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DEPOLITICISING AIRPORT EXPANSION:

Market-Oriented Responses to the Global and Local Externalities of Aviation

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Kristian Niemietz joined the IEA in 2008 as Poverty Research Fellow, and became its Senior Research Fellow in 2013. He studied Economics at the Humboldt Universität zu Berlin and the Universidad de Salamanca. In 2007, he graduated as Diplom-Volkswirt (MSc in Economics), with a dissertation on the privatised pension system in Chile. During his studies, he interned at the Central Bank of Bolivia (2004), the National Statistics Office of Paraguay (2005), and at the IEA (2006). After graduating, he went on to work for the Berlin-based Institute for Free Enterprise (IUF). Kristian is currently a PhD student in Political Economy at King's College London, where he also taught economics. He is a regular contributor to various journals in the UK, Germany and Switzerland.

Summary

- The liberalisation of air travel that began in the mid-1980s was a great free-market success story. The sector has grown at enviable rates, and air travel has become accessible to low-income earners. But as a consequence of this success, the sector is now bursting at the seams in the south-east, as airport capacity has become its bottleneck. The great inconsistency is that while air travel is generally left to market forces, airport capacity has remained a political issue.

- This paper does not propose a free-for-all in aviation. It recognises the existence of externalities, both globally (carbon emissions) and locally (noise).

- The issue of environmental externalities, however, has already been solved, and in fact 'over-solved'. Rates of Air Passenger Duty (APD) already exceed estimates of the social cost of carbon, which simply means that air travellers are already overcharged for the modest environmental damage they cause.

- Aviation emissions are not just taxed through APD, but also capped in total, because the sector has now been included in the EU's Emissions Trading Scheme (ETS). Each of these measures, APD and ETS, would in itself be sufficient to solve the environmental problems associated with air travel. Their combination represents environmental overkill, or more precisely, the overcharging of air travellers.

- Opposition to air travel has never been about carbon emissions alone. Papers that criticise air travel often begin with a discussion of environmental impacts, but then quickly morph into an aesthetic critique of mass tourism, which is presented as tacky and vulgar. Stopping low-budget tourism through taxation, regulation and re-education quickly becomes an aim in its own right, rather than a necessary price to pay for the sake of limiting climate change.

- Defenders of airport expansion no longer dare to defend leisure travel, and prefer to escape into a 'global race' rhetoric in which airport capacity is presented as a means to boost economic growth. This produces economically unsound arguments.

- At worst, the global race rhetoric can be construed as a justification for an industrial policy style approach to airport expansion, which involves the commitment of public funds. But the public sector has a poor track record as an airport investor. Spain's 'ghost airports' serve as a reminder of the dangers of getting the public sector involved. Airport investment decisions should be left to the market, and taxpayers should never have to underwrite private investment risks.

- To get the national politics out of airport investment decisions, airports have to be given a means to find an agreement with those affected by their decisions, that is, the residents exposed to aircraft noise. The aim should be to create a framework for something approaching a 'Coasean' solution, in which residents could 'sell' the right to emit noise in exchange for a fee that they are free to set. That fee would be compensation for having to put up with noise, and its level would reflect the strength of residents' aversion to noise. Airport activity would be redirected to the areas where people are least noise-averse, because these areas would charge the lowest compensation fees.

- The 'Coasean' solution is an abstract idea. One way to put it into practice is to delegate the power to approve or refuse applications for airport expansions to the local councils representing the noise-affected residents. The airport could couple its application

with an offer for a compensation payment, and demand a local referendum on the proposal.

- A broader solution would be to adopt a more decentralised tax system more generally, thus ensuring that the tax revenue generated at and around an airport stays in the local area, rather than being transferred to the national level. The surroundings of large airports could then become ‘tax havens’: airports would account for a large share of the local tax revenue, so residents could enjoy both low taxes and excellent local public services/infrastructure.

- Supporters of airport expansion should stop hiding behind an instrumental defence of aviation, and openly make the case for air travel as a leisure industry. They should confront the mindset of ‘Malthusian miserabilism’ which characterises modern environmentalism. Environmentalists have become the latter-day heirs of the Duke of Wellington, who opposed railway travel on the grounds that it would ‘only encourage the lower classes to move about needlessly’.

‘What a nonsensical idea. Flight is reserved for the birds and the angels.’

Bishop Milton Wright [father of Wilbur and Orville Wright] (1903)

‘Higher, Orville, higher!’

Bishop Milton Wright during his first flight (1910)

Introduction: air travel as an unfinished free-market success story

The liberalisation of air travel, together with the privatisation of airlines and airports, has been a great free-market success story. Since the process began in the mid-1980s, civil aviation has changed beyond recognition. Within less than a generation, air travel has been transformed from a good reserved for special occasions to a frequently consumed mass-market product. This has hugely changed travel patterns and leisure habits. The air travel industry, and the recreation industries surrounding it, have grown in size, variety and sophistication. The UK has been at the forefront of this development, and a major beneficiary of it.

One milestone in this development has been the commercialisation of British Airways (BA), culminating in its privatisation in 1987. It led to an increase in capital productivity and labour productivity, relative to both the company's own past performance and to the industry average. This did not just lead to a decrease in BA's own average ticket prices, but also in the ticket prices of competing airlines on the relevant routes (Eckel et al, 1997).

Another milestone was the 1986 Airports Act, which started the commercialisation and privatisation of airports (Humphreys, 1999). On its own, this act would probably have had only a limited impact, but its effects were compounded by the deregulation of airlines that occurred in parallel. Deregulation led to the mushrooming of 'no-frills airlines' in the 1990s, spreading the phenomenon of 'frugal

innovation' to the aviation sector. As part of their aggressive cost-minimisation strategy, these low-budget carriers deliberately sought out airports with lower landing fees, thus passing on some of the competitive pressures that existed in the airline industry to the airport industry (Barrett, 2000). Competition between airlines intensified, and this became a catalyst for competition between airports. British air passengers could reap the benefits of a comprehensive reform package, consisting of elements that sensibly complemented each other rather than just existing side by side. There were inconsistencies in policy design, efficiency losses and missed opportunities, but on balance, the programme produced a whole that was greater than the sum of its parts.

A brief glance at the macrodata gives an illustration. In the early 1970s, only around 40 million terminal passengers passed through the UK's airports per year, a figure which increased to around 60 million by the early 1980s. Growth in passenger numbers began to accelerate in the mid-1980s, rising to above 100 million for the first time in 1990 (CAA, 1993: 49). In 2010, despite the severity of the recession, the figure stood at 211 million (not counting transit passengers) (CAA, n.d.). Heathrow alone now handles more passengers per year than all UK airports taken together handled in the early 1980s.

These figures are not, as some critics have asserted[1], explained by a few wealthy frequent flyers. On the contrary: air travel has spread to low-income earners. According to airport surveys conducted at the country's seven busiest airports, among leisure travellers resident in the UK, 13.2m reported incomes of less than £17,250 per annum (see Table 1). Such figures need to be treated with caution: the number of low-income passengers is lower when passengers are classified by (occupation-based) socio-economic group rather than income, and it is not possible to filter out multiple flyers. However, it is safe to say that while a discernible income gradient in air travel behaviour remains, flying is far from uncommon among low-income earners – even at the trough of a severe recession.

1 For example, George Monbiot: 'Angle of descent', *The Guardian*, 3 October 2012.

Table 1: Number of low-income UK leisure passengers in 2011

	Annual income <£17,250	socio-economic groups D/E
Heathrow	3.2m	1.3m
Gatwick	2.7m	1.6m
Manchester	2.1m	2.1m
Stansted	1.8m	0.9m
Luton	1.3m	0.7m
Birmingham	1.1m	0.7m
East Midlands	1.0m	0.8m
Total	**13.2m**	**8.1m**

Based on data from CAA (2012: 68-76)

If the expansion in air travel is allowed to continue, a future flattening of the remaining income gradient among airport users is virtually guaranteed. The reason is that there is simply an upper limit to how often people are able or willing to fly, even if the price of flight tickets fell to zero, and high-earners may already have come close to this limit. People who belong to socio-economic group C1 fly a lot more often than people in group C2, who, in turn, fly a lot more often than people in groups D/E. However, between groups A/B and C1, only a small difference in flying behaviour remains (see BATA, 2010), which suggests that in this consumer segment, the income elasticity of demand for air travel has already reached very low values. Future expansions of air travel are therefore likely to be concentrated among the less well-off, because they represent the unsaturated segments of the market. The 'democratisation' of air travel has come very far already, and if the sector's expansion is allowed to continue, it can only go further.

There is, therefore, still a lot of growth potential in the market. However, at least in the south-east of England, airport capacity has become the sector's bottleneck. Most UK airports still have spare capacity, but the largest one in terms of passenger numbers – Heathrow – has exhausted its reserves, and the second-largest

one – Gatwick – is on the verge of doing so. Substitutability between these two airports and the others in the region is limited, and even if they were fully substitutable, the numbers would simply not add up. The excess demand at Heathrow and Gatwick could theoretically exhaust the combined capacity reserves of all other airports in the region.

It is worth providing a short explanation of what it means to say that an airport is operating 'at full capacity'. Even the most congested airports are sometimes underutilised, and even airports with large spare capacities sometimes experience congestion. A way of analysing an airport's capacity situation consists of ranking all operational hours of the year by the number of aircraft movements recorded during those hours, and comparing selected key points of this 'activity distribution'. These key points include:

- The busiest hour of the year, as an indication of the highest level of activity that is physically and logistically possible (at a given safety standard) at that airport. This 'revealed capacity' can differ from the airport's declared capacity.[2]
- The 95th percentile, as an indication of the level of activity during the busiest peak hours of the year, but without counting extreme one-off events.
- The mean and the median, as indications of the level of activity during a typical hour of the year.

For most airports, this activity curve rises in a more or less linear fashion, at least for the busier half of the year, and shows an upward spike at the very end (Wilken et al, 2011: 123). This means that their activity is more or less evenly distributed around the average, with full utilisation of the airport's capacity occurring only during exceptional one-off events. Heathrow, however, shows a very unusual profile. The upper half of the activity curve is almost flat, which means that in terms of aircraft movements, there is little

2 This happened, for example, at Frankfurt Airport, which had a declared capacity of 83 movements per hour, but which occasionally managed to handle around 90 movements per hour (Wilken et al, 2009: 124).

difference between a typical hour, a very busy hour, and the busiest hour of the year. The number of aircraft movements at the 95th percentile is only 4% below the number recorded during the year's busiest hour, and even the average number of movements is only 19% below that (Gelhausen et al, 2013: 5). From observing the number of aircraft movements at Heathrow, it would be difficult to discern whether one is witnessing a typical hour, a very busy hour, or busiest hour of the year. As Gelhausen et al (ibid: 6) explain, 'no other airport worldwide reaches that level of capacity utilisation, thus London Heathrow serves as an excellent example of a capacity saturated airport.'

Another way of assessing whether capacity constraints of a given airport have become a binding constraint is to compare the observed variation in airport activity to the variation that might be expected given the overall evolution of the market. Between 2000 and 2008, air traffic in Europe as a whole grew by 20%, and then recorded a sharp decline as the Great Recession hit. Yet air traffic levels at Heathrow neither parallel the fast growth of the pre-recession years, nor the recession-related decline. They remained nearly flat throughout the period (ibid: 4), which suggests that Heathrow is no longer able to gain when the aviation sector as a whole expands. Nor, for that matter, does it suffer when the sector as a whole contracts, because the recession has merely decimated excess demand that the airport could not have accommodated anyway.

The situation at Gatwick is less extreme, but the difference is mainly explained by the off-peak hours and off-season months (Transport Committee, 2013: 19-21). For most of the day during most of the year, Gatwick comes close to 'Heathrovian' levels of capacity utilisation, and the remainder is expected to be only a matter of time. Eurocontrol (2013: 21-22) forecasts that by 2035, unaccommodated demand in the UK will amount to 15-20 per cent of the total potential demand (at given prices). This means that about one in five flights which could have taken place will not take place, simply because the airport capacity is not there.

Capacity constraints also entail other economic problems which are less amenable to modelling and forecasting: they dampen competition between airports. Airports which are already 'oversubscribed' need not fear the loss some of their customers, as they can readily tap into the reserve army of unmet demand. Attracting new customers is even less of a concern when these could not be accommodated anyway. The competitive wooing of customers, which is such a boon to consumers in other sectors of the economy, cannot be expected to take place under those conditions. This undermines the objectives of the Competition Commission, which has recently done a lot to spur competition between airports in the Greater London Region. It has broken up the former British Airports Authority (BAA), the giant which had once united Heathrow, Gatwick and Stansted (and several Scottish airports) under single ownership. These three airports are now, in theory, competitors. Adding in City Airport, Luton, and the more recent easyJet base of Southend, this means that London could now be characterised by a fiercely competitive airport industry. But one key ingredient for activating these competitive forces, and allowing them to work in the consumers' benefit, is outside of the Competition Commission's control: capacity.

Plausible alternatives to capacity expansion are disappearing fast. Until fairly recently, the fact that airlines obtained airport slots on the basis of 'grandfathered rights' – an airline which had used a slot in the past had an almost automatic right to continue using it in the future – represented a major inefficiency in the allocation of scarce airport capacity (Boyfield, 2003). Grandfathered rights meant that slots were used by the airline that happened to be there first, not the airline that could make the most efficient use of the slot. Secondary trading of these slots amongst airlines occurred, but it had long been a legal grey area. However, secondary slot trading has since been regularised, and occurs frequently at congested British airports. This must have led to appreciable improvements in the efficiency of the use of existing airport capacity. But it also means that the low-hanging fruit has been picked already.

If the aviation sector is stuck in a rut, it is, in a sense, choking on its own success. A transport policymaker of the 1970s could not have dreamt of current airport capacity levels, but activity has grown even faster than capacity. Yet this is also a symptom of a more general inconsistency in the current policy arrangement. In a market economy, unaccommodated demand due to capacity constraints is a rare phenomenon. When the demand is there, capacity-enhancing investment is profitable, and will sooner or later occur. Demand for beer may increase and exceed the capacity of the brewing coppers currently installed, but brewers are free to increase their capacity as they see fit. The obvious problem is that airports are different from breweries insofar as their activities affect many more people around them. There is no reason why the community should have any say over a brewer's investment decisions, as they are not the owners of the brewery, and are not affected by its activities in a meaningful sense of the term. Aircraft noise, however, justifies the involvement of surrounding residents in the relevant investment decisions of airport owners/managers.

It is important to note that negative effects of airport activity on the surrounding communities do not represent a 'market failure', but rather a misspecification of the market's boundaries. The interests of people living near an airport are recognised in aviation policy, but they are not given tangible, enforceable rights. If this problem was brought into the remits of the market economy, the right to a moderate noise level would be comparable to a copyright. Those who wish to exceed the specified noise level would have to approach the rightholders, and ask for permission, in the same way in which somebody who wishes to replicate protected material has to obtain permission from the copyright holder. As in the case of copyright, the rightholders can refuse that request, or grant it under the conditions they see fit. Residents could then, for example, grant that right in exchange for a fee, which they would be free to set. That fee would reflect their aversion to noise, and it would rise to prohibitively high levels in very noise-averse communities. Airport activity would thus be gradually directed to the places where people are least opposed to it, and/or where people value the additional income most. The obvious objection to such an arrangement would

be transaction costs, but these are a matter of the negotiation infrastructure. The scenario of airport companies having to negotiate with every single resident separately is as implausible as the scenario of a musician having to negotiate separately with every single shareholder of the copyright-holding record company. The rights could be managed by a trust fund, collectively owned by all residents. This would be a 'Coasean' solution, combined with an 'Ostromite' communal property rights regime.

The transaction costs would arise in setting up such an organisation in the first place, and agreeing on the balance of power within it. This is why this paper will not advocate this solution, even though it would probably be the first-best solution if the initial difficulties could be overcome. This paper will propose a second-best solution which avoids the high setup costs of the Coasean arrangement. For now, however, suffice it to say that the current arrangement, in which the decision about expansion is taken at the national level, is as far away from a market solution as can be.

To cut a long story short, the fundamental contradiction in the current arrangement is this: Over the past three decades, aviation has, *grosso modo*, moved from the political sphere to the market sphere. Yet one key parameter, airport capacity, still remains a political and a national concern. This is not true for all airports, of course, but it is true for the largest ones, and these are also the ones where capacity constraints are currently most binding. It is not unlike having a private brewery industry, while also having the government deciding on the number, size, type and allocation of brewing coppers.

At the time of writing, the Airport Commission (2013) is pondering no less than 52 proposals for airport expansion in the south-east, submitted by universities, think tanks, local authorities, airports, other private companies and private individuals. Many of these submissions are well-researched, original, and informative. The present paper is not a critique of any of these proposals, but a critique of the whole approach. There should be no such thing as an Airport Commission in the first place. The 'where?', the 'when?', the 'how?' and 'how much?' of airport expansion should be decided

in the marketplace, without the national government getting involved. Hence, this paper will not try to be the 53rd submission to the Airport Commission; it will not comment on business matters, let alone on matters of engineering, transport logistics or physics. Rather, it will go back to the basics, and try to reintroduce some free-market economic thinking into the airport debate.

If the expansion of aviation is a free-market success story, it is an unsung one. Since about the late 1990s, flying has come to be considered as a somewhat 'dirty' habit. Aviation may not be quite in the same league as smoking or gambling; not many would fully go along with the extreme positions of environmentalists like George Monbiot, who demands 'not only that growth stops, but that most of the aeroplanes flying today be grounded'.[3] But the pervasive rhetoric of guilt has demonstrably left its mark: studies on social attitudes show that people often become defensive and uncomfortable when questioned about their flying habits (Cohen et al, 2011; Gössling and Peeters, 2007). And in times in which a Conservative Prime Minister boasts of his intention of heading the 'greenest government ever', it is difficult to imagine a politician citing an increase in flights as an indicator of success. The opponents of air travel have not won the debate, but they have successfully set its tone.

It may well be for this reason that the rhetoric in favour of airport expansion has shifted its emphasis. Few are prepared to defend air travel for tourism and leisure purposes, so instead, all the rhetoric concentrates on the business and trade aspect. Air links to emerging economies are presented as vital for accessing these attractive new markets, and thus as an important determinant of the UK's future economic potential. This often comes with a 'global race' rhetoric that appeals to popular concerns about falling behind other countries in economic terms.

3 `George Monbiot: 'On the flight path to global meltdown', *The Guardian*, 21 September 2006.

Escaping into this indirect defence of airport expansion may be a convenient way of avoiding the difficult and emotive issue of climate change, but it is ultimately counterproductive. The relationship between air connectivity and economic growth is not that well understood, and even if it turned out to be as strong as the 'global racers' claim, this would not in itself provide a case for greater airport capacity. Only a small share of that capacity is used for business and freight transport purposes, so arguably, this is more an argument about the allocation of capacity rather than its volume. What is worse, the global race rhetoric implies that airports are a strategic asset of the economy, to be deployed by policymakers as a tool to promote economic growth. This opens the door to the mindset of interventionist industrial policy, the policy of picking winners. An aviation policy conducted in this spirit is prone to airport expansion strategies which involve the commitment of public funds. The track record of taxpayer-funded airport subsidies is not a glorious one. Spain's loss-making 'white elephant airports' such as Castellón and Ciudad Real, built with subsidies or credit-guarantees from regional governments, serve as a reminder.

This paper will examine both the environmentalist case against airports, and the 'global race' case for them. It will reject both of them, but it will not settle 'somewhere in between'. It will make the case for depoliticising aviation, and transferring the decision-making over the key variable of airport capacity to the market sphere. 'Market sphere' will be broadly defined to include not just airport operators, airlines and passengers, but also the people who live in an airport's flight path.

Aviation and externalities

Environmentalist campaign groups, journalists, politicians and academics oppose airport expansion because they believe it only encourages flying, and flying fuels global warming. Rosenthal (2007) argues:

> 'Flying, particularly on long-haul flights, is so highly emitting that it dwarfs everything else on an individual carbon budget. Many climate groups have calculated that in a sustainable world each person would have a carbon allowance of two to four tons of carbon emissions annually. Any single long-haul flight nearly "instantly uses that up," said Christian Jardine, a senior researcher at the Environmental Change Institute at Oxford University.'

During a TV debate, when asked whether flying was in moral terms comparable to stabbing somebody, MP Caroline Lucas responded: *"Yes it is! Because people are dying from climate change."*[4]

This argument is echoed by George Monbiot: 'Flying kills. We all know it, and we all do it. And we won't stop doing it until the government reverses its policy and starts closing the runways.'[5]

Ignoring the somewhat lurid language, there is, at first sight, nothing unusual about the anti-aviation camp's arguments from an economic perspective. In economic terms, these objections refer to the negative

4 'UKIP accuses Lucas of 'bending the truth' in air travel row', *The Parliament*, 21 April 2009.

5 George Monbiot: 'We are all killers', *The Guardian*, 28 February 2006.

externalities of aviation, the existence of which almost no economist would dispute. There is little disagreement about the fact that the sector's contribution to climate change represents an environmental cost, which is not automatically reflected in the market prices.[6] But such externalities are a standard economic problem, and there are standard economic techniques to internalise them, i.e. to make sure the polluters pay in full for the damage they cause. One standard textbook solution is to levy a 'Pigouvian' tax on the activity which generates the externality. Another standard solution is to make the activity subject to licensing, with the government controlling the number of licenses/permits (cap and trade). If the Pigouvian option is chosen, the tax rate would have to be set equal to the activity's (marginal) external cost. Its effect would then be to reduce the activity to the socially 'optimal' level, which is the level that would have resulted if the polluters had never been able to pass the cost of pollution on to others. If the cap-and-trade option is chosen, the level of the activity would have to be reduced to its socially 'optimal' level directly, by setting the number of permits accordingly. The two techniques should lead to the same volume of the activity and the same cost to polluters, because the price of a permit should tend towards the (marginal) external cost of the activity, and thus the cost that polluters would also have faced under an equivalent Pigouvian tax. Under a Pigouvian tax, cost to polluters (the tax rate) would be fixed, and the volume of production would fluctuate with the business cycle. Under a cap-and-trade system, the volume of production would be fixed, and the cost to polluters (the permit price) would fluctuate with the business cycle. Averaged over the course of a business cycle, these variations should balance out.

In practice, the textbook optima are impossible to achieve, because neither the 'external cost' nor the 'socially optimal level' can be known. It is notoriously difficult to put a monetary value on environmental variables such as a state of air quality or water quality. Such valuations are highly subjective, and could only be gathered from observing revealed preferences, which is rarely possible. It is

6 This paper will not go into the protracted debate between 'warmists' and 'sceptics'. It will accept the 'orthodox' position spelt out in the *Stern Review*, with the exception of the discount rate used in that report.

already challenging on a small scale, and becomes exponentially more so the larger and the more heterogeneous a population is. Climate change has to be the area where valuation techniques are least satisfactory. The geographic scale is global, the timescale spans centuries, the uncertainties surrounding climatology itself are tremendous, and it affects not one but a multitude of environmental variables. Under these circumstances, even the most sophisticated estimates of the external cost of carbon cannot be more than complicated guesswork.

Nevertheless, lacking an alternative methodology, a Pigouvian tax (a carbon tax, in this case) or a cap-and-trade system remain the least bad ways of dealing with the external cost of carbon in aviation. But blocking airport expansion is an entirely different kind of intervention. It is basically an attempt to limit air travel by restricting one of its input factors, an approach which has no basis in any economic theory. When a factory emits a noxious fume, the way to deal with it is to levy a tax on each unit of the noxious substance emitted – not to prevent the company from erecting a new factory building. When alcohol consumption leads to additional treatment costs in a tax-funded healthcare system, the way to deal with it is to levy a tax on each unit of alcohol – not to prevent breweries from installing new brewing coppers. And when airplanes emit CO2, the way to deal with it is to levy a carbon tax on them – not to prevent the building of new runways. Blocking airport expansions is a roundabout, clumsy and non-transparent way to deal with climate change, and just as arbitrary as the restriction of any other input factor would be. Following the same logic, one might as well impose a cap on the number of airplanes that can be built, or on the number of pilots that can be trained.

The economic standard techniques of internalising externalities have been developed for a reason. Compared to more heavy-handed interventions, their strength is that they attempt to replicate some features of a market discovery process, at least to the extent that this is possible in politically designed system. Under these market-oriented approaches, the government decides on the total volume of emissions reductions, but remains neutral with regard to *who*

implements these reductions and in what way. It is impossible to know in advance how a given volume of emission reductions can be achieved in the least costly way, which is why government policy should not be biased towards, let alone dictate, any particular abatement strategy. It should instead incentivise each firm and each household, via market-oriented tools, to work out the abatement strategy that works best for them under their individual circumstances and preferences. Since these vary enormously from firm to firm and household to household, so will abatement strategies under a market-oriented approach. It will be an open-ended process, which permits unexpected outcomes, revisions, rectifications and incremental learning from best practice and past experience.

Households and firms would try to work out which carbon abatement options they find least painful to implement. For some households, this would involve cutting back on air travel, particularly those who value air travel least. But there is no special reason why many households should prioritise air travel when making carbon savings. It is quite feasible that many households would prefer to make carbon savings elsewhere (for example, switching from driving to cycling, or investing in home insulation), while leaving their travel habits unchanged. A policy under which the government actively selects areas for emission reductions, and imposes reductions in those areas on everybody, allows no such substitutions. Constraining airport capacity would be an extreme example of such a policy. For any given volume of carbon abatement, it entails greater welfare losses than a more neutral policy would have done.

The inferiority of prescriptive/selective carbon abatement policies over market-oriented ones becomes more severe over time. One of the main advantages of market-oriented techniques to internalise externalities is their ability to produce beneficial dynamic effects, because these techniques can be carefully targeted. An externality-generating activity is usually entangled in a production process, most parts of which are harmless. A well-designed Pigouvian tax would therefore be akin to keyhole surgery; it would target the part of the process where the externality arises, while attempting to leave the rest intact. In this way, it would incentivise producers to

invest efforts in minimising that critical part (e.g. finding substitutes for a noxious substance, installing filters etc.). The socially optimal level of production can therefore rise over time without an increase in environmental damage.

In the case of aviation, both a carbon tax and a carbon cap-and-trade scheme would incentivise airline companies to invest in measures to improve fuel efficiency.[7] A policy of constraining airport capacity would not, as airport capacity constraints affects fuel-efficient and –inefficient planes alike.

7 Fuel efficiency, measured as the amount of fuel used per passenger kilometre, has already been improving for decades (DfT, 2011: 71-75), long before taxes or other politically imposed incentives became an issue. So more precisely, a carbon tax or a cap-and-trade system would only strengthen incentives that already exist.

Quantifying external costs: do air passengers pay their way?

Air Passenger Duty

Environmentalists have long argued that aviation was taxed very lightly in the UK, and until not long ago, they had a point. Air Passenger Duty (APD) - a tax which, while not strictly speaking a Pigouvian tax, shares some of its characteristics (see Leicester and O'Dea, 2011: 195) - was only introduced in 1994. Its low initial rates were gradually raised, but as recently as 2003 APD raised no more than £0.8 billion in annual revenue (HMRC and ONS, 2013). Given that most types of aviation fuel are not subject to fuel duty, this represented a relatively benign treatment.

However, several things have changed since then. Firstly, APD rates doubled in 2007, with further increases following in subsequent years. Revenue raised from APD has now increased to £2.8 billion per year, despite the sharp decline in the number of flights since the onset of the recession (HMRC and ONS, 2013). This corresponds to about a quarter percentage point of a British household's annual disposable income (see Table 2), which is quite substantial when keeping in mind that this average includes households who rarely or never fly, that air travel is not consumed on a daily or weekly basis, and that this is only the cost of one special tax, not counting the price of the product itself.

Table 2: Spending on Air Passenger Duty in per cent of equivalised annual disposable income by income quintile, 2011

	APD spending in per cent of income
Bottom quintile	0.24%
2nd quintile	0.20%
3rd quintile	0.27%
4th quintile	0.26%
Upper quintile	0.23%

Based on data from ONS (2013)

In the *Mirrlees Review*, Leicester and O'Dea (2009: 196) compare APD rates to various estimates of the social cost of carbon. This is not a straightforward exercise, because for at least two of the key variables involved, it is only possible to specify an interval rather than a single value. This is true for the social cost of carbon itself, but also for the impact of aviation on climate change, which goes beyond the impact of CO2.[8] So there is not really one estimate of the social cost of aviation, but different combinations of intervals. Yet on the whole, the authors' conclusion is clear: 'In summary, these studies all seem to suggest external costs that are, if anything, lower than current APD rate.' This means that according to the currently available estimates, APD is more than appropriate to internalise the negative externalities associated with flying.

This is even recognised by the Department for Transport (2008), in a study which estimated the impact of the 2007 hike in APD. The study specifies different scenarios which differ in their assumptions about the social cost of carbon, and the non-carbon climatic impact

8 Aviation is also responsible for other potentially climate-affecting emissions, the impact of which is not well understood, and aviation emissions take place at a higher altitude, which is thought to magnify their impact.

of aviation. According to the central estimates, airline companies and their clients paid for between 90 per cent and 119 per cent of the social cost they caused (see Table 3).

The only scenarios that produced values well outside of this range relied on rather extreme assumptions about non-carbon impacts.

Table 3: Extent to which aviation covers its climate change costs, UK, 2006 (with 2007 tax rates)

Coverage of the environmental cost of C02 emissions	211%
Coverage of the environmental cost of CO2 emissions and non-CO2 effects, lower estimate of carbon costs	119%
Coverage of the environmental cost of CO2 emissions and non-CO2 effects	106%
Coverage of the environmental cost of CO2 emissions and non-CO2 effects, upper estimate of carbon costs	90%
Coverage of the environmental cost of CO2 emissions and non-CO2 effects; upper bound for the latter	50%

Based on data from DfT (2008)

So according to these estimates, APD rates of 2007 were broadly right. Since then, rates have increased again. Air travellers and airlines are paying their way, and in all likelihood, they are already paying more than that. Climate change can therefore no longer be used to justify restrictions on aviation. A case could be made for extending APD to cover transit passengers, or to make its rate structure correspond more closely with the environmental impact of different types of flights, but these are parametric reforms within the system. The fundamental problem of externalities in aviation has been solved.

This assessment will seem implausible and counterintuitive to many readers, because it is not compatible with the way in which the threat of climate change is generally presented. Combating climate change is typically framed as a matter of life or death. When thinking about it in those terms, inquiring whether some tax rate or other economic parameter is a bit too high or too low must seem like inquiring whether a deckchair on the Titanic is a bit too far to the left or to the right. In 'The revenge of Gaia', James Lovelock (2006: 1) describes the consequences global warming in the following terms:

> '[W]e are now so abusing the Earth that it may rise and move back to the hot state it was in fifty-five million years ago, and if it does most of us, and our descendants, will die. It is as if we were committed to live through the mythical tale of Wagner's *Der Ring des Nibelungen* and see our Valhalla melt in torrid heat.'

If Lovelock was an economist, he would have said that the marginal external cost of carbon is infinite, in which case the optimal level of aviation would have to be zero. There can be no trade-offs in this this apocalyptic mindset, and consequently, those who share it find economic considerations tedious. George Monbiot writes:

> 'The transport department suggests that the aviation industry should "pay the external costs its activities impose on society at large". This is an interesting proposal, but unfortunately the department does not explain how it could be arranged. Should a steward be sacrificed every time someone in Ethiopia dies of hunger? As Bangladesh goes under water, will the government demand the drowning of a commensurate number of airline executives?'[9]

But such melodramatic descriptions of climate change have never been backed by the climate science these authors purport to have on their side. Even the worst case scenario of the *Stern Review*, which can hardly be accused of exaggerated optimism, comes nowhere near 'Valhalla melting in torrid heat'. Even the *Stern Review* is ultimately no more than a cost-benefit analysis. Its central message is that cutting carbon emissions is worthwhile despite its costs, because dealing with climate change would be costlier in the end.

9 George Monbiot: 'On the flight path to global meltdown', *The Guardian*, 21 September 2006.

This conclusion, in turn, depends heavily on the application of near-zero discount rates over various centuries. While it is safe to say that the optimal response to climate change will be some mix of mitigation and adaptation, the precise mixture ratio is highly sensitive to the discount rate employed. Broadly speaking, the higher the rate, the more it seems that adapting to climate change is a smarter option than trying to fight it (see Dawson, 2008; Lawson, 2009: 34-46 and 82-90; Lomborg, 2007: 37-48 and 190-197; Nordhaus, 2007; Sinclair, 2011: 21-26).

This paper will not take a position on how best to deal with climate change; it only aims to emphasise that dealing with climate change is a matter of balancing costs and benefits, not 'saving the planet'. As Bjørn Lomborg points out: *'Global warming is real - it is man-made and it is an important problem. But it is not the end of the world.'*[10] Of course, to professional apocalypticists, an instrument such as APD will always seem like a drop in the ocean. But once we strip climate change of its mysticism and treat it as the cost-benefit problem that it really is, it turns out that a measure like APD is more than sufficient to deal with it.

The EU Emissions Trading Scheme

In the above section, Pigouvian taxes, of which APG can be seen as a makeshift version, and cap-and-trade systems, have been presented as alternatives. Policymakers can opt for one or the other. In aviation, they have opted for both. Since 2012, air travel within the European Economic Area has been included in the European Emissions Trading Scheme (EU-ETS), a (highly imperfect) version of a carbon cap-and-trade system.[11] Under this system, airlines are required to obtain permits for every unit of CO2 they emit. The total number of carbon permits for air travel is capped, namely at the emissions level the sector recorded in the mid-2000s minus five per cent (CAA, 2013; DfT, 2011: 66). This means that if the sector

10 'The NS Interview: Bjørn Lomborg', *New Statesman*, 24 September 2010.
11 Details for the inclusion of intercontinental flights are currently being negotiated, a process which is likely to be completed this year.

does not manage to cut its total emissions by at least five per cent relative to the reference level, airlines have to finance offsetting emission reductions in other sectors of the economy (via the purchase of carbon permits). Either way, the cap is inescapable.

The ETS is frequently criticised by environmentalists who argue that due to low permit prices, it has had little effect in recent years (for example, Green Party, 2013). But this is a misunderstanding of the nature of cap-and-trade systems, which are meant to be countercyclical. Emission levels vary with economic output, and consequently, so does demand for permits. Compared to an equivalent carbon tax, the permit price will therefore always be 'too low' in recessions and 'too high' during boom periods. Environmentalists' demands for a carbon price floor betray a lack of understanding of the purpose of the ETS, which is *not* to push CO2 emissions to the lowest possible level. It is to push emissions to the 'socially optimal' level. If an economic downturn cuts emissions so severely that the cap becomes non-binding, then emissions are already too low, and the cap-and-trade system should not cut them even further. It should, instead, go into 'hibernation mode' until economic activity, recovers, and emission levels rise again. Low permit prices during a prolonged recession like the present one do not indicate the failure of the ETS system, but its normal functioning.

Of course, opponents of aviation are entitled to argue that the cap is still too generous, or that its coverage is too narrow. But even so, this would only represent a case for adjustments within the ETS system – not a case against airport expansion. Since aviation has been included in the ETS, carbon emissions from aviation have been capped. Even if airport capacity was trebled or quadrupled overnight, emissions could not rise above the cap, unless any excess is cancelled out by commensurate emission reductions either within the sector or in other sectors covered by the ETS. Under this system, increases in airport capacity cannot lead to an increase in emission levels.

Opponents of aviation are highly pessimistic about the future potential for efficiency improvements in the sector. They concede that spectacular improvements have been made in the past, but are convinced that this potential has now been fully exhausted. George Monbiot, for example, asserts that 'major new efficiencies in the next 20 years or so are a pipedream. […] There is, in other words, no technofix. The growth in aviation and the need to address climate change cannot be reconciled.'[12] This paper will not speculate on matters of engineering, physics or technology; it will take no position on what technological developments are likely or unlikely to be expected over the coming decades. But the point is that even if Monbiot's extraordinary level of confidence in his ability to predict the technological developments of the future turned out to be warranted, it would still not provide a case against airport expansion. If it turned out that the aviation sector was incapable of achieving any further improvements in fuel efficiency, and if airport expansion was allowed to go ahead unrestrainedly, there would be two possible outcomes:

1. It could turn out that while the aviation sector is incapable of implementing efficiency improvements itself, it is able to 'outsource' them to other sectors via the permit system. If the price of a permit was, for example, €15, if the airline sector could turn an additional permit into a profit of, for example, €20, and if some other sector could cut a ton of carbon out of its production process at a cost of, for example, €10, 'outsourcing' carbon abatement would make more sense than 'in-house' abatement. The airline sector would not cut its own emissions, but it would pay somebody else to do it for them; it would not *implement* any carbon reductions itself, but it would still *finance* carbon reductions occurring elsewhere. Airport expansion and carbon abatement would then be perfectly compatible.

2. It could turn out that while the aviation sector is incapable of implementing efficiency improvements itself, it is also unable to outsource them to other sectors, because most other sectors suffer

12 George Monbiot: 'On the flight path to global meltdown', *The Guardian*, 21 September 2006.

from the same problem and are thus unable to sell carbon permits. In this case, a ban on capacity expansions would be unnecessary. Airports would have no reason to expand their capacity even if they were allowed to do so, because that extra capacity could not be used anyway.

In short, as long as emissions from aviation are part of an economy-wide (and Europe-wide) emissions cap, no reasonable case for a ban on airport expansion can be made. Even a pessimistic assessment of the potential for further efficiency gains cannot be a justification for not even giving the sector a chance. This could only be justifiable if the possibility of future efficiency improvements could be definitely ruled out, not just in aviation but in the economy as a whole. Even then, though, an expansion ban would not be necessary, because in that case, the cap itself would be just as effective in limiting aviation.

APD and ETS: an odd couple

This paper has deliberately avoided taking a position on whether Pigouvian taxes are preferable to cap-and-trade systems or vice versa, but it has emphasised that the two are substitutes, not complements. They cannot be meaningfully combined. When externalities are taxed at an appropriate rate, there is no case for capping them, and when they are capped an appropriate level, there is no case for taxing them. Yet in the case of British aviation, an odd combination of both has been adopted. Aviation emissions are taxed through APD, a clumsy variant of a Pigouvian tax, and they are also capped under the ETS, a clumsy variant of a cap-and-trade scheme. If APD alone is already likely to overcompensate for the global externalities generated through air travel, then its application within an emissions cap definitely does. A sound economic case can therefore be made for an abolition of one of these two instruments, and a substantial reduction of the burden borne by air passengers and airlines. Flying is not ‘too cheap’. It is too expensive, because its users are overcharged for the minor environmental cost they impose upon others.

At the very least, though, it is safe to say that there is no environmental case for discouraging air travel any further, least of all through roundabout measures like imposed capacity constraints. All airports should be given the green light for any expansion they see fit, subject to approval from the local residents who are directly affected by noise. Wider environmental problems are already ‘overtackled’, and should play no further role in aviation policy.

The nature of the opposition to aviation

For quite a while, environmentalists' concerns that airlines were able to earn profits while dumping environmental costs on third parties were not wholly unjustified. But while this situation has changed considerably, environmentalists' arguments have not. The external cost of aviation has now been internalised, but opposition to aviation continues unabated. In order to understand why recent hikes in APD, combined with the subjecting of aviation emissions to the ETS cap, have done so little to placate the critics of aviation, it is necessary to take a closer look at their arguments.

These arguments have never been about externalities alone. Rather, papers which begin with a discussion of the impact of air travel on climate change frequently morph into an aesthetic critique of mass tourism and casual tourism, which is described as tacky and vulgar. This attitude can be seen in the choice of vocabulary, with terms such as 'binge flying', 'binge mobility', 'trophy tourism', 'hypermobility' etc. being standard fare in the literature. The focus of the literature is thereby shifted from the environmental impact of air travel to the behaviour and attitudes of its consumers. This brand of environmentalism is virtually indistinguishable from anti-consumerism.

A paper in *21st Century Society: Journal of the Academy of Social Sciences* criticises a perceived 'consumer mentality characterised by a desire for instant gratification, and hypermobility in the form of leisure travel (Peeters, 2006, 2007) brought about by a potent mix of hyperconsumption (Balch, 1994; Ritzer, 2001) and postmodern ennui' (Burns and Bibbings, 2009: 34). Issues of consumer sovereignty are quickly dismissed, because the authors believe that 'travel is not simply the allocation of limited resources to a variety of commodities by rational consumers. Rather, demand seems to reflect the need for more intense experiences, reaction to information overload and a host of other ill-defined social phenomena of the developed world' (ibid: 36-37). What they find especially objectionable is

> 'the tendency for what might be termed "trophy tourism" where the tourist simply "ticks off" destinations to add to his de-contextualised, passionless collection (Burns, 2005) […] Most search engines compete for business on price alone (e.g. Lastminute, Opodo have price/cheapness as a core part of their marketing message) thereby contributing to an increasingly mobile society, which regards travel as just another consumer product' (ibid: 38).

A paper in the *Annals of Tourism Research* argues that 'excessive tourist air travel, or binge flying, may constitute a new site of behavioural addiction' (Cohen et al, 2011: 1071). This hypothesis is substantiated in the following way:

> 'Not only does excessive tourist air travel meet this basic criterion of behavioural addiction where longer-term outlooks are sacrificed for immediate gratification, but tourist experiences also supply many of the psychological benefits that Griffiths (1996) uses to characterise sites of potential behavioural addiction. These include feelings of escape, heightened experiences of pleasure and excitement (a 'buzz' or 'rush'), relaxation, disinhibition of behaviour and the activity as an arena for identity work and searching for meaning in life (Cary, 2004; Rojek, 1993; Ryan, 2010).' (ibid: 1077)

The authors also criticise a kind of tourism which consists of 'only visiting a destination for a couple of days before adding it to one's mental list, with length or depth of experience unimportant' (ibid: 1075).

This is echoed in a paper in the *Sociological Review*, which sees global mass tourism as 'the outcome of increased "freedom" […] part of that is the freedom to become "addicted", to be emotionally and/or physically dependent upon excessive consumption of certain products and services of global capitalism' (Urry, 2010: 93-94). The author's main concern is about mobility:

> 'Central to global heating has been the reconfiguring of economy and society around "mobilities". There is an emergent "mobility complex" […] Contemporary capitalism presupposes and generates some increasingly expressive bodies or habituses relatively detached from propinquitous family and neighbourhoods. They are emotional, pleasure-seeking and novelty-acquiring. […] There are many ways in which the body is commodified in and through it moving about and being moved about, through what might be described in the late 20th century as "binge mobility"' (Urry, 2010: 90-91).

This type of mobility is blamed for the decline of domestic seaside resorts like Blackpool, which are referred to as 'places of working-class mass pleasure' and described as places where 'pleasure was highly regulated through the co-presence of one's family and to some degree one's neighbourhood, who also travelled at the same time to the very same place' (ibid: 91). This regulated pleasure is then contrasted to contemporary centres of global tourism, where:

> 'there is only pleasure, no guilt; norms of behaviour are unregulated by family or neighbourhood; there are liminal modes of consumption; bodies are subject to commodification […] Mobilities, we thus might say, are all about choice, of food, products, places, services, friends, family, gambling and addictions. Dubai is the current iconic place of such excess […] This is a place of vice, of overconsumption, prostitution, drink and gambling' (ibid: 93-94).

A more conventional critique can be found in a paper in the *Journal of Sustainable Tourism*, which claims that:

> '[t]ourism in poor developing countries is often to the benefit of foreign investors who are usually from countries in transition or industrialised countries with a high concomitant backflow of money […] there is also evidence that not all crosscultural contacts will have "positive" results. For the broad majority of mass leisure tourists, for instance, contacts with locals are likely to remain superficial in character and to reinforce stereotypes rather than to create insights in other cultures' (Gössling and Peeters, 2007: 410).

Another paper in the same journal presents the results of a qualitative study on public attitudes towards air travel. It interprets a lot into the (rather predictable) finding that many respondents claim to be opposed to air travel for environmental reasons, but fail to draw any consequences for their own travel habits. Most economists would see this as no more than an illustration of the difference between stated preferences and revealed preferences, but this paper identifies a 'denial mechanism' (Becken, 2007: 362). The author argues:

> 'Some made jokes about possible transport alternatives such as swimming or sailing to New Zealand. This kind of humour could be interpreted as a defence mechanism to sudden internal dissonance […] Diverting into generalised responsibility (e.g. 'We need people to travel less!'), rather than specifically referring to oneself was common' (ibid: 358, emphasis in the original).

In stark contrast to the economic standard case of negative externalities, the problem is not primarily seen in a misaligned cost structure, but in wrong attitudes. Consequently, the solutions advocated go far beyond technical, economic alterations, like changing the tax treatment of aviation. Burns and Bibbings (2009: 33) argue that 'social norms, habits, practices, and assumptions about travel (especially leisure mobility) in its contemporary, ubiquitous form have to be challenged and changed'. And: 'a new and revitalised political and cultural framework where the present paradigm of "travel: the perfect freedom" […] becomes overwhelmed by the need for "freedom from global warming"' (ibid: 41). Becken (2007: 365) makes a case for 'renegotiating the current trends towards hypermobility and the positively biased social representation of air travel in particular.' Cohen et al (2011: 1074) are more pessimistic, because '[o]ne of the key reasons that air travel has become embedded in (and will be difficult to disembed from) holiday practices is that the ideal of freedom is firmly established in the minds of many tourists […] which is one way in which unbridled capitalism has generated new forms of excessive consumption.'

But they see hope that:

> '[M]ovement in consumer discourses towards a mainstream negative perception of the practice of holiday frequent flying may eventually find tourism consumption the further subject of query as an addictive phenomenon. Frequent air travel may then join gambling, smoking, shopping, video games and Internet use, (Clark and Calleja, 2008), amongst others, as 'pathologised' sites of behavioural addiction that reflect society's (re)positioning of certain types of behaviour as socially dysfunctional" (ibid: 1086).

Urry (2010: 89) explicitly rejects what he sees as a narrow economistic approach:

> 'This neglect of social science is true even of the very significant Stern Review which, written by an economist, does not develop analysis of how human practices are organized over time and space and how they might be significantly transformed. Changing human activities is mostly seen as a matter of modifying economic incentives for individuals through varying tax rates.'

He sees this as inadequate because 'to slow down, let alone reverse, increasing carbon emissions and temperatures requires the reorganization of social life, nothing more and nothing less.'

The dismissive attitudes towards mass tourism apparent in the above sources also pervade the materials of environmentalist campaign groups and journalists, except that they are much more reluctant to directly criticise low-budget travellers. They therefore draw a rhetorical distinction between the individual air traveller (good) and the aviation industry, i.e. airlines and airport operators (bad). In their account, the expansion in air travel is driven by the supply side alone. The individual consumer does not actually want to fly, he has just been manipulated by the industry into believing he wanted to. Greenpeace, for example, asserts:

> '[C]ompanies like British Airways are employing the tactics of big tobacco and big oil, obscuring scientific arguments with misleading figures, keeping a tight hold over government policy and relentlessly pushing for growth in an unsustainable industry. Greenwashing, shady lobbying, hypocrisy - you name it, they're doing it. Airlines are continually demanding more - more flights, more airports, more runways, more money and promoting a culture that's more geared towards binge-flying'.[13]

Or, on a different occasion: 'We really have to do something about this culture of binge-flying that British Airways is doing so much to bring about.'[14] The pressure group Plane Stupid also declares: 'For decades we've been sold a hypermobile lifestyle, with columnists and television presenters, soap operas and celebrity magazines pretending that everyone is jetting off to Malaga eight times a year. […] A whole industry is dedicated to brainwashing us into air travel.'[15] Plane Stupid clearly sees itself as an anti-industry group, not an anti-consumer group: 'We came together in 2005 to oppose an aviation industry conference and have been taking action ever since. So far we've occupied Stansted, East Midlands, and Aberdeen airports; shut down easyJet and BAA's headquarters; […] and chucked green custard over Peter Mandelson.'[16] One of their key demands is a ban on advertising for air travel. The Camp for Climate Change draws on the same illusory distinction between industry and consumers. During a protest at Heathrow Airport, a spokesperson pointed out: 'We're not here to try to disrupt passengers, we're here to try to disrupt BAA.'[17]

There are exceptions. Writing for the *Guardian* newspaper, Max Hastings directs his criticism directly at low-budget tourists, rather than going for 'the industry' as an easy target: 'The low-budget traveller creates dilemmas for destinations all over the world.' Hastings criticises this class of tourists for 'boorish behaviour', such as 'picnicking in [Venice's] St Mark's Square', or 'walking the streets bare-chested or in bikini tops.' These low-budget travellers, he claims, 'conduct themselves in a manner that diminishes the grace and beauty they come to see.' Hastings cites one of the anti-aviation camp's figureheads, Mark Ellingham, who claims that 'We now live in a society where, if people have nothing to do on a Saturday night,

13 'The problem with aviation', http://www.greenpeace.org.uk/climate/aviation
14 'Greenpeace protest at BA flights', BBC News, 17 March 2007.
15 'DfT report shows public confused about airport expansion', http://planestupid.com/?q=blogs/2008/10/31/dft-report-shows-public-confused-about-airport-expansion
16 'About us', available at http://www.planestupid.com/aboutus.
17 'Warning for Heathrow protesters', BBC News, 13 August 2007.

they go to Budapest for 48 hours. We fly anywhere at the slightest opportunity, 10 times and upwards a year.'[18]

Needless to say, each of these authors is perfectly entitled to take a critical view of mass tourism. But what must be kept in mind is that in doing so, they are no longer making an environmental case about externalities. Identifying a negative externality does not involve a 'moral' or an 'aesthetic' critique of the economic activity which generates it. It involves no more than a recognition that the costs and benefits of the activity are not properly aligned. In the textbook model, the externality is an isolable stain on an otherwise unproblematic economic activity, so the policy focus is on tackling it through 'minimally invasive surgery'. Attempts to re-educate consumers, to challenge their (suspected) motives and attitudes towards the product, and to stigmatise consumption as socially undesirable, have no place in this framework.

By contrast, in the environmentalist/anti-consumerist perspective, mass tourism is not seen as a valuable economic activity, but as problematic in its own right. Indeed, none of the above-quoted passages would have to be greatly rewritten if air travel were replaced by a hypothetical technology of carbon-free mass teleportation. So unsurprisingly, in discussing measures to limit aviation, none of the above papers pays any attention to the risk that such policies could also overshoot, and/or cause collateral damage. When the authors discuss potential risks, these are the risks of the policy not going far enough, or not finding electoral support.

The short summary of this section is that just because airport expansion faces a lot of opposition from environmentalists does not mean that there is anything fundamentally wrong with it. Once externalities have been corrected, a dislike of mass tourism is ultimately no more than a matter of personal taste.

18 Max Hastings: 'Binge-flying culture is just beginning. The only way to stop it is a severe tax', *The Guardian*, 7 May 2007.

The 'global race' as a red herring

At first glance, it may seem as if the environmentalist/anti-consumerist critique of mass tourism has had little impact on actual aviation policy. A series of hikes in APD and related measures may have nipped the era of ultra-cheap air travel in the bud, but the more radical and definite policy of deliberately constraining airport capacity has not been adopted. Whether at Heathrow or elsewhere, airport expansion in the south-east will happen.

But the constant badmouthing of air travel has left its mark. There is no shortage of opinion formers, politicians and business leaders who support airport expansion, but their defence of air travel is usually an instrumental one: they defend air travel insofar as it produces benefits to other sectors of the economy, not as a consumer good in its own right. Air travel, it seems, is now only defensible when it is an input in the production of something else, not when it is used for mere leisure purposes.

This functional defence of airport expansion stresses the importance of air links as a means to access global markets. If the UK fails to provide these links, other countries will, and the ensuing economic benefits which could have accrued to the UK will accrue to them instead. This is often phrased in the unhelpful terminology of a 'global race', in which economic activity is presented as a zero-sum game, and which focusses unduly on *relative* performance.

London Heathrow Limited (2013: 2-3), for example, argues:

> 'The Government's vision is for Britain to win the global race for jobs and economic growth. To do so, we must be better connected to future growth markets – Asia, South America, North America – than our European competitors. Heathrow is one of the world's best connected hubs and is well placed to help Britain win the global race […] Heathrow is slipping out of the "Premier League" of Europe's international hub airports. This is bad for Britain's future as a world economic power' (ibid: 3).

The Confederation of British Industry contends:

> '[I]n the last two decades, Heathrow's growth rate has fallen behind that of other EU hubs as capacity constraints have hit. The UK hub has grown 53%, substantially lower than Frankfurt (84%), Paris Charles de Gaulle (142%) and Amsterdam Schiphol (160%). Indexing these growth rates reveals the extent to which Heathrow risks falling behind its major competitors […] The UK's aviation constraints are already having a demonstrable impact on our ability to build connections with the biggest high-growth economies – relative to the success of our closest competitors in establishing their own links' (CBI, 2013: 12-13).

The position of the British Chambers of Commerce is similar:

> 'The UK will miss out on investment and jobs if the government does not act now to improve capacity in the South East, strengthen our regional airports, and develop more connections to emerging markets. Infrastructure is the lifeblood of British business. […] Business leaders like Richard Branson and Willie Walsh are right to argue that expansion would benefit thousands of firms across the UK, and help get our economy back on track by attracting investment from overseas. […] [C]ontinued delay risks leaving the UK at a competitive disadvantage to its global competitors. While Britain dithers, others do. Foreign competitors are forging ahead on new air links while we sit and twiddle our thumbs' (BCC, 2012).

Oxford Economic Forecasting (2006: 72) estimates that 'the spillover effects [of a third runway at Heathrow] on the rest of the economy could lead to GDP in 2030 around +0.3% a year higher than it would otherwise have been.' When coupled with capacity expansion at Stansted, Birmingham and Edinburgh, the estimate rises to as much as 0.6% of GDP (ibid: 73).

The written statement to Parliament by the Secretary of State for Transport, Patrick McLoughlin (2012), also opens with the paragraph: 'International connectivity is vital to support economic growth. This government has made clear that its priority is returning this country to sustainable economic growth and our aviation networks and infrastructure have an important role to play.'

It is easy to see why supporters of airport expansion revert to this type of rhetoric. In the short term, it is easier to avoid the difficult issue of climate change, and instead appeal to public concerns about falling behind other countries economically. But the 'global race' rhetoric leads to muddled thinking which will ultimately be unhelpful.

On a basic note, 'global race' arguments do not provide a case for airport expansion at all, as they only refer to business travel and cargo flights. A policy of strict airport slot rationing could be just as compatible with this rhetoric as a policy of airport expansion, provided the rationing process heavily favours business/cargo travel over leisure travel. Indeed the position of Zac Goldsmith, MP for Richmond Park and North Kingston and one of the most vocal opponents of a third runway at Heathrow, is quite compatible with this line: 'The problem is that we don't use that capacity well. If we want to preserve Heathrow's hub status, we need to stop clogging it up with point to point flights to places like Cyprus and Greece […] which contribute nothing to overall connectivity.'[19] If we take 'Cyprus' and 'Greece' as cues to read 'leisure travel, and therefore useless', this can be seen as a plea for capacity rationing; and those who defend airport expansion on the grounds that it will be needed for business and cargo travel cannot sensibly refute this point. Business travel accounts for less than a quarter of total UK air travel, and international business travel for no more than a fifth (CAA, 2012: 6). It is not a lack of airport capacity per se that constrains business travel.

19 Zac Goldsmith: 'The third runway is lazy thinking by those who should know better', *New Statesman*, 3 September 2012.

Nor do we know much about how strong the link between air connectivity and trade really is. The Confederation of British Industry attempts to model this relationship, and concludes that 'factoring in variables to filter out the impact on trade of proximity, historical and cultural links, size of economy and destination growth rates, the results are encouraging. The analysis suggests that an increase of 1,000 passengers a year between two countries sees trade increase by as much as £920,000' (CBI, 2013: 8). However, they offer no explanation on what the causal mechanism might be, and concede that there are economies in their dataset for which this relationship does not hold. It is not clear why trading with a country must necessarily involve large numbers of people travelling there frequently. The CBI's own data suggest that while trade and travel do indeed often go together, it is not impossible to have a lot of one without a lot of the other.

The global race mindset also takes too narrow a view on the relationship between airports, conceiving of them exclusively as competitors, and overlooking the degree of complementarity between them. Of course, if two otherwise identical cities or countries differ only in terms of air connectivity, the city/country which is stronger in this respect will enjoy a competitive lead. If, for example, a Chinese company plans to open a European subsidiary in either London or Frankfurt, if there are direct flights to Frankfurt but none to London, and if the company is otherwise indifferent between the two cities, then airport infrastructure will tip the scales. But it is not clear whether such marginal cases are frequent and substantial enough to justify the additional cost, noise, disruption etc. entailed by greater airport capacity. If the company has a clear preference for London over Frankfurt, they will still open their subsidiary in London, and use Frankfurt only as a gateway to get there. It would have to be a close call indeed if the desire to avoid the short connecting flight from Frankfurt to London was enough to tip the balance in Frankfurt's favour.

In other words, Frankfurt's good connectivity can also be a boon to London rather than a threat. London can still 'siphon off' business travellers coming to Europe via Frankfurt, Paris or Amsterdam

without actually hosting all the relevant airport infrastructure itself. The global racers are not oblivious to this mechanism. They contend, after all, that other British cities reap spill-over benefits from increased activity at Heathrow, rather than worrying that these other cities may be 'losing the national race'. The problem with the global racers is that their thinking, or at least their rhetoric, is essentially mercantilist; it places too much emphasis on what side of a national border an airport is located on. But investment in UK airports should be determined by what makes economic sense, not by a perceived imperative to match what some 'competing country' is doing.

Besides, the mercantilist rhetoric cuts both ways; it can also backfire and be used against airport expansion. A case in point is the position of Friends of the Earth (2005: 2), who argue that airport capacity should be constrained in order to contain what they call the UK's 'air travel deficit':

> 'The UK runs a massive economic deficit from air travel. Foreign visitors arriving by air spent nearly £11 billion in the UK in 2004, but UK residents flying out spent £26 billion abroad – a loss to the UK economy of £15 billion pounds. […] [R]egional decision makers should recognise that airport expansion will result in an economic drain, not an economic boom, for their region. They should not support airport expansion, either in their region or nationally. Airport expansion will massively increase the net outflow for every region in the country except London.'

Of the many attempts by environmentalists/anti-consumerists to rationalise an emotional dislike of low-budget tourism, this has to be the most transparent one. By the same 'logic', one could advocate a constraining of seaport capacity, in order to hamper the arrival of foreign cars and thus tackle the UK's 'car deficit'. But while FoE's argument does not deserve to be taken seriously as an economic argument, global racers would find it difficult to counter it, if they present airports as a mercantilist tool to maximise GDP.

Most of the time, global racers reach broadly sensible conclusions, even if they reach them in muddled ways. At the end of the day, most global racers simply advocate a more permissive approach to airport expansion. However, thinking of airport capacity as a strategic asset, to be deployed in a policy agenda built around some notion of 'national competitiveness', can also give rise to damaging and wasteful proposals. The language of the global race is the language of industrial policy. It can be used to call for a removal of unnecessary obstacles, which obstruct the functioning of the aviation market. But it can just as easily be used to call on government to actively promote investment in airport infrastructure, including through explicit or implicit government subsidies, or even government-funded *grands projets*. Boris Johnson's earlier proposal for a brand new hub airport in the Thames Estuary certainly had elements of that, and so has Foster and Partners' (2012) plan for a 'Thames Hub Airport' on the Isle of Grain. Foster and Partners are confident that the construction of the airport itself can be privately funded, but there are huge ancillary costs surrounding the proposal, not least the establishment of new transport links and the cost of dismantling Heathrow.

Industrial policy should have no place in aviation. Airports do not have public good-like properties; there is no risk of underprovision caused by an inability to charge the beneficiaries properly. There are economic benefits associated with air travel, but there is no reason why these should not be reflected in airports' profits. Industrial policy proposals are always based on an implicit assumption that there are ventures which will be hugely profitable in the future, but somehow only politicians are able to see these future opportunities, while private investors are blind to them. The past track record of industrial policy projects does not lend support to such an assumption, which is why the arguments of industrial policy advocates can usually be boiled down to 'But this time it's different'.

This time is not different. Government investment projects have failed time and again, but as Myddelton (2007) shows, they fail in systematic and predictable ways. This is what distinguishes the economics of government projects from private sector failures, which, although they occur all the time, do not follow readily identifiable patterns. Myddelton looks at six prominent British case studies, and identifies a number of commonalities. Such projects typically start with an unrealistic optimism in the initial cost projections and timetables, which make large cost and time overruns inevitable later on. Among the projects' advocates, there is a tendency to denigrate cost-effectiveness considerations as petty-minded, and an unwillingness to consider the project's opportunity costs. In defending the project, there is a tendency to escape into abstract rhetoric, rather than basing the case on tangible benefits. There is an unwillingness to abandon a project when it is evidently heading towards failure, and to write off sunk costs. There is a preference for visible, conspicuous projects over potentially more cost-effective but unspectacular ones. The main reason for all this is the huge asymmetry in political power between those who pay for the project, and those who benefit from it. Among the general electorate, incentives to monitor a project's performance are extremely weak, as no single voter has a discernible influence on the political decisions surrounding the project. Even if there is latent discontent, incentives to mobilise it into an organised political force are even weaker. The costs of a government project are too abstract and too dispersed, and it falls upon a group that is too large and too heterogeneous to form an electoral coalition. The opposite is true for the beneficiaries, such as the companies that stand to gain lucrative contracts, the arm of government that sees its weight and influence grow, and the political decision makers who get to erect themselves a monument.[20] More recently, all of these features have again been recognisable in the proposed High Speed 2 line, the preceding HS1 line, and the Jubilee Line Extension (Wellings, 2013).

20 Notice how quickly the proposed Thames estuary airport got the nickname 'Boris Island', even if the mayor has now shifted his support to the Isle of Grain hub proposal.

There is no reason why a government-supported airport project should turn out any more favourably.

In short, the roundabout defence of air travel is at best awkward and at worst counterproductive, and it is, in any case, missing the point. As shown in the previous section, environmental arguments should no longer be relevant in the airport debate. Genuine environmental concerns have already been sorted out, and what remains is merely a personal dislike of mass tourism. Air travel is a growth market in its own right, and it should be defended in its own right. The best argument for airport expansion is the fact that people want to travel, and are prepared to pay for it. That is a good enough reason on its own. If the positive economic side-effects turn out to be substantial, all the better, but these are no more than an added bonus.

Market-oriented solutions to noise externalities

A focused solution

If the national government should not get involved in airport investment decisions, a local mechanism has to be found which enables airport operators and affected residents to reach an agreement. The introductory section mentioned the possibility of a Coasean solution to noise externalities. If the appropriate organisational infrastructure were in place, the transaction costs of this solution need not be especially high. The transfer of rights to emit noise would then be akin to a transfer of copyrights or patents.

The high transaction costs arise because no such organisational infrastructure currently exists, and setting it up would almost certainly be a complicated and drawn-out process. A second-best solution could consist of having such negotiations mediated through local councils. It could work like this:

If an airport operator plans a capacity expansion, they would have to obtain permission from all the councils comprising residents who would be affected. The definition of ‘affected’ would, of course, be somewhat arbitrary. A critical noise threshold would have to be specified; and changes in airport infrastructure that do not involve a crossing of the threshold would not require permission, while changes that involve crossing the threshold would. If the application is refused, the airport operator would have a right to approach the

council again with a proposal for a compensation payment, and crucially, the airport operator would be given the right to demand a local referendum on the issue. A referendum would go some way towards neutralising some of the conventional Public Choice problems; especially when there is a small minority of committed obstructionists, and a large majority of people who are indifferent towards or even mildly in favour of the proposal. The conventional political channels favour the organised obstructionists, as can be seen in British housing policy, which is completely dominated by 'NIMBY' groups (see Pennington, 2002; Niemietz, 2012). The airport's proposal would be summarised on the referendum ballot paper, which could look a bit like this:

Option 1:
The airport's application will be rejected. Council tax rates remain at their current level.

Option 2:
The airport's application will be granted. This could result in aircraft noise rising to levels between x and y [a simple comparison here to make sure every voter understands what these noise levels mean]. In turn, the airport will pay the council £Z per noise unit. This will lower an average council tax bill by between £X and £Y.

The airport could propose any compensation mechanism it sees fit. For example, as a signalling device to local residents, it could choose a formula that links payments to recorded noise levels. In the past, airport operators have often tried to appease local resistance by arguing that future technological progress would act to reduce noise levels, but such noncommittal announcements are unlikely to be taken seriously by residents. With a formula of this kind, however, the airport could credibly commit itself to noise-abating investment. Residents would not have to trust the airport operators. With a pay-as-you-bluster formula, their own interests and the airports' profit interests would be aligned.

In designing a referendum proposal, the airport would face strong incentives to study local public opinion in detail, since both the compensation sum they have to offer and the chance of the referendum's success would critically depend on what exactly is being proposed. In particular, it would make sense for the airport to investigate whether residents are indiscriminately opposed to all airport noise, or whether there are particular aspects of airport noise that they are especially opposed to. Are they, for example, most troubled by noise in the early morning hours, by noise in the late evening hours, by peak noise levels, or by the overall duration of noise exposure? If a preference pattern can be identified, it could be worked into the referendum proposal. The proposal could include a binding commitment to, for example, ceasing airport operations earlier at night, starting them later in the morning, or excluding the noisiest planes. This logic is illustrated below in the form of a hypothetical numerical example. There is an airport which plans to build a runway, and prepares a referendum proposal on the issue. The airport's research into public opinion reveals that residents are especially disturbed by noise in the early morning and late evening. They reckon that in order to win approval for unconditional expansion, they would have to pay out a compensation sum of at least 100,000 gold coins (or in other words, the 'social cost of noise' is equivalent to 100,000 gold coins). If the airport commits to refraining from operating in the late evening, the required compensation sum would drop to 50,000 coins, and if they commit to refraining from operating in the early morning, it drops to 40,000 coins. It is assumed that this airport makes most of its profits in the early morning hours, but only a small share of its profits in the late evening hours. Ending early morning flights is therefore not sensible: compared to the benchmark scenario of unconditional expansion, the loss to the airport is greater than the gain to the residents, which can be seen from the fact that the decrease in airport profits is greater than the decrease in the required compensation sum. The opposite is true, however, for the option of banning late-evening flights: The airport's loss of profits is small compared to the gains enjoyed by the residents. As the bottom row shows, this is the welfare-maximising option i.e. the option where the difference between the airport's profits and the social cost is greatest. This is the option which the airport would propose.

Table 4: A hypothetical example of a compensation scheme

	Options for airport expansion		
		Condition: no early morning flights	Condition: no late evening flights
Minimum compensation required to win referendum (=social cost of the proposal)	100,000	40,000	50,000
Airport's profits before compensation costs	110,000	20,000	80,000
Airport's profits after compensation costs	10,000	–20,000	30,000

The current system does not offer anything comparable. Once an airport complies with statutory regulations on such matters, it has no incentive to make additional concessions to local preferences, or, indeed, to even investigate what these preferences are. Under the current system, airports simply emit as much noise as they can get away with.

In some cases, the best way for an airport to minimise compensation payments and/or maximise its proposal's chance of success might be to decrease the number of people under the critical part of the flightpath, by requiring airplanes to alter their landing approach routes. The smaller the number of people who are affected, the smaller the total compensation that has to be offered, and/or the higher the compensation per capita that could be offered. (Offering a higher per-capita-compensation would increase the chance of the proposal being accepted.) Again, the current system offers no such incentives. Once airplanes have permission to overfly a particular route, airport operators have no reason to redirect them.

A number of possible objections against the referendum solution come to mind. But a proposal like this should always be evaluated in comparative perspective, that is, it should be benchmarked against the existing system with all its vagaries, not some hypothetical ideal system (the 'Nirvana fallacy').

- *Arbitrary boundaries:* Voting along council boundaries would be somewhat arbitrary and at times unfair. Within those boundaries, not all voters are equally affected by airport noise, but those who are only mildly affected would have as much of a say as those who live at the edge of the airport. At the same time, there would be people outside of those boundaries who might still be affected, but just not quite enough to qualify for inclusion in the referendum. However, these objections also apply to the current system, which effectively turns the election of MPs in the affected constituencies into a (non-binding) *ersatz*-referendum on airport expansion. This mode of decisionmaking is infinitely more arbitrary than a local referendum would be, because all sorts of distorting factors come into play. In other policy areas, it has long been shown that governing parties favour constituencies that they could potentially win but cannot take for granted (see, for example, Bloom et al, 2010). This mechanism seems to apply to aviation no less. Arguably, the third runway at Heathrow would long have been built if the adjacent constituencies were firmly in the hands of any one political party. That party could then be pro-expansion because they could take the parliamentary seats for granted, while the other parties could be pro-expansion because they would consider the seats a lost cause anyway. In a referendum, party politics could be taken out of the equation altogether. Voters' preferences would also crystallise more clearly, as a referendum is a vote on one single issue rather than a package of issues.

- *Irreversibility:* It could also be argued that under the above proposal, a wafer-thin majority could lead to an irreversible decision which voters later regret. But again, this is also the case under the existing system. Voters can also be unhappy about an irreversible decision that politicians at the national level have made for them. Besides, a negative decision can be just as

irreversible. Demand for airport capacity is large, but not infinite. If capacity expansion is refused at airport X, airport Y (or several other airports) may expand instead, absorbing the excess demand and making expansions of airport X unviable for the foreseeable future. If those who live close to airport X then have second thoughts about, for example, the job opportunities that are now being created somewhere else, or the better travel connections now enjoyed somewhere else, it would also be too late. In short, wrong decisions leading to later regrets will be made in both directions, and they will be made under *any* system of governance. They cannot be avoided, but under the referendum solution, councils can take several steps to make them less likely. For example, they can specify conditions to make sure the outcome is sufficiently representative, such as a quorum. They can also take steps to prevent 'gaming' of the systems. The danger of an airport demanding repeat referenda in the hope that voters will eventually deliver the desired outcome – the 'Lisbon Treaty strategy' – can be averted by specifying minimum intervals and/or charging setup fees.

- *Voters' knowledgeability*: It could also be objected that the subject is too technical for voters to be sufficiently informed. And while it is true that few voters calculate in quota counts or decibels, it is up to the airport to make its proposal well-enough understood: voter confusion would almost certainly work against the proposal, both through inertia and through the status-quo-bias. Voters who feel insufficiently informed would be less likely to turn up in the first place, thus decreasing the chance that the quorum will be met, and among those who do turn up, uncertainty about the unknown alternative would make 'the devil you know' seem relatively more attractive. Thus, formulating the proposal in an understandable way and running accessible information campaigns would be in the airport's best interest. The council could still intervene if it deemed some of the information disseminated by the airport misleading. Besides, citizens' initiatives opposed to expansion could, and no doubt would, campaign against the proposal, and challenge the airport's arguments. The airport's campaign would be better funded, but

citizen's initiatives would still enjoy a headstart. After all, airports are profit-oriented corporations aiming to maximise shareholder value, while citizens' initiatives are perceived as 'grassroots organisations', run by 'concerned citizens' for 'the common good'. It is not difficult to anticipate which side will enjoy greater media sympathy, and which side will be subject to greater scrutiny. And again, the complexity argument cuts both ways. In parliamentary elections, voters also need to pick the candidate whose views on – among many other things – airport expansion comes closest to their own, whether those views are well-informed or not.

- *Timeframe*: Compensation payments will be time-limited, but the increase in airport noise will be permanent. This is not a problem, however, because in the long run, airport noise externalities are 'self-internalising'. Not all airport noise is per se an externality. If a hypothetical new settlement developed underneath an existing flightpath, the term 'externality' could not be applied, because by the act of moving there, every resident would have given their implicit consent to (at least the existing level of) aircraft noise. They would be 'compensated' through the 'noise discount', the difference between the price they actually paid for their house and the price they would have paid in the absence of noise. Future increases in noise levels are a bit more complex, because the extent to which they can be considered externalities depends on the extent to which they were predictable. If an airport had already declared its intention to expand, the future increases in noise levels would already be capitalised into house prices. Other things equal, the price of a house near an airport that is expected to expand will be lower than the price of a house near an airport that is saturated. Externalities arise when an airport broadens its flightpath and draws people into it who were not previously subject to aircraft noise, or when it unexpectedly increases noise levels under its existing flightpath. Over time, though, this effect will wear off as new residents move into the area in full knowledge of the noise levels, and able to buy/rent homes at a noise discount. Externality-wise, the area will then become more similar to the hypothetical new settlement described.

It is only the 'first generation' that needs to be compensated, which is why a one-off or a time-limited payment would be appropriate.

- *Voter heterogeneity*: The term 'voters'/residents preferences' has been used as if this were a group with homogenous preferences, which is, of course, unrealistic. In any given flightpath, highly noise-sensitive residents will be living alongside residents that are indifferent towards noise. Compensation payments will at best represent aggregate preferences, but there may not be a single individual for whom the payment is not either too low or too high. And yet this is, again, true for *any* decision-making mechanism, and cannot be held specifically against the referendum solution.

In short, while the above proposal has numerous shortcomings, these are, in one form or another, present in the current system as well. This does not mean that the proposal would be practically feasible everywhere: not all airports are in a position to offer noticeable compensation sums. But, generally speaking, modern airports are no longer just places where planes take off and land; rather, they have become like small towns. They are retail parks, they are clusters for catering venues and hotels, they are car parks, and they are marketplaces for services such as car rental and currency exchange. Ultimately, the compensation sum should not be borne by the airport operator alone, but by all the businesses at and around the airport jointly (including, obviously, the airlines).

One important precondition, however, would have to be met. At the moment, not all airports can freely set their own prices. The so-called 'designated airports' are subject to price cap regulations similar to utilities industries (see Starkie, 2008: 51-67). Designation status is on the basis of a 'market power test', and at present, it applies to Heathrow, Gatwick and Stansted. The designation status of these three airports is currently under review by the Civil Aviation Authority, but the CAA has already announced that Heathrow and Gatwick are likely to retain designation status, while only the case of Stansted is more ambiguous (CAA, 2013a; 2013b; 2013c). Under

those conditions, the airports' ability to pass compensation costs on to others in the form of higher charges is limited. The introduction of a compensation option should therefore be accompanied by an abolition of price controls. Airports should be allowed to set their landing and take-off charges freely, and they should also be able to design the structure of those charges. If, for example, an airport decided to sell its aircraft slots by auction to increase its revenue, it should be free to do so. Secondary slot trading could still correct the initial allocation, as it does currently, but if airlines are allowed to sell a slot to the highest bidder, airports should be allowed to do the same. 'Grandfathered rights' should be abolished; the fact that an airline has used a slot in the past should not entitle it to its use in the future.

This proposal would turn the reasoning of the CAA on its head. The CAA cites capacity constraints, among other things, as an impediment to competition, and therefore as a justification for the continued existence of price controls. The proposal made here would abolish price controls, as part of a broader package to overcome precisely those capacity constraints which impede competition. Airports should be able to increase their profits, and use those profits to effectively buy the right to increase capacity from the affected local residents. This proposal would not have been feasible under the old ownership structure, in which the BAA (as it was then) owned Heathrow, Gatwick and Stansted. Since it was such a dominant player, there would have been a high risk that the BAA would simply have hiked its charges and kept the extra profits, rather than investing them in compensation payments and capacity expansions. Under today's potentially competitive market structure, however, such an outcome is a lot less plausible.

The idea of injecting direct democracy into aviation policy is not this author's idea. It already exists in practice. The citizens of the canton of Zurich, Switzerland, recently held a referendum on an act that would have banned further expansions of Zurich Airport. They rejected it, while also rejecting a more radical proposal that would have actively reduced airport activity by an even stronger

majority.[21] The only novelty in the above approach is that the airport itself would be the referendum's initiator, and that the proposal would include a compensation payment.

A broader solution

'Localism' has become a popular political buzzword. Politicians of all major parties have grown fond of using it, usually alongside buzz phrases like 'empowering local communities'. But it is empty rhetoric. The reality is that the UK is one of the most heavily politically centralised countries in the world. 95% of all tax revenue accrues to the national level, compared to an OECD average of 73%, and much less than that in countries with a strong federalist tradition (see Table 5). Even Council Tax, the only noteworthy local revenue source, is not a genuinely local tax. Councils can determine the rate, but not the tax base or tax structure. Local autonomy cannot exist in such an overcentralised fiscal architecture. As long as the national level funds almost everything, it has a legitimate right – even a duty – to attach strings to the use of those funds.

21 Kanton Zürich, Direktion der Justiz und des Innern, Statistisches Amt: Gesetz über den Flughafen Zürich (Flughafengesetz) (Änderung vom 23. Februar 2009; Keine Neu- und Ausbauten von Pisten) (ABI, 2009: 402); Gültige Teile des Gegenvorschlags von Stimmberechtigten (ABI, 2009: 1105; 2011: 1390), 27 November 2011.

Table 5: Share of the national government in total tax take

	Tax revenue of the national level in per cent of total tax revenue
Canada	52%
Switzerland	60%
USA	64%
Sweden	65%
Germany	69%
Spain	69%
Japan	72%
OECD average	*73%*
Denmark	75%
Finland	78%
Australia	82%
Italy	84%
France	88%
UK	**95%**
Greece	99%

Based on data from the OECD (n.d.)

This pattern is also reflected in the finances of the large cities. London is uniquely dependent on fiscal transfers from the national level, which represent three quarters of the city's revenue. This is an astonishingly high figure in relation to comparable cities (see Table 6). The comparison with Berlin is particularly telling. Berlin is one of the economically weakest parts of the Federal Republic, and a net transfer recipient. London, in contrast, is the undisputed economic powerhouse of the UK, and a large net contributor to the nation's finances. Berlin could not hope to be self-funding, while London could easily fund itself many times over. And yet Berlin enjoys much greater financial autonomy than London, with the ratio of locally raised revenue to national government grants being the inverse of the London ratio.

Table 6: Grant from the national government in per cent of municipal finances

Tokyo	8%
Paris	18%
Berlin	26%
New York	31%
Madrid	37%
London	**74%**

Based on data from the London Finance Commission (2013: 35)

This is an absurd arrangement, not just because it contrasts so starkly with the political rhetoric of localism, but also because of the inefficient 'churning' involved. London should not receive a single pound from the national government. It should simply be allowed to keep enough of the tax revenue that is generated on site, rather than transferring almost all of it to the national level, only to claim part of it back in the form of designated grants.

The referendum proposal presented above would leave the UK's heavily centralised fiscal architecture untouched, and offer a loophole specifically for airports. A more holistic approach would be to bring the UK's tax system into line with the rhetoric of 'localism' that its political class is so fond of. This could not be done overnight, because British councils are currently not set up to govern, but to administer funds handed down to them from the centre. But it is a transition path worth embarking on. Even if airport capacity was not an issue at all, fiscal decentralisation and local autonomy bring countless other well-documented advantages. They promote accountability, policy experimentation and learning from best practice, greater use of local knowledge, and a closer matching of public spending with voters' preferences (Blankart, 2007; Feld et al, 2004). In passing, it would also provide a more sensible framework of dealing with airport capacity.

Airport activity, like housing or infrastructure projects, is a two-pronged sword. It does cause noise and disruption, but it is also a valuable economic activity and a generator of tax revenue. In a decentralised system of governance, local decisionmakers would always see both sides of this equation, and conceive of the issue as a trade-off. Under the current system, it often appears as if policymakers at the national level in the UK are pro-growth, while the local level is dominated by obstructionists. But it is far more likely that this division of roles reflects differences in incentives rather than differences in mentality. For local policymakers in the UK, 'revenue' is something that comes from the national government, not from economic activity in their local area. Local policymakers in the UK see no connection between the economic activity they allow to take place in their area, and the fiscal resources available to them, so they have every reason to oppose activities that have unattractive aspects. They may be aware that the activity also produces a lot of benefits, but these benefits are collectivised at the national level, while the unattractive aspects are felt locally, so they prefer the activity to take place somewhere else. When everything is funded from a common pool, 'nimbyism' is a perfectly logical response.

In a localised system, local policymakers would be aware that if airport expansion takes places somewhere else instead, the corresponding tax revenue would also accrue somewhere else instead. Letting it take place somewhere else could be a good choice, if local voters value low noise levels more than reductions in local taxes. Airport activity would then be gradually redirected to the less noise-averse areas. But airport policy should take place under conditions of transparency about the opportunity costs. The kind of 'localism' which 'nimby' groups (for example, CPRE, 2006) have in mind – a system in which the local level has a right to obstruct everything, while the national level is obliged to compensate it for the ensuing loss of tax revenue – is not localism at all. It is a system of institutionalised free-riding.

Localism cannot be meaningfully separated from fiscal autonomy at the local level. The local level should have the right to keep most of the locally generated tax revenue. But the logical correlate of that right is that areas which permit a high level of economic activity are no longer obliged to share their revenue with areas that do not. In a decentralised system, the vicinities of airports would become ‘tax havens’. It is often claimed that high tax rates are the necessary price to pay for high-quality infrastructure and public services, because there is no way to combine ‘Swedish social services with Singaporean tax rates’. That claim is wrong. In a localised system, areas with sufficiently high levels of airport activity could achieve precisely that. There is no free lunch, but residents in those areas would ‘pay’ by tolerating high noise levels. That is a near-market solution for economic progress that benefits all sides.

Conclusions

Since the mid-1980s, aviation has been gradually transferred from the political sphere to the market sphere. The results have been impressive. Market forces have transformed a former luxury good into a mass market product. Air travel has become accessible to people on low incomes, not just on special occasions but on a regular basis. The ‘democratisation’ of air travel is a great capitalist victory. And the best could yet be to come. The upper-income segments of the market show signs of saturation, but the middle and lower part still represent growth markets with great potential.

Yet in the busy south-east, airport capacity has become the sector’s bottleneck. There has always been one important inconsistency in the aviation policy framework, which now comes home to roost: the sector has all the tools on hand to generate growth, except one – it cannot easily increase its own capacity. That is the one element which has remained a political and a national issue rather than a business matter.

This paper suggests a removal of the airport capacity issue from national politics – but it does not suggest a free-for-all in aviation. There are externalities involved - both global externalities (carbon emissions) and local externalities (flight noise). This analysis has looked at both sets of externalities separately, and examined to what extent they could provide a justification for deliberately obstructing airport expansion.

It has found that global externalities cannot provide a case for constraining airport expansion under any circumstances. Interventions to address externalities are only theoretically justifiable if they address these externalities in a targeted way, minimising the adverse impact on the harmless parts of the production process. Economically justifiable interventions to address externalities have to be akin to keyhole surgery, not a sweeping blow against the sector as a whole. The sector must not be allowed to impose uncompensated external costs on others, but it must be given a chance to reduce those external costs while continuing its otherwise valuable activity. Blocking the expansion of an airport is the very opposite of keyhole surgery intervention. It is a sledgehammer approach that strangles the sector as a whole, without providing any incentives to improve fuel efficiency or reduce environmental impacts in other ways.

It is also an extremely inflexible approach to carbon abatement from a cross-sector perspective. If it turned out that emissions are difficult to reduce in aviation, but much easier to reduce in some other sectors, then reductions should concentrate on these latter sectors – not aviation. Market-oriented decarbonisation tools like carbon permits that are tradable across industries, or a carbon tax that applies to all sources of carbon alike