

The uneconomic case for a 3rd runway at Heathrow

Len Skerratt, November 2015

The Airports Commission provide two forecasts of the supposed economic benefits of a 3rd runway at Heathrow: (1) the wider *indirect* economic benefits to the national economy and (2) the narrow economic case for the *direct* benefits to aviation. The calculations of both the indirect and direct benefits are doubtful. Since the direct benefits are very small, the Airports Commission's case rests on the *indirect* benefits to the wider economy. **However, it should be noted that the eye-catching headline of £147 billion indicated as the *indirect* benefits of a 3rd runway rest on an untried economic model whose results should not be given significant weight, according to the Commission's own economic advisers.**

As part of the work of the Commission, the forecasts were reviewed by two expert economic advisors appointed by them (Prof Peter Mackie and Mr Brian Pearce). These expert advisors cast serious doubts over the economic methods used. However, their advice appears to have been little heeded in the final recommendations of the Commission. Further examination of their advice and of the assumptions underlying the recommendations **indicates a project that is risky in economic terms.** Optimism pervades the Commission's entire economic case.

Furthermore, whilst the Commission has gone to some lengths to quantify all the benefits, particularly the indirect benefits including intangible social benefits, scant attention has been given to the intangible costs, such as those arising from: aircraft noise (effects on cardiovascular health, sleep disturbance, annoyance, psychological well-being, and children's cognition and learning); pollution (reduced lung functioning, Irritation of eyes, nose, mouth and throat, asthma, respiratory disease, disruption of endocrine, reproductive and immune systems, neurobehavioral disorders, cardiovascular problems, cancer, and premature death); and productivity loss, delays and annoyance caused by construction. And whilst the Commission forecasts that noise and pollution will reduce over time¹, it is the law of physics that there is a trade-off where reducing pollution increases noise and vice versa.

These key aspects are discussed below.

(1) Unreliable predicted indirect benefits to the UK national economy.

There would not be an economic case for the 3rd runway without the supposed indirect benefits to the national economy. These wider economic benefits are said by the Commission to amount to some £131-£147 billion, between 0.65% and 0.75% of GDP by 2050². However, these predictions are not believable.

The wider economic benefits are calculated using an economic model entitled the Spatial Computable General Equilibrium (S-GCE) model. Mackie and Pearce voice a number of concerns about this approach:

- (i) The model originates with HMRC. It has been extensively used to assess the impact of VAT/Corporation tax/Income tax changes on the UK economy. It assesses the effect of a single well specified shock from government on all the sectors of the economy. Mackie and Pearce³ make the point that using the model to assess the impact of a change in one sector of the economy (airport capacity) on other sectors is a very new departure, and therefore the results should be treated with great caution. They discuss this at some length; for example they say “a change in the rate of VAT is far easier to represent in a model than a change in accessibility caused by an increase in airport capacity”⁴.
- (ii) Some of the results of the model are counter intuitive and therefore cast doubt on the conclusions. Mackie and Pearce say “We find it hard to explain why the PWC results show GDP impacts of more than twice the size of the direct welfare and wider economic benefit gains”⁵.
- (iii) Mackie and Pearce question a key feature of the model, which assumes an under utilisation of resources elsewhere in the economy, so that investment in airport capacity will encourage investment elsewhere. They suggest that full utilisation of resources in the rest of the economy over such a long appraisal period is more appropriate, in which case the scheme will “simply pull resources from other regions, [...] leaving national GDP unchanged”⁶.

Another academic study, by Laird and Stroombergen⁷, also questions the reliability of the wider economic benefits predicted by the Spatial Computable General Equilibrium model. Their argument is much the same as that of Mackie and Pearce, that the model is designed to receive a single economic shock such as a change in VAT or corporation tax; however, converting an increase in airport capacity in to multiple economic shocks which can then be fed in to the model is problematic. Laird and Stroombergen’s view is that this conversion process is unconventional, and in places inappropriate, leading to predictions of GDP impacts that are too high. They also argue that the model is not powerful enough to distinguish between a 3rd runway at Heathrow and a 2nd runway at Gatwick.

Similar views are expressed by Professor John Kay, founder and former director of the Institute of Fiscal Studies, who argues⁸ that the Commission conducted an over-elaborate modelling exercise which is misplaced given the huge economic uncertainties over the 60-year horizon of the project. Consequently, he says that little weight should be attached to its results; instead, the decisive factor for location should be where fewer people are affected by the extra noise and air pollution.

Add to this all the problems encountered in the direct economic case discussed in (2) below, which also apply to the S-GCE model, and you have a recipe for a very large black box, which no one understands (and which is somewhat reminiscent of the banking crisis of 2008). The concluding advice of Mackie and Pearce was “... we counsel caution in attaching significant weight to either the absolute or relative results of the GDP/GVA S-GCE approach”. The Commission seems to have done exactly the opposite, and relied wholly on this previously untried model.

(2) Excessive optimism, yet small predicted direct benefits.

