

Transport Committee

Oral evidence: [Scrutiny of the draft Heathrow Expansion National Policy Statement](#), HC 482

Wednesday 2 September 2026

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Members present: Ruth Cadbury (Chair); Steff Aquarone; Dr Scott Arthur; Jacob Collier; Daniel Francis; Olly Glover; Alex Mayer.

Environmental Audit Committee member present: Barry Gardiner.

Questions 1–55

Witnesses

[I](#): Matt Shepherd, Director, Frontier Economics, Dr James Laird, Peer reviewer of the S-CGE modelling, Peak Economics, Dr Alex Chapman, Head of Economic and Environmental Policy, New Economics Foundation, and Ian Mulheirn, Chief Analyst and Chief Economist, Department for Transport.

Examination of witnesses

Witnesses: Dr Alex Chapman, Dr James Laird, Ian Mulheirn and Matt Shepherd.

Chair: Welcome to the first evidence session in the Transport Committee's scrutiny of the Government's draft Heathrow expansion national policy statement, which will be the policy basis against which a decision on whether to grant planning permission for a third runway at Heathrow airport will be made.

The Liaison Committee has granted us the right to scrutinise the draft Heathrow expansion NPS, including the extent to which it provides clear guidance on how to assess the proposed runway scheme and the robustness of the assumptions and requirements in the NPS and its associated documents. This session is very important, given that the former Chancellor used economic growth as the reason for moving ahead with Government policy to support runway 3.

I welcome Barry Gardiner, who is joining us as a guest from the Environmental Audit Committee. We look forward to Barry or a colleague joining us for future evidence sessions in this inquiry. I also thank all the people who have been advising us and the core team on the work for this inquiry. Although it concerns a single piece of infrastructure, it is the most extensive inquiry I have been involved with in all the time I have been on the Transport Committee. It has so many different aspects that require an awful lot of work and support, so I thank both our core Transport Committee team and all the additional people who have come in to help and advise us on the inquiry.

We have two panels today. During our first panel we will hear about the economic case for a Heathrow expansion, and in our second panel we will hear about the business and employment case for Heathrow expansion. First, I will ask our witnesses to introduce themselves.

Ian Mulheirn: Good morning, Chair. I am Ian Mulheirn. I am chief analyst at the Department for Transport.

Dr Laird: Good morning, Chair. I am James Laird, director of Peak Economics, which is my own company, and also a visiting research fellow for the Institute for Transport Studies at the University of Leeds, although I am based in the north of Scotland, in Inverness.

Matt Shepherd: Good morning, Chair. I am Matt Shepherd, a director at Frontier Economics.

Dr Chapman: Good morning. I am Alex Chapman, head of economic and environmental policy at the New Economics Foundation. We are a charitable think-tank based in London.

Q1 **Chair:** We have limited time this morning and an awful lot to cover, so if our witnesses find themselves being drawn into a lot of detail on



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something, they should please bear it in mind that they are more than welcome to follow up on the detail in writing afterwards. I also remind our Members to keep their questions brief.

We have an initial question for you, Ian Mulheirn, because you were able to send us a correction last night. Thank you for drawing attention in your letter to a technical correction to the Department's analysis. We have published that correction. Would you briefly explain the significance of it?

Ian Mulheirn: Essentially, the expansion of Heathrow has effects on other airports, and there are terminal capacity constraints and runway constraints. With some of the changes we have made, terminal capacity constraints at some other airports become more important, and some of the benefits from the expansion of Heathrow actually occur at those airports because it relieves pressure on them. We have found that there is a significant chunk of benefits at Gatwick airport because those constraints are relieved by the expansion of Heathrow. That was not captured in the initial analysis, because we have had to fundamentally change some things in how the analysis is done for this exercise. Apologies for missing that. We still have not finalised exactly the scale of that, but we hope to do so in the coming days. We will write to you about the scale.

Q2 **Chair:** That would be my next question: we would like an indication of the order of magnitude of the correction. Is it billions or millions?

Ian Mulheirn: It is likely to be billions; it is a material change, but we are fairly certain at this stage that it does not change any of the qualitative conclusions of the economic case.

Q3 **Chair:** Does the analysis have any other outstanding issues that the Department is aware of?

Ian Mulheirn: We are not aware of any other issues with the analysis at this point.

Q4 **Chair:** Thank you very much. Let us get back to the main questions. The first is to each of you in turn, in the same order in which you introduced yourselves, please. The draft HENPS states that analysis shows the Heathrow expansion "could add up to 0.05% to GDP in 2056". Has the economic case for a third runway at Heathrow diminished in the time since the Airports Commission reported? If yes, why?

Ian Mulheirn: In order to consider whether the economic case has deteriorated, we have to consider both the GDP modelling and the appraisal, which takes into account welfare—the full set of things that people might value, not just the GDP bit. It is fair to say that there have been significant changes since the last decade, when we looked at this most closely, that have made the case somewhat different to what we looked at then.

Most obviously, there is significantly greater capacity in the rest of the south-east. We also have a more graduated expansion plan here from Heathrow; it takes a number of years before the full programme is delivered, and that means capacity comes on stream slower. A third issue



is that business travel is significantly lower as a proportion of passenger flights than it was back in 2018, pre covid. The final thing that weighs in the economic case overall is that how we, as Government, value carbon emissions has changed since 2021, and we now place a higher value on carbon emissions. That is not an underlying change in the case, but how we look at it is significantly different.

One way to think about this is that the airport system in the south-east eventually fills up and by the 2040s and '50s you are really starting to see benefits coming through. So there is a question, in a sense, about when things will fill up, as much as there is about whether the economic case has deteriorated in absolute terms.

Q5 Chair: James, I should explain that you are the peer reviewer of the Frontier Economics work that was commissioned by the DFT.

Dr Laird: That is correct. Obviously, the Frontier Economics work did not look historically at the previous work. The previous S-CGE work was done by PwC 10 years ago, and the modelling set-up was completely different. I also peer reviewed that.

What I would say first—you introduced it by talking about the 0.05% of GDP—is that that is actually quite a material and significant impact from a transport project. I am estimating that that is equivalent to about a 4.8% real rate of return. To take a Government gilt, stripping out inflation, that compares to about 2%. For a transport project, 0.05% of GDP is actually really quite large. It is not as large as what the PwC model found 10 years ago, but Adolf Stroombergen and I conducted the peer review and we were highly critical of what they did.

