areas.

In this essay, first I will speak about a cost-benefit analysis framework, which can be used to explain projects such as HS2. Then, I will point out the challenges that a cost-benefit approach will face when analysing HS2. In the remaining of this essay, I will explore arguments for and against HS2 on the following issues; increasing productivity and inequality. These are: Creating job opportunities and inequality, Economics decentralisation and regenerating cities faster, Reducing negative externality of congestion on the roads and environmental impact of HS2.

Cost-Benefit Analysis and Project Appraisal

Cost-Benefit Analysis and Project Appraisal is a methodology applied when deciding whether a project should go ahead. Cost-benefit analysis calculates all the present, and all future, costs and benefits. Then it calculates the present discounted value of benefits minus costs.

The present discounted value takes into account the fact that the size of the benefit or cost today are not directly comparable to future benefits or costs due to time preferences, risk, and inflation. After the cost benefit analysis has worked out the present discounted value of benefits minus costs a single number is obtained which is known as the net present value. If the net present value is positive, then the project will increase social welfare and should go ahead. The equation for the net present values, as defined by Hindriks and Myles (2006), is given below where the benefit at time t is $B(t)$, the costs are $C(t)$ and the discount rate is d

$$NPV = \sum_{t=0}^T (1+d)^{-t} [B(t) - C(t)].$$

The UK Green Book is a guide for government economists in applying cost benefit analysis. When applying cost benefit analysis the Green Book states that no project should go ahead without

answering the following two questions. Are there better ways to achieve the objective? Are there better uses for the resources?

There are many issues that arise in applying cost benefit analysis. The first issue is the difficulty of calculating costs and benefits. Once HS2 has been built it will provide benefits far into the future. The fact that the future is unknown causes a problem because benefits are currently uncertain. The government can make predictions of passenger numbers and time travelled saved. However, these are just predictions and nobody knows what will happen in the future or whether a new technology will come along that will replace railways.

The second issue is that cost-benefit needs a monetary value to be placed on everything. There are many aspects of HS2 that are intangible like the gains from network externalities and costs, the cost to the environment, and the value placed on reduced travel time. There are methods to deal with each of these issues but none is perfect and they make it difficult to claim the cost-benefit calculation provides an indisputable answer.

The remainder of the essay will discuss these issues in more detail.

Increase productivity and Inequality

Wider Economic Impact (WEI) and Benefit to Cost Ratio (BCR) are two indices that were used by Department of Transport (2012) to argue the benefits of constructing the HS2 rail network. The Department of Transport suggested that the BCR of 1.8 to 2.5 including WEI shows a positive case for construction of HS2. In real terms, this means that every pound that government spends will deliver £1.8 to £2.5 of benefits to the economy. Based on these forecasts, it can be argued that with construction of HS2, there are going to be wider economics benefits for businesses. For instance, the construction of HS2 will decrease the amount of time it takes to travel from major towns like Birmingham, Manchester to London. By shortening this time, productivity is improved and since less

time is spent travelling and more time spent working, this results in more output per unit of extra time allocated to work rather than travel.

An underlying theme within the UK economy is that the south of the country is more prosperous and economically developed compared to the north. This has led to the market failure of inequality between the south and the north. Rowthorn (2010) has analysed this gap in affluence and argues that it has emerged since the 1970s. He argues that the long run prosperity of a region is determined primarily by the strength of its exports. In other words, the north of the UK has to increase its exports relative to the south of the UK in order to reduce the inequality gap. He argues that immigration to the north and well connectedness cannot change the underlying difference. This argument may undermine the forecast benefits of HS2 and the basic idea of integrated cities and the creation of wider economic impact for the north.

On the 25th March 2015 the House of Lords Economic Affairs Committee published a report on the HS2. The conclusion of their report was that the government had not put forward sufficient evidence to justify the building of HS2. One of the insufficiencies pointed by the Committee was the estimated cost of 50 billion. The government had put forward two main objectives for HS2 which were increasing capacity on the railways and rebalancing the economy. The committee report suggested that that the government had failed to provide sufficient evidence the proof either of these objectives would be met.

Job opportunities and Inequality

Another justification for HS2 is that access to a better network will allow businesses to draw on a larger pool of employees and talents, as people are able to commute greater distances. HS2 will create better access to job opportunities in more locations for people living in regeneration areas. Greater job opportunities leads to higher productivity and an increase in consumption as individuals earn more. However, the downside maybe an excess supply of labour in the labour market that may

induce downward pressure on wages. Workers will not find this desirable but it might be tackled through government interventions and policies. A further benefit of well-connected transport system for businesses and firms is that it will allow them to connect to a wider range of other businesses and markets. This returns to the Graham and Melo (2010) argument on the positive effects of knowledge and experience spill overs. The answer to the question of which of the above arguments is the most significant depends on the political priorities of the governments and the social weights assigned to workers and businesses.

There are two types of effects on the job opportunities front that result from HS2: short run and long run. In the short run, jobs will be created during the construction of the tracks and the trains. More importantly, in the long run services in the supply chain and support/service sectors which will support the operation of High Speed Rail services will employ more workers.