The analysis of the predicted direct benefits of a 3rd runway at Heathrow to aviation shows⁹ a net present value over a 60 year period of £11.8 billion (as compared to £10.8 billion for Gatwick) if carbon emissions are traded, and £1.4 billion (as compared to £5.5 billion for Gatwick) if carbon emissions are constrained to those suggested by the Climate Change Committee. As the Commission's own expert economic advisors point out¹⁰, these appraisals rely on assumptions which are excessively optimistic:

- (i) The forecasted growth of the economy is 2.75% per annum whereas the OECD predict growth of no more than 2%.
- (ii) The extra costs of the new runways would be recouped from consumers. However, Mackie and Pearce remark that, surprisingly, demand is assumed by the Commission to be relatively unresponsive to these extra charges. The justification is that there are opportunities for passing on the costs to those consumers whose demand is invariant to price (perhaps business travellers). Mackie and Pearce think that this is "a very strong assumption"¹¹.

The following further points should also be made:

- (iii) The provision for over-runs seems very optimistic. The Commission sets the provision for over-runs at only 20%¹² and indeed they themselves acknowledge this optimism elsewhere in the report¹³. Berlin's new and still unfinished airport (a relatively small project in comparison to a 3rd runway at Heathrow) has become a national laughing stock, with costs reportedly rising from a predicted 2.5 billion euros forecast in 2006 to as much as 8 billion euros¹⁴.
- (iv) The Commission estimates surface transport costs at £5 billion. Again, there seems to have been excessive optimism, as Transport for London estimate these costs at £15-20 billion¹⁵. Such costs in themselves turn the supposed gain into a loss.

Furthermore, the Government will not contribute to these costs. In response to a parliamentary question tabled by Conservative MP Adam Afriyie, Transport Minister Robert Goodwill said¹⁶:

"In terms of surface access proposals, the Government has been clear that it expects the scheme promoter to meet the costs of any surface access proposals that are required as a direct result of airport expansion and from which they will directly benefit."

- (v) Discount rates are critical in calculating net present values. The discount rate used appears to be 3.5% based on the 2003 edition of the Treasury's Green Book, used for appraisal and evaluation in Central Government and based on social time preference¹⁷. Given that a small change in discount rate can have a major impact on the calculations (and could well result in a net loss rather than a net gain) one wonders whether this rate is appropriate for the current economic climate. Following the banking crisis, it may be that less importance should be attached to future benefits, resulting in a higher discount rate and therefore a lower net present value. More importantly, using the social time preference rate as the discount rate means that all the risk assessment is reflected in the optimism adjustments attached to revenue and cost estimates. But despite the sensitivity analysis undertaken, the

values in the Final Report do not seem to be risk adjusted. Furthermore, as mentioned above, in items (i) and (ii), Mackie and Pearce suggest that revenue predictions are too optimistic, and I suggest above, in items (iii) and (iv), that potential upward movements in cost are under estimated.

- (vi) Even if the calculations of the direct benefits were credible, the net gain of £11.8 billion (carbon traded assumption) or £1.4 billion (carbon constrained assumption) is worryingly small. To put it in context, the net present value of M&S is currently around £8 billion, and that of Unilever about £88 billion. The 10-15 year construction upheaval and permanent environmental damage of a 3rd runway would be unprecedented for such a comparatively small gain.

(3) Insufficient concern for carbon emission risks.

Since the Commission's report was published in July 2015, there have been new and serious warnings of the financial impacts of climate change, which indicate that both carbon trading and carbon capping are likely to be excessively optimistic assumptions. Notice should be taken of IMF Chief Lagarde's judgement that "The planet is "perilously close" to a climate change tipping point"¹⁸ and Bank of England Governor Carney's warning that "climate change [may] lead to financial crises and falling living standards" and that "challenges currently posed by climate change pale in significance compared with what might come"¹⁹.

Carney details " ... three ways in which climate change could affect financial stability: physical risks, such as claims from floods and storms; liability risks that could arise if those suffering climate change losses sought compensation from those they held responsible; and transition risks caused by the [de]valuation of assets caused by the adjustment to a lower-carbon economy."

The 2nd and 3rd risks (**liability** and **devaluation** risks) seem particularly relevant to an evaluation of airport capacity.

(4) Major omitted costs.

It would be usual in a business case to find a detailed breakdown of all costs. However, this does not appear to feature in the Commission's Final Report nor its Business Case. The main costs indicated are the total costs of construction of the new runway together with the cost of surface access (scheme capex and surface access cost) of £16,100 million, with no detailed breakdown, arriving at net present values of £11,800 million (carbon traded) and £1,400 million (carbon capped) (Table 3.23 of the Business Case and Sustainability Assessment). It is also unhelpful that there is a mix of monetised numbers and non-monetised colour coding. A number of significant costs appear to have been omitted:

- The Commission's Report repeatedly refers to 'generous/world class compensation'.
 - Property values are estimated to be reduced by 10% if they are beneath a flight path, which increases the cost of a 3rd runway significantly. Even if this is ameliorated by an increase in employment, this unlikely to be across the whole range of the housing sector. There is no mention of any compensation for a decline in property values.