Other than for the reasons that Ian has given, which I will not repeat, I will not say that the case has been diminishing. It was possibly overstated before in terms of the S-CGE work, not the welfare analysis. A 4.8% real return is still high for a mature economy that is very well connected already. Again, we would probably want to look at that. I am sure we are going to come on to that further.

Matt Shepherd: In the interests of brevity, I agree with the comments James and Ian have made and do not have anything to add.

Chair: Scott, you wanted to come in.

Q6 Dr Arthur: James, thanks for putting that 0.05% in context, but you compared it to transport projects—

Chair: Sorry. I forgot to bring in Alex Chapman—sorry, Alex.

Dr Chapman: I am happy to wait for the Member's question, if preferred.

Dr Arthur: You compared the 0.05% to other transport projects, but normally when I think about transport projects, they are delivered by the Government. That is a different context. This will not be a Government-funded project, will it? It is a private investment. I know it is a transport project, but is that the correct comparator in this context?



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Dr Laird: There is an economic literature that looks at capital investment in transport, whether it is privately or publicly funded. The mechanism of funding is irrelevant. It is to do with whether we are increasing the stock of transport in the system.

Dr Arthur: We would expect different returns from public and private investment in transport: we invest in transport as a Government because it is a public good, not necessarily because we want to get a return from it.

Dr Laird: There are multiple reasons for investing in transport—

Q7 **Dr Arthur:** So what is the comparator?

Dr Laird: Part of the overarching process within Government is that we are looking at it from a wellbeing or quality perspective, which is the economic case. There is also an interest in the economic performance of the nation as a consequence of the infrastructure, so we look at that as well. Generally speaking, transport is something that contributes across the piece to quality of life and to the economy, so we would always expect the rate of return on a transport investment to be lower than something that was maybe purely focused on business.

Chair: Thank you. Back to Alex Chapman.

Dr Chapman: I personally think the primary driver is this decline in business passenger demand. Just for context, back at the time of the Airports Commission assessments, the DFT was forecasting something like 93 million business passengers in the UK aviation system in 2050. That has now dropped to somewhere around 50 million, which is essentially implying more or less no growth between now and 2050 in business passenger demand. That feeds both into the welfare assessment and the ticket fare savings that drive the appraisal and the GDP assessment. That is a fundamental change in our expectations about the future.

I would just add that what we need to investigate here is not just whether there is a beneficial GDP impact, but whether that impact is worth while relative to the costs of the scheme, social and otherwise. There have been some material changes in the way that we look at those costs. Even looking back, for example, to the period since the jet zero strategy, the Government have now changed their position such that they are expecting residual emissions from aviation of 41 million tonnes in 2050 instead of previously—only a few years ago—15 million tonnes.

Why is that relevant to today? Under a net zero legal obligation, the plan is to pay to capture those emissions. That is a cost of this intervention. The scheme will be responsible for expanding the envelope of the number of emissions that will have to be paid for and bought back, potentially by the state or otherwise. We do not have any kind of mechanism to secure that.

In the appraisal, we have a recognition of that loss, which is why there is such a negative overall appraisal assessment here, because there is no



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way of dealing with that future cost. However, that needs to be weighed against the scheme. That is something that we did not have, partly because we did not have the net zero commitment back in 2017, alongside the other changes that we have seen, including things such as the use of remote communication technologies, Brexit and all the rest of it. That is a material consideration here.

Chair: Thank you. We will now move to the economic test.

Q8 **Barry Gardiner:** Thank you for inviting me to join today, Chair. Dr Chapman, tell us about the economic growth test that is specified in the draft national policy statement—are you content with how that is specified?

Dr Chapman: To put it simply, for me it is not specified. The reality of the test is that, to be able to judge, you would need to have some sort of benchmarking of what would be an acceptable level of beneficial impact relative to the costs of the scheme, economic, environmental, social and otherwise.

The thing that I find most shocking about the way that it is currently written is that, at two points—paragraphs 5.92 and 5.99—the test asks the applicant to assess beneficial effects. It mentions at one point a “breakdown of wider benefits” and, at another point, about information on “expected benefits” without reference to costs, which sort of suggests that the intention is to ask the applicant to provide essentially a puff piece or propaganda piece about their own scheme, which does not actually appraise the full system.

Q9 **Barry Gardiner:** Who would have guessed it? Did you hunt through for some numerical values to be attached? Were you surprised, as I was, not to find them? Do you think that requires some real offsetting against costs?

Dr Chapman: Clearly it does. But you can refer to what we have seen recently with the Luton and Gatwick decisions, whereby initial recommendation opportunity was given to the Planning Inspectorate to make their recommendation. In both cases, their initial recommendation was that the economic benefits were not sufficient to outweigh the environmental costs. But the Government later overturned those recommendations anyway. Essentially, that leads to some scepticism about what the value of that process really is. The Government have set their intention here. It has asked the Government, the provider, to present their benefits. Whatever level those may be, it seems likely that they will be deemed acceptable or overturned if they are not.

Q10 **Barry Gardiner:** So it was a conclusion looking for a justification? Is that what you are telling us?

Dr Chapman: Perhaps you could say so, hence why it is so important today that we scrutinise the Government’s own impact assessment and appraisal.

Q11 **Barry Gardiner:** Let us look at the Green Book cost analysis. That



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concludes that the scheme has a net present value of between negative £23.4 billion and negative £62.5 billion over 60 years. What do you make of that?

Dr Chapman: It is also important to note that the figures you quoted are only for the UK-side impacts. There is a subsequent assessment further down that identifies, I think, around minus £80 billion to minus £120 billion when considering the global impacts here. We are not a society in the habit of considering only impacts that occur within the domain of our borders. I would like to think that we are better than that.

I am interested to hear from the DFT on this, but I would not be surprised to hear that that is potentially the worst net present value appraisal outcome that a Government scheme has ever delivered in history, although I cannot prove that point. It is quite extraordinary. As I say, it reflects a number of different factors, particularly the inadequate policy infrastructure in place to deal with the climate emissions and climate damage of the scheme.

Q12 Barry Gardiner: You also did some analysis of jobs created. I think your forecast said that 15,200 jobs would be lost in the wider regions of the UK either in or by 2050, and that a further 6,400 would be displaced within London and the south-east. Can you elaborate on that? Obviously one of the great principles behind this is that it is going to create jobs, yet you are telling us that the wider effect is actually going to be negative on jobs.

Dr Chapman: Yes. The Government have presented the jobs impact in their analysis. That impact is actually just a local impact within the bounds of the airport's supply chain. It is not a system-level jobs impact; it is just the supply chain at Heathrow. That is more or less derived from multiplying the number of passengers you have by the number of jobs you expect as a result. What the Government have not provided is the equivalent jobs impact for the airports around the country that will lose passengers as a result of this expansion. It is the same multiplication; it is not particularly sophisticated. It still relates only to the aviation supply chain as opposed to the nation, but yes, it shows losses around the country.

Q13 Barry Gardiner: I am conscious that we probably need to acknowledge Mr Mulheirn's "rabbit out of the hat"—the new benefits that are going to accrue to Gatwick. How would that affect the jobs situation?

Dr Chapman: As far as I am aware, there is no read across there, but I do not know the details of what they have produced. It sounds like they are probably talking about more airfare ticket savings for passengers flying at Gatwick as a result of the competition, which probably has limited impact in terms of jobs.

Chair: That is correct.

Q14 Barry Gardiner: Does the economic analysis provided by the Government show that the test has been met at a national, regional and local level?



Dr Chapman: Clearly not. You do not have to look only at the appraisal report to see that. You can also open up the appraisal of sustainability, where another consultancy has looked at the same question and taken an opinion on the national impact of this. That, of course, is not limited to just the cost-benefit analysis in the appraisal but is their review of the broader profile of the scheme that the Government intend to rely on to ignore their own appraisal. They conclude that the national benefit is uncertain and, at several points, that the impacts are unequal across groups and places of the UK.

Q15 Barry Gardiner: You also talked in your analysis about the reliance on carbon capture and storage to address residual emissions, but without putting in place a funding mechanism for that. If this is to be paid for by the proposers themselves, do we not need to know how they are going to put that in place and how it will be funded?

Dr Chapman: Absolutely. The Whitehead review has been published, and it suggests that the cost of capture could be anything from £169 per tonne to well over £400 per tonne. We are legally obliged to meet our targets, so someone will have to pay that fee to deal with these emissions. Currently, under the policy landscape as we have it, there is no mechanism to deal with that. We have to assume, given the lack of a mechanism as it stands, that the Government will pay it, so it will fall upon the people of Britain to pay that cost. As it happens, we estimate that the cost could run to £1.67 billion, which is roughly similar to the GDP impact that has been claimed as a benefit from the scheme, so that could be wiped out quite quickly.

Of course, there is a world where future policy puts this on the airlines, but if that were to happen and the cost was passed through, then alongside the astronomical costs of the scheme, which are also likely to fall on the airlines—we will hear from them about that later in this process—we might find that there is no need for the scheme, because it would increase the airfare price and there would be no demand. You would not have the demand to generate passengers at an expanded Heathrow, given in particular that it is already the most expensive airport, or one of the most expensive, in the world.

Q16 Barry Gardiner: Indeed. Your modelling said that “the new runway will not be commercially viable if required to ‘pay for itself’ from the users of the new infrastructure”, because of the impact on landing fees. Will there be cross-subsidy there? Are users of the existing infrastructure going to have to pay, what, between £940 million and £1.8 billion a year?

Dr Chapman: Unless it is radically changed in the coming months, which looks unlikely, the current CAA regulatory model would lead to a position where all users of the airport, including runways 1 and 2, would pay towards the cost of this expansion, and would probably pay much of it before the new runway ever opened. The principle of cross-subsidisation is quite strongly recommended against by ICAO, the UN body on aviation, because it produces perverse economic outcomes whereby non-viable schemes can none the less be promoted. But it is necessary to run this scheme in that way because it would never stand up on its own two feet.

It is so astronomically expensive—running to over £50 billion if you include surface transport access—that the users of the new runway would never be able to pay enough for it to be commercially viable to pay that fee, hence why others will be asked to pay it.

I think the airlines are also concerned that even if you do that cross-subsidisation, you still do not have a viable project. The DFT's own forecast analysis, which includes the pass-through of aero charges—strangely, the central analysis does not assume that pass-through, but the basic assumption would be that it will be passed through—shows a 20 million passenger drop in the 2030s as a result of the higher fees they will have to pay to pay for the new runway, so we could end up with a Heathrow in the 2030s that is smaller than it is today because of passengers being lost to pay for this scheme.

Barry Gardiner: This sounds like a complete disaster.

Chair: Barry, could we keep to objective questions, please?

Q17 **Barry Gardiner:** You are telling us that there will be no growth, no jobs and probably not much profit. Is that correct?

Dr Chapman: I would imagine, if the scheme proceeds, that there will be some profit to be had, because it would suggest that it is commercially viable, although that seems doubtful. But if it is, then the final question for us to ask is about where that profit arises. The DFT recognises in its HEAR impact appraisal that we also have to consider the domicile of ownership. Of course, Heathrow is predominantly owned overseas, so the airport's profits are likely to flow overseas. The GDP numbers ought to be considered in that light, not independent of exactly who is gaining that additional value created, which, proportionately, are likely not UK-domiciled entities.

Q18 **Barry Gardiner:** The national policy statement states that the scheme promoters will be required to provide in their applications credible evidence of the economic impact across the country. I am now addressing the panel in the room, Dr Chapman. What more credible evidence do you think that they can provide?

Ian Mulheirn: Is that addressed to me?

Barry Gardiner: It is addressed to all of you. We want to know whether any credible evidence is out there, after what we have just heard.

Ian Mulheirn: From the Department's perspective on what we really mean by credible evidence, we are looking for scheme promoters to identify supply-side benefits that will flow from their intervention. What we have in the appraisal report is a quite high level of analysis—particularly on the regional distribution of benefits, say—and what we would be looking for is more detailed supply-side impacts from the scheme promoters. That is what we mean by credible evidence.

Q19 **Barry Gardiner:** Perhaps I have not been specific enough. I was looking



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for what sort of thing you think they will be able to bring forward.

Chair: The point of that emphasis is to tell the promoters what information they are required to provide; it is not for the DFT to have that information at this point.

Matt Shepherd: I can say what I would consider to be credible economic evidence, if that is helpful to the panel. I would look at economic evidence as being credible when it corresponds to real-world, observed consumer and commercial behaviours, so it is consistent with the behaviours we would expect to see in the real world. I agree with the point made by Alex about considering the costs and benefits of a particular policy—or, in this case, expansion—and that the trade-offs that come with it are complete, in that the evidence captures the whole range of costs and benefits, rather than seeking to say, “We’ll focus either on the costs or the benefits, or on things that we can quantify precisely”, which is the cost of things that are harder to estimate but might be material. Then, based on a set of economic principles, that must be clearly explained and include a proportionate sensitivity analysis.

Q20 **Barry Gardiner:** That is, looking to take everything into account and providing a balanced view, which prompts me to ask Mr Mulheirn about the communication on HENPS, in which the Government say that the scheme could deliver over £40 billion of benefit to the UK. That figure, however, derives from the HEAR—the assessment report—and the Government have actually cherry-picked the upper band estimate of the benefit side of their own cost-benefit analysis. That does not seem to conform to what Mr Shepherd was saying about what would be a reasonable way to proceed, does it?

Ian Mulheirn: I cannot speak to all the communication that Government have done on this, but what I can say is that it will all be consistent with the numbers that you find in the report.

Q21 **Barry Gardiner:** But you have not provided a balanced view; what you have done is cherry-pick the number that is most favourable to the outcome that you believe that the Government want.

Ian Mulheirn: I think—

Barry Gardiner: The word “could” is providing a lot of—

Chair: Barry, he is giving advice. Mr Mulheirn is speaking to the advice given to Ministers.

Ian Mulheirn: All commentary on this will choose different numbers from the report, which has hundreds of numbers in it, some of which may not be the full picture, depending on what point someone is trying to make, but I think that is totally legitimate and all stakeholders will do that.

Chair: These three witnesses are speaking to the analysis that they have given to the Government, not to how it is presented. Bear that in mind.



Dr Laird: On the credible evidence side of things, I echo the views of Dr Chapman and Matt Shepherd. What I would add, to give a bit more flavour, is that if we were making claims about jobs, for example, I would expect to see some evidence about what the job market is like in those respective places.

For example, it appears to me, on reading the HEAR assessment from the Department for Transport—Dr Chapman appears to have interpreted it the same way—that jobs are moving from regions into the local Heathrow area. A credible piece of analysis that would support that would be that the housing market can support an extra 60,000 workers in Heathrow: where are those workers going to live?

The next thing is that, again, the strength of the model that Frontier has built is that it is able to handle those changes in the job market. In an economy like ours, we are operating pretty much at full employment. I know that sections of the labour market are dysfunctional and are not working very well, but in the main, the economy works very well and those jobs will sort themselves out. That is what we see coming out of the model.

We would be expecting to see job losses only if the parts of the economy where the jobs move from are not operating very well. I would expect to see a piece of analysis that either shows that where those jobs are leaving is functioning well or not.

Chair: Thank you for that. We will now look at the relationship between the DFT's HEAR and the Frontier analysis.

Q22 **Daniel Francis:** As the Chair said, there are two pieces of analysis. First, how should they be read together? Secondly, the HEAR notes that the economic growth results from the Frontier work "are not wholly additional to the welfare estimates". How do we consider them together in that context?

Ian Mulheirn: If I can start, we are clear that you should not see those two things as entirely complementary; you cannot add the two numbers together. On the HEAR—the appraisal report—the tools that we have in conventional appraisal are not able to capture some of the key things that are the primary focus of the work that Frontier has done. In particular, the trade impacts and the productivity effects of that higher connectivity.

I would also point out that in the Frontier report we have an impact on GDP—an annual figure by the 2050 or 2055 point. That is different from the net present value figures that we have just been talking about in the HEAR, which is a discounted sum of values over time. They are not quite comparable in the scale of the number that you are looking at.

Standing back and looking at the two together, although we say they are not wholly additional, it is fair to say there is a significant amount of additionality in what we find in the CGE modelling, because it is tackling those effects on trade and productivity, which are not captured in the HEAR. The HEAR is not a complete picture, and you need to look at it

together with the GDP benefits to get the full picture of the benefits and costs of the scheme.

Dr Laird: I echo Ian's point. The two analyses are producing two economic metrics, but they are different: one is a welfare, wellbeing and quality of life metric, and the other is a pure monetary term. The Frontier analysis does not include the direct use benefits of using the air services, which very much is the focus of the HEAR analysis. There is quite a lot of complementarity, but you cannot add a GDP number to a welfare one.

You can adjust the Frontier number—the GDP number. Primarily, it gets into the technical nature of how you measure GDP, but broadly speaking, you would take out the investment part of the GDP and you would also have to adjust the GDP associated with new workers who are coming into the economy. But mainly you can quite easily bring the two things together.

Q23 **Daniel Francis:** Matt, do you have anything further?

Dr Laird: You cannot add them. You can adjust the Frontier number on to the HEAR one.

Matt Shepherd: To build on that, additional analytical work would be needed before you can add the two together. I emphasise that, in general, as other witnesses have said, these are two different ways of looking at the challenge. The primary focus of the work we did was on trade, investment and productivity, but there are other factors, and those factors not being captured in the HEAR, in this specific example, leads to them being largely complementary. That is not a universal rule; it is quite specific to this case.

Q24 **Chair:** Why not do that analysis? Why not put them together?

Ian Mulheirn: The primary reason is that conceptually it is hard to know for certain. What we try to do with transport analysis guidance—the Department's guidance on how to assess transport schemes—is delineate different effects so that there are no overlaps between them and we are not double-counting benefits; we want to avoid doing that as much as possible. As these are fundamentally different ways of looking at things—one is a welfare basis; one is a GDP basis—we cannot be 100% sure that there are no overlaps in some of the benefits. Empirically, it is hard to be certain that you have got rid of that overlap by adding them together. That is not to say that an attempt to do that could not be made, but it is complicated and there is a lot of judgment involved, so at this stage we have kept them separate.

Dr Chapman: The GDP analysis is a very, very thin assessment of whether this is a good policy. There are many ways to create GDP. You could chop down and sell every tree in Britain; you would probably gain GDP, but that does not mean that you want to do it. The fundamental question that the welfare-based appraisal asks is who gains, who loses and why. There are so many things that the GDP assessment is blind to. The others on the panel can correct me if I am wrong on this, but the



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carbon debt that is built up and that must be paid off by Government—running into the tens of billions over the period—is not captured in any way by the GDP assessment. You would need to completely reform the way the model works to capture that.

I am disappointed in the appraisal in that it needs to look at the distribution of welfare, costs and benefits, and it promotes airfare savings as the primary benefit of the scheme, but really to understand that this is a good policy you need to look at the distribution of those benefits—who gets them? A huge focus of the recent Government-commissioned Green Book review was to start asking the question, “Why do we always favour London and the south-east?” The answer is basically that we are not considering the broader social benefits of scheme investments. It is really disappointing, then, to see that the appraisal does not use any of the tools that it has available in the Green Book system to ask those questions.

Who gets those airfare savings? It is the wealthiest in society, is it residents of the south-east or is it those living in wider parts of the country on lower incomes? I can hazard a guess at the answer to that question. That is what welfare assessment should ask, but in this case, it sort of doesn’t.

Chair: Thank you. No one is disputing or picking up on that point, so I will take it as read.

Q25 Daniel Francis: Ian, what expertise does the Department have in scrutinising the kind of analysis that you have been provided with by Frontier?

Ian Mulheirn: The Department has been involved in CGE modelling and S-CGE modelling in many different domains over many years. In this case, we have worked closely with Frontier to understand the model, particularly with the Centre for Policy Studies, which owns the model. We have met with them and interrogated the workings of the model. Throughout, we have involved Professor Laird as our peer reviewer, to challenge and provide a constant stream of notes and discussion with Frontier to ensure that we were all content with the way the analysis was proceeding. This is not something that has just been done and handed to us; we have been closely engaged on quality-assuring throughout the process.

Q26 Alex Mayer: Starting with Alex and then everyone else, do you have confidence in the robustness of the passenger forecasts that underpin both analyses?

Dr Chapman: The DFT has a well-developed model. I am not going to sit here and critique it, and I do not know all the ins and outs of it. There are potentially some questions about the veracity of the elasticities and things like that, but I will leave that to others.

My biggest concern with the forecasts package that we have in front of us is the scenarios that we have been offered. As we discussed, the high likelihood is that, actually, for the scheme to ever get off the ground and for aviation more broadly to be compatible with our climate targets, higher

carbon charges will be needed and will be passed through on to ticket prices.

The Heathrow proposal does not seem to grapple with the sensitivity test at least, or a scenario of higher carbon prices. To give you a concrete example, my understanding is that the assumed carbon price paid on international long-haul flights beyond the EU in 2050 is only £30 per tonne, which is dramatically lower than the social cost of carbon and the levels that are required to manage demand. So I am concerned that what we have in front of us is an unrealistic scenario in terms of the pass-through of how carbon will be dealt with in the future.

Why does that matter? It goes back to the question whether there is actually demand for the scheme. What we have now is a scenario that assumes that flying will be really cheap and, therefore, there will be lots of demand. In that world, maybe that is true, but how realistic is that? Will the Government independently pay for all the carbon offsets that it is expecting the system to need? I think the people at large will probably be quite unhappy with that. I think the expectation is that passengers will need to, but that is not the central scenario in front of us.

The second point is similar. The scheme is incredibly expensive and, as a result, it is very likely that high charges to the passengers at Heathrow airport will be needed to pay for it. But actually, the sensitivities scenario in the forecasts, where they look at the impact of the pass-through of those charges, is a separate sensitivity; it is not the core scenario. The core scenario assumes that there is no pass-through, which, again, I find unusual. The bigger question is not those two things independently, but what happens when you pass through the cost of the scheme to the user and you have higher carbon charges in future, and if that brings down demand to a level that makes the scheme redundant. We don't know—that is not in front of us in these forecasts.

Matt Shepherd: I will perhaps leave it to Ian to comment on the totality of the passenger forecasts. I should say that the analysis that we did took those passenger forecasts as an input, so we have not reviewed those. I would like to pick up one of the points that Alex made about the degree of cost pass-through and perhaps how that works, because I think that speaks to one of the key mechanisms in the Department's forecasts.

I think Alex is right: in a standard competitive industry, if costs increase, you then expect there to be some increase in the prices charged to end consumers. But Heathrow is not a standard industry; it is severely capacity constrained with a significant level of demand to fly from that asset. In that world, you would expect the prices charged to consumers to increase above the competitive level at Heathrow so that you balance the demand for flights at Heathrow with the supply that is available. The charges that Heathrow can levy on airlines for landing there are regulated by the Civil Aviation Authority, but that means that the prices that end passengers are paying are above the competitive level. It is not clear to me that there would be complete pass-through of the cost of Heathrow expansion, reflected in the charges that Heathrow levies to the airlines,



that would necessarily then be reflected in the charges that the airlines levy on passengers, because those fares are already above the competitive level.

Dr Laird: In answer to your question about robustness, we have to be clear that these are forecasts, and there is a lot of uncertainty in forecasts. What I see a bit later in the HEAR is different scenarios. That is the standard way of dealing with uncertainty. There has been discussion to an extent of the specification of the tests and the pass-through costs, and what the forecasts actually are, but underlying that is what is the base level of demand that we are working with. That is uncertain, and the best way of dealing with that is through some form of scenario analysis. When Mr Gardiner was asking questions about credible evidence, one of the things that Matt mentioned was the treatment of uncertainty and scenario analysis. This is critical. We should not be treating passenger forecasts as single-point estimates: we have to be thinking about the range.

Q27 **Alex Mayer:** There are six forecast scenarios. Do you think that is an adequate range? You are probably saying that it is. The Department has said that the current trends scenario is probably the most likely. Do you concur?

Dr Laird: I have not done a review of the forecasts. I am familiar with the road traffic forecasts that we use in the road traffic system. Do they definitely use the words "most likely"? We need to be careful with words because these forecasts are often presented as scenarios without a probability attached. I am an academic, so I advise decision makers and I have the privilege of not having to make the decision. It depends on how risk averse you are. If you are risk averse, you maybe make the decision off the lower set of forecasts, and if you are a risk seeker, you might use the higher set of forecasts. That is for the decision makers—yourselves and the Government—to do, and it is for the analysts to present the range.

Ian Mulheirn: I agree with everything Dr Laird just said. I will give you a sense of how the core projection is done: essentially, we take observed passenger levels and then we use evidence from the past about how air passenger demand grows when household income grows, when airfares change and when the population changes. We try to factor that all into our projections. They are projections and they are highly uncertain. In our core projection we are inevitably somewhat reliant on past trends and relationships, and that is why we do this scenario analysis—we know that things can break those past relationships—but the sensible thing to do is to say that the most likely is the continuation of recent relationships.

On the point of risk, I would differ slightly from James in the sense that essentially the risk is symmetrical. There are chances of undershooting or overshooting the core projections. Either way, if you make a decision in the wrong direction, it could be problematic for one reason or another. It is not like there is a safe way to look at it, you have to think about the risks on either side of the core projection when making the decision.



Q28 Alex Mayer: Given that in recent years we have seen such changes in technology and the way that people meet virtually and so on, do you think you have taken future technological innovation, that we may not know about yet—perhaps we will all meet each other as avatars—into account enough, and that it is built into the future scenarios, as opposed to just looking at what has happened in the past and assuming that it is a straight-line projection into the future?

Ian Mulheirn: That is a very good challenge. We can never know whether we have taken enough account of these things. One of the scenarios is the technology development scenario in the business case, which looks at some of the potential improvements you might get in aviation technology that might make the case significantly better, but as you say, there are all sorts of other changes we might imagine would happen across society, which might have further impacts on business travel or whatever else. We cannot know for sure, so in a sense the purpose of the scenario is just to give you a sense of the scale of how the case changes—how the numbers look when you start to play around with the central assumption that the future is going to look like the past.

Q29 Alex Mayer: Some of the scenarios seem to not go as far into the future as we might have expected. Can you explain the reasoning for that?

Ian Mulheirn: Yes. Unfortunately, that is a technical limitation in our modelling suite. We can project passenger demand under different scenarios at a national level, but we struggle when national demand is allocated to different airports around the country according to how close people are to an airport and those kinds of factors. Unfortunately, once all the airports start to fill up our modelling suite struggles to cope with that. That is a technical problem we have been unable to fix in time for this analysis. That is why some of the scenarios do not go as far out as we might hope.

Q30 Alex Mayer: Are you working on a fix?

Ian Mulheirn: We are looking at what we can do to fix that. We are able to extrapolate based on what we know about the national demand figures, so it is not as though we are flying blind, as it were, beyond that point, but it does mean that the demand at, say Heathrow in particular, is slightly more uncertain once we get beyond that forecast.

Q31 Alex Mayer: Do you anticipate publishing updated forecasts in any timescale that you are able to give us?

Ian Mulheirn: I will have to come back to you on the timescale for that. I do not think we are anticipating fundamental changes to the model as it stands in time for the final draft.

Chair: Thank you. I am very conscious of the time and there are some key points that we will pick up on with some brief questions.

Q32 Olly Glover: Mr Mulheirn, you have touched on some of this already, but perhaps you could briefly expand. Some of our written evidence suggests that there could be wider economic benefits not captured in the modelling

and, equally, perhaps negative impacts as well. In compiling the HEAR, what sort of benefits or negative impacts did the Department particularly struggle to monetise or estimate?

Ian Mulheirn: There are some impacts in there. We spoke before about how in the appraisal report we do not include the trade and productivity effects that are captured by the GDP modelling. Those two very significant benefits are effectively missing from the appraisal itself. There is also a category of effects that is missing from both of the pieces of analysis. That is what happens because you effectively have lower fares than in the non-expansion case, and potentially lower costs for freight shipping as a result. Neither of the pieces of analysis have the impact of that on GDP or the challenges about overlaps with other benefits here, such as if households are saving their income because their fares are cheaper—what knock-on effects that might have.

There are some things in there that are unquantified. There are also some environmental costs around biodiversity about fine particulates that are not captured in the analysis. Particularly on the environmental side, we took the view that the things we were unable to quantify were not particularly substantial in terms of their negative side, especially compared to the things we have quantified on the negative side, which are the bulk of the disbenefits. We are fairly sure that, quantitatively, we have captured the biggest elements of the negative side of this.

Dr Arthur: I will try to get through these questions relatively quickly.

Chair: You do not have to do all of them.

Q33 **Dr Arthur:** Ian, we know the net social benefit is negative, so this is a dead duck, isn't it? It's not going to fly.

Ian Mulheirn: As I say, to get the whole picture of this intervention you have to think about the GDP modelling that captures the trade and productivity benefits. That number you are seeing there is reported as a—

Q34 **Dr Arthur:** But we have heard that some of this GDP is going to leave the country, so why are we doing all this so that money can just leave the country? It seems incredible, doesn't it? What is your estimate of how much of that GDP will leave the country?

Ian Mulheirn: We have not done an assessment on GDP versus the GNI. There could be a difference there. It is not immediately obvious how big that would be. You need to put the two together to make a judgment. It is not as clear cut as saying that it obviously does not work when you take the two together.

Q35 **Dr Arthur:** The written evidence from Dr Simon Hayley said that "the disadvantages of expansion outweigh the advantages under all plausible scenarios." Do you think that is fair?

Ian Mulheirn: I would need to look back at all our scenarios to be sure, but I would go back to the point that it is difficult to just look at the appraisal report, given the substantial benefits and, yes, some costs that it



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misses, and draw a conclusion entirely on that basis. I would be cautious about drawing the conclusion just from that.

Q36 Dr Arthur: I was going to ask Alex about the benefits and the costs, but he already said that, in terms of the balance, it is the worst of any transport project he is aware of. Is that something you are proud of?

Ian Mulheirn: It is not for me to say. I cannot corroborate whether it is or not in terms of the numbers. As I say, I really encourage the Committee to look at both of these pieces of evidence together.

Dr Arthur: I have perhaps misrepresented Alex. He might want to clarify what I have said.

Dr Chapman: I just wanted to add to that. I am quite surprised to hear Ian say that the disbenefits that are not quantified are small because, as I understand it, the non-carbon aviation emissions that the Government's own guidance suggests make up potentially 70% more climate damage—anything up to three times as much climate damage—are not quantified. You could potentially look at that negative net present value and add at least another 70%. Is that not fair to say?

Q37 Chair: Ian, do you want to come back on that?

Ian Mulheirn: I cannot answer the detail of that. I am happy to write to the Committee, if it would be helpful, to set out what is and is not quantified on that front.

Chair: Thank you. Some negatives are difficult to quantify, but the non-carbon emissions are certainly quantifiable and measurable.

Q38 Dr Arthur: James, what do you think is missing from the Frontier model and your analysis that could affect the overall conclusion?

Dr Laird: Two pieces of work have been going on: the economic case and the Frontier analysis. I think they can be brought together to get a more complete picture. Ian said that it was not in this case and that there needs to be a bit of thought, but we have done it before and it is possible to do. That would probably be useful. That then helps to fill in some of the gaps.

What is really good about the model is that it is linked to the aviation demand forecast. It is very good at dealing with the tourism, the air operations and the construction. These are what we think of as demand-side impacts. These are going to be really large. The model is handling that in a particularly strong manner. The model is quite assumption sensitive on other parameters.

Q39 Dr Arthur: Do you think those assumptions have been tested enough? You would do some sensitivity analysis, wouldn't you?

Dr Laird: My recommendation in the report was for more sensitivity testing, so I think there could be some more exploration going on.

Q40 Dr Arthur: Do you think there is optimism bias in that?



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Dr Laird: I do not believe that Frontier was trying to create extra good forecasts. They are a good consultancy—

Dr Arthur: They have worked for Heathrow airport in the past in analysis.

Dr Laird: Okay. I will let Matt answer that question. In terms of bits that are missing, Ian mentioned air freight. Through both the HEAR and the Frontier work, I don't see the direct benefits to the users of Heathrow appearing. I am looking at both sets of results, and I'm looking at the forecasts, and I'm seeing that as soon as terminal capacity is made available at Heathrow, people are switching to use it, but I'm not seeing a line in the tables of results showing me the benefit that they are getting from doing that. I feel that there is a missing direct benefit.

As I said, I live in the north of Scotland. We export salmon from the highlands and islands. It is trucked into Heathrow, and it is very price sensitive. In the future, with very high air freight charges, this market will potentially be crowded out—we will lose custom—and that benefit is not there.

Q41 **Dr Arthur:** Earlier, you were quite relaxed about jobs moving from regions to Heathrow; you said that it is just something that might happen. That will really affect places like Inverness, Aberdeen, Glasgow and Edinburgh, won't it? You were quite relaxed about that, but you recognise that as a benefit: more jobs going into an already overheated area, when perhaps we should be making it easier to move freight from Scotland—from Inverness.

Dr Laird: Maybe I gave the wrong impression about being relaxed. I actually don't believe that there will be as much job creation. Without seeing the evidence—there is no evidence—I would say that there will be no job creation in the region of Heathrow airport. The Frontier model shows, I estimated, approximately 7,000 new jobs in the economy. I think the rest will primarily be people just switching from one job to another. I used to work in Tesco; I now work—

Q42 **Chair:** Sorry, one job to another or one location to another?

Dr Laird: One job to another. I do not imagine that there will be a vast migration to London, unless people show me evidence that that would actually occur. We see the economy as being at full employment. Where it is relevant is where jobs are being removed from a location, such as the west coast of Scotland; then, there are no other jobs for people to take, and that is when there is a problem.

Dr Arthur: Exactly so.

Ian Mulheirn: I thought it might be helpful to add some context to that. The way passengers are allocated across different airports is that airports that are much closer are much more likely to be substitutes for one another. In large part, the passengers who are switching to Heathrow are coming from the rest of the south-east, so there is a lot of movement within the rest of the south-east. By the end of the forecast period, most



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non-south-east airports are less than 1% below their non-expansion change, so there is limited impact for those.

- Q43 **Dr Arthur:** I am just back from Vienna for the football—let's not go into my holidays—but I don't want to have to go via London whenever I want to go somewhere. Just now I have fantastic point-to-point flights for Edinburgh; I don't want to lose that. I think that is part of the concern as well.

Chair: While we are on northern Scotland to Heathrow versus northern Scotland, point-to-point, to somewhere else or to another hub, is that potential shifting of passengers—and of salmon—incorporated into the analysis?

Ian Mulheirn: As James said, to the extent that people are now going to, say, Heathrow, because it is cheaper than it would have otherwise been, that benefit to them is not incorporated. The cheaper freight shipping is not incorporated in this. Those are benefits that are not directly captured. They overlap somewhat with other benefits that we capture, so we have that problem again of trying to avoid double counting, but there is something else there that we don't currently, in this case, capture.

- Q44 **Dr Arthur:** James, I have two super-quick questions for you. What is missing from the report and recommendations, and if all those issues are addressed, what do you think that will do to the benefits overall? Do you think we would be looking at higher GDP or lower? You talked about risk earlier; what would you bet on? If all those omissions were corrected—if corrected is the right word—and all your recommendations were addressed, where do you think we would be heading?

Dr Laird: I know the conversation moved on, but in terms of the actual modelling, one of the things I was concerned about was that the way that the financing treatment was modelled was creating extra benefits. It appeared to be creating benefits in the model, and it therefore was not clear what the actual test was. Are we testing increased connectivity or are we testing increased investment in the UK economy through a higher savings rate? When you remove that—because there is a dummy run—the benefits fall quite significantly.

The trade cost benefit is based on all passengers. As Alex has mentioned, the economic mechanism is about business travel—making connections face to face. You mentioned direct benefits and direct links. We see this as being quite important, but total passengers was used as the measure. I have not seen anywhere in the report anything about what the uplift in business travel is, but ideally one of the sensitivity tests is that we should be using the business travel uplift and not the all-passenger travel uplift. There is a sensitivity test—

- Q45 **Dr Arthur:** We heard from Alex earlier that he is quite cynical about—

Dr Laird: No, he is talking about the baseline. What we are looking at is what Heathrow does to business travel. If business travel does not change in the base, that does not mean we will not get an uplift in business travel



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from Heathrow airport. I feel that the 0.05%, which I have already said is actually quite a large impact, would come down, and we would be looking at a lower number.

Q46 **Dr Arthur:** How much lower, proportionally?

Dr Laird: You are obviously—

Dr Arthur: A half? A quarter? A third?

Dr Laird: I am looking at the numbers in the report; they halve and there is a lower number in the annexe. You also have to bear in mind that we are talking about 2055 or 2056. That is the first year that we are getting an increment in travel. This airport will be open for much longer and we will get larger increments in the future.

Q47 **Dr Arthur:** The net present value is diminished because they are so far into the future, isn't it?

Dr Laird: It is the case, but—

Chair: Sorry, I want to get on.

Q48 **Dr Arthur:** Let's go to my second quick question, very briefly. Did you have enough time to do the S-CGE analysis peer review properly? In your report, it seems you were pressed for time.

Dr Laird: What that meant was that there was no tabling of questions and responses, but generally the way these things have to be dealt with is that there are areas of judgment. You deal with that through sensitivity testing. I am fairly confident that it is a good model and that it is the right sort of model to apply, but I would look at some of the assumptions and explore them a little further.

Q49 **Dr Arthur:** Matt, overall, what is your analysis and assessment of the peer review and the impact it will have. The sensitivity analysis seems quite important. It seems like quite an oversight that it has not been robust enough.

Matt Shepherd: Any analysis of this type, as James has just said, relies on a very significant level of data on what we have, other inputs, projections around passenger volumes and a series of assumptions and mechanisms within the model. We very much welcomed working with James and the insight and challenge he provided. Reflecting on that conversation—and I am very conscious of time—there were five areas that James just identified that move in different directions. Freight is not included, but if you included it there would likely—

Chair: Can you write to us with that? I am sorry, but we are going to have to move on, because I want to pick up on regional growth. We have touched on it, but Olly has some questions.

Q50 **Olly Glover:** One of the headlines of the Government's announcement about Heathrow expansion back in January 2025 was that 60% of the economic growth would occur outside London and the south-east of



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England. Is that substantiated by the analysis published alongside the draft policy statement?

Matt Shepherd: The analysis that we put together, which provided a regional distribution, makes a first view—I am conscious that James may comment and that we are short of time—around how those benefits may be distributed around the UK. Forgive me, I have not got the precise number in my mind, but others may.

Ian Mulheirn: The figures vary by scenario. On our calculations based on your report, they range from 14% to 40% of the benefits outside of London and the south-east.

Q51 **Olly Glover:** In a quick supplementary question, James, you note in the peer review that, “In my view it would be erroneous to claim a broad distribution of the gains from Heathrow to regions on the basis of the modelling” by Frontier. Why is that, and what weight should be placed on them?

Dr Laird: The way that the data has been put together—this is my reading of the report—and the way that the exports and imports are shocked from the Frontier model reflects regional export-import trade shares rather than the shares that are going through Heathrow. I think that I have been misquoted in the press, as the press is prone to do: I am not saying that there is not going to be regional growth, but that the model is not going to give you the regional disaggregation that you would wish because it is primarily shocking off regional trade shares.

One thing about air is that it benefits what they call contract-intensive sectors where people are exchanging ideas and knowledge and there is a lot of control and you want to be looking at the product you are buying. Regions that have more contract-intensive industries are going to gain more, because those are the sectors that air benefits. We would expect the main beneficiaries of Heathrow airport expansion to be those who use Heathrow airport, and the model does not tell you that.

Dr Chapman: I completely agree with the concerns that James has raised. Just to provide some context to the Committee, the assumption is that trade at Heathrow looks a lot like trade across the UK, of course where that trade also involves trade through ports. Multiple Government documents contain a figure of something like £200 billion of trade per year going through Heathrow, but it is really important to remember that something like 60% of that—or indeed, in this year to date, 70%—is just gold going backwards and forwards, predominantly to Switzerland but sometimes to other places. That form of trade has more or less negligible GDP or wider benefits.

You also have other factors of trade such as the import of low-value goods from China under the tariff regime that the Government are planning to phase out in a couple of years—they make up a large number of consignments at Heathrow. Those are the same parcels that are now widely considered to be destroying the British high street. You have to look very carefully at what the trade actually is before you can conclude



that, for example, “Oh yes, this is great for salmon in Scotland.” Salmon, of course, is an absolutely tiny fraction of the trade.

Dr Laird: The evidence is now becoming clear on the impact of air services on the global economy, or what it has been. The econometric tests are robust. The business travellers are creating trade through ports—they are clinching the deals—so we expect the trade to be going through ports and by sea, not necessarily by plane. I say that because Dr Chapman referred to ports and trade. We expect that businesses travellers on air services will change the amount of trade that goes through our ports.

Q52 **Chair:** On regional growth, when we talk about growth we think that everybody benefits, but the local authorities around Heathrow airport, which each have different views on runway 3, all talk, in different ways, about the levels of deprivation in many of the super-output areas around Heathrow airport. Deprivation has grown around Heathrow over the last 10 years, rather than improved, as airport business has grown. Do the levels of deprivation feed into any of your analysis on growth? Is that factored in?

Matt Shepherd: The short answer is no. The assumption that fits within the model is that, for the country as a whole, there is a full level of employment. The mechanisms by which the expansion of Heathrow and subsequent trade affect people are primarily through changes in real wage levels and employment in different sectors, rather than changes in the employment level as a whole.

Dr Laird: To add to what Matt said, but also to draw on some of the earlier questions, the models are generally dealing with the average—they are not dealing with the distribution—so deprivation is not picked up. To come back to the credibility questions about additionality, for example, if there is deprivation around Heathrow airport, and if Heathrow airport is going to employ 50,000 more people, and if it makes a commitment to take in 20,000 apprentices or something like that and train young people, we would see that, in economic impact terms, as additional. When I have talked about—

Chair: Those are two big “ifs” though.

Dr Laird: But it becomes part of the developers’ test, doesn’t it?

Chair: Yes—been there.

Q53 **Jacob Collier:** Turning to employment, James, you spoke about 7,000 jobs being created; is that in the long term? What is your assessment of the wider employment impacts across the UK?

Dr Laird: I was reading the report, and that was my interpretation of it—Matt is here and can talk to that in more detail. The model is written, as has been mentioned, with this full employment assumption, which means there should not be any more new jobs, other than if the wages increase in society—there are people on the margin who are choosing not to work,



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maybe because they have someone else who can support them, and higher wages could bring them into the labour market. My reading of the report is that there are an extra 7,000 jobs, and that would be primarily around the London area—sorry, I have lost track of the question.

Q54 Jacob Collier: The analysis also suggests a displacement of labour. What will be the impact on other airports if the expansion goes ahead?

Dr Laird: In the Frontier report—Matt can maybe talk to this—there is no presentation of regional employment numbers. I have always interpreted those. In fact, if I remember correctly, regional employment numbers are held fixed, so the discussion that Alex has had about jobs being lost and the Department's approach to the extra jobs in London are not part of the model.

Matt Shepherd: No; that is correct. We allow for short-term impacts on the level of regional employment, but in the longer term they are held constant. That is the modelling point. More generally, the mechanism through which we expect to see economic impacts on the supply side of the economy is not through material changes in the total number of jobs but in the composition of labour markets in particular areas as people move either into the aviation sector or out of it, and the difference in productivity within those sectors. From a broader economic perspective, the focus, as with so many of these questions, has been around the productivity rather than the employment levels.

Dr Laird: To try to put it in the way an economist would view this, the modelling has taken a position of full employment, whereas when we are talking about jobs being lost, that might be seen as a non-full employment position.

Q55 Jacob Collier: Ian, there is no forecast for air freight in the analysis. Should that have been considered?

Ian Mulheirn: Yes. Freight is a complex sector. There is lots of variation in the types of products, and there are lots of different constraints that happen at the airport level that affect freight in different ways. It is very hard to get a grip on from a modelling perspective, not least because a lot of the data around this is proprietary and held by private companies. It is quite difficult to get the data to do analysis of freight, but also, conceptually, I mentioned that lower freight costs are a benefit that is not directly quantified. It is also analytically difficult, even if you do have the numbers to pin it down. It is really about the limitations of both data and theoretical and empirical techniques to get a grip on this. We know that the freight effects are a benefit, but we are unable to say how big they are.

Chair: I am afraid that brings us to the end of this panel. We have covered an awful lot of ground, and I thank our four witnesses very much for that. As I said, if there is anything you would like to add, please write to the Committee.