Investing in a high speed railway may not be as important as investing in small businesses that offer the potential for growth. The rates of return and gains to the local population will be higher compare to the positive rates of return from building HS2. Large cities are already well connected and it is the local businesses that needs to access to larger pools of workers. Therefore, building HS2 will only benefit a marginal number of firms located in city centres, whereas regional businesses and local markets that are in need of regeneration will not benefit.

Economic decentralisation and regenerating cities faster

Cities will evolve and specialise over time and will also become economically regenerated when they are well connected. Michaels et al. (2013) make the case that cities will become heavily service oriented and specialise in specific areas. Therefore, building a high speed railway is an important component of this type of economic decentralisation. In other words, markets and cities will begin regenerating and developing further around the new high speed rail stations. Given their capacities and Ricardo's specialisation concept, different cities will have different abilities to produce

specialised products. HS1 was built a few years and the experience has been successful, despite all the objections made at the time about how it might fail to deliver the expected rail travel to the rest of Europe.

The economic benefits brought about by HS2 may only benefit the small section of the population who use trains between major cities. At the moment, the majority of the studies and evaluations that have been carried out focus on how metropolitan cities such as Manchester and Birmingham will integrate with London. A small portion of the country's population live in these cities and economic regeneration will not take place in the rural areas where it is most needed. This raises the case for wider economic benefits being gained from relatively slower train routes as they connect more places and allows better access to those deprived markets. On the other hand, the principle of uncertainty rules the issue surrounding the forecasts for passenger numbers. A major project such as HS2 needs very careful evaluation before it is commissioned.

The House of Lords Economic Affairs Committee has found that a high speed railway is not the best way to reduce the inequality between the North and the South. They use evidence from France that shows that the capital city is the biggest beneficiary from high speed rail links.

Reducing Negative externality of Congestion on Roads

HS2 will increase the traveling capacity of the rail network from London to the North with an estimated increase of 160%. In addition to reducing travel time, the nature of traveling will change and the trickledown effect of a new high speed rail way will ease congestion on the existing train routes for both commuters and freight trains (Rosewell et al. 2013). HS2 will also reduce the negative externalities from congestion on local and national roads. At the moment, major city centres suffer from road congestion and traffic gridlock. There is further pressure from the growing population, and the cities capacities to offer opportunities for the newly entered labour force. All

road users and commuters will benefit, directly and indirectly, from the extra capacity that the HS2 project will bring.

However, one can argue that the alternative to building an entire new railway with huge costs is that the government can invest in the existing train route and increase the length of trains. This will increase capacity and have the same ultimate result, which is the reduction of congestion. It will become effective more quickly since the timescale for HS2 is very long.

Also, as stated by the House of Lords Economic Affairs Committee, figures for usage of the railways has not been made publically available by the government. But evidence shows that long distance trains arriving at Euston Station in London are on average only 43% full at off peak times and are only 60% full at peak times. The Committee stated that overcrowding is a problem that occurs at weekends and on commuter routes to London. If this is true, why does the country need to build a high speed railway when there is little demand to travel on it? Surely, the money would be better spent on improving routes which suffer from overcrowding, for example Colchester to London Liverpool Street, than those which don't. For the routes which need investment HS2 would have no effect on improving commuter times or in improving overcrowding.

Environmental impact of HS2

HS2 is going to be built across many miles of the British countryside, meaning the habitats of many animals will be affected and many sites of natural beauty will be destroyed. The latest analysis by the Wildlife Trust suggests that that around 500 wildlife sites will be affected by HS2. This includes ten sites of scientific interest, 150 local wildlife sites, 43 ancient woods and 9 wild life nature reserves.

The magnitude of the effect on wildlife is hard to calculate. The environment is in equilibrium and when changes occur the effects can have far reaching consequences. The building of HS2 could push many endangered species of British wildlife even closer to extinction. The cost of this is unknown.

By the cost to the environment of HS2 being unknown it makes the calculation of cost benefit analysis very hard. This leads to a lot of prediction and uncertainty in the calculations.

Furthermore, HS2 rail lines will be a negative externality for people having it built in their local countryside. Their views will be destroyed and the sound of the trains will disrupt them. The government is very willing to talk about the economic impact of the train but in their reports there is very little mention of the environmental impact of HS2 and the negative externalities caused by it.

Conclusion

The government has put forward two main objectives for HS2. These are increasing capacity on the railways and rebalancing the economy. This essay has discussed these objectives and has considered if they will be achieved. In places this essay has not been able to provide solid evidence for many of the arguments discussed. The reason for this is that there is little concrete evidence for the benefits or costs of HS2. All the figures are estimates and predictions, and opinions are politically biased.

Furthermore the UK green book asks two questions before policy should be put in place. These are: Are there better ways to achieve this objective? Are there better uses for these resources? I feel that there are better ways to spend the resources and achieve the two goals of HS2. The government can invest on existing railways to increase rail capacity and it can invest in Northern cities to rebalance the economy.

Because of this, I agree with the opinion of the House of Lords Affairs Committee that there is not enough conclusive evidence to support the building of HS2 at the cost of £50billion. The money from HS2 can better invest in other projects to achieve the goals set out by the government.

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