- Many would argue that there is no sufficient financial compensation for the health effects of noise and air pollution and for the loss of quality of life.

Taking just noise pollution, the bare minimum compensation would be the provision of insulation, and this takes no account of outdoor spaces or summer conditions.

The new 'generous compensation' of £700 million is proposed for noise insulation for 160,000 homes (Commission's Report Section 14.50). This would give an average of £4375 per home, which would seem barely adequate. There are already 725,000 homes estimated by the EU to be affected by noise from Heathrow, and another 275,000 estimated to be affected by a third runway, who did not choose to live under a flightpath. The average UK household is 2.3 people, making 440,000 homes. The cost of double-glazing and 'soundproofing' (to the extent it is possible) an average home is more likely to be around £15,000, if not more. This leaves a shortfall of at least £5,900 million (£4,200 million for the 280,000 homes not considered at £15,000 each and an extra £1700 million for the 160,000 homes already mentioned at £10,625 each). Such insulation would also require periodic renewal, which would mean further financial provision. Furthermore, it would be much more costly in the many conservation areas overflowed now or in the future.

- Many may feel they have no option but to move. *In addition to the loss of property value mentioned above*, just the removal costs for those people could be as much as 15% of property value, without considering the intangible costs of stress and upheaval. At an average home value of say £600,000 for the 440,000 homes affected, and assuming that 1 in 5 households might move, this would give average costs of 90,000 for 88,000 people, or a further shortfall of £7,920 million.
- The Commission's report refers to road congestion in the Heathrow area in a number of places, and also to the plan to tunnel part of the M25. The M25 was only recently extensively widened (in 2005) and is already almost permanently congested around Heathrow. However, there appears to be no provision for (a) the cost to the economy of additional road traffic delays during the long construction phase, nor (b) any consideration of the limiting factor represented by tunneling and the cost of either (i) future congestion or (ii) the feasibility and cost of future widening. **These would be large costs, that would fall to the general economy and the public exchequer.**
- There appears to be no provision for the costs of legal challenges and possible damages. **These too could be large costs falling to the public exchequer.**
- The Airports Commission recommend the establishment of an Independent Aviation Noise Authority and a Community Engagement Board to ensure a collaborative relationship between Heathrow Airport and local communities²⁰. Where is the forecast of the cost of these authorities? And who would bear the cost?

5. Conclusion

The economic case for the 3rd runway rests on: an untried model; excessive optimism about demand and costs, ignoring by far the majority of the noise and pollution costs imposed on 250,000 residents (estimated by the EU) under new flight paths; and excessive pessimism about the UK economy without it. The only beneficiaries are the shareholders of Heathrow Airport . A decision is required that reflects “Not pounds and pence, plans and policies, but people.” (David Cameron, 2015).

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Footnotes

¹ Final Report, p5.

² Final Report, page 24.

³ Mackie and Pearce, page 5.

⁴ Mackie and Pearce, page 6.

⁵ Mackie and Pearce, page 6.

⁶ Mackie and Pearce, page 6.

⁷ Laird and Stroombergen, Airports Commission. 2.Economy: Wider Impacts Assessment, https://www.gatwickairport.com/globalassets/publicationfiles/business_and_community/all_public_publications/second_runway/airports_commission_july15/ac-lgw-203---laird-and-stroombergen-2015-peer-review---airports-economic-impact-study--march-2015.pdf

⁸ If Heathrow is the answer, the model is flawed, Financial Times, 4 November, 2015, p13 and The flaws in the case for Heathrow, Prospect Magazine, November 2015.

⁹ Business Case and Sustainability Assessment, Table 3.23

¹⁰ A note from expert advisors [to the Airports Commission] Prof Peter Mackie and Mr Brian Pearce, on key issues considering the Airports Commission economic case, May 2015.

¹¹ Mackie and Pearce, page 3.

¹² Business Case and Sustainability Assessment, 3.115

¹³ Cost and Commercial Viability: Cost and Revenue Identification Update: Heathrow Airport North West Runway, 2.3.1 Risk

¹⁴ <http://www.dw.com/en/berlin-airport-the-five-biggest-mistakes/a-17740584>

¹⁵ <http://www.zacgoldsmith.com/tfl-tells-mps-that-heathrow-and-the-airports-commission-have-significantly-underestimated-costs-of-a-third-runway/>

¹⁶ http://adamafriyie.org/index.php/2015/10/14/blow-to-heathrow-as-government-rules-out-funding-surface-access-costs/#.Viuxx_mrTIU

¹⁷ Cost and Commercial Viability: Financial Modelling Input Costs Update: page 5, Introduction and methodology

¹⁸ <http://www.rtcc.org/2014/02/05/imf-chief-lagarde-warns-of-merciless-climate-change/>

¹⁹ The Guardian, 29 September 2015.

²⁰ Final report, paragraph 11.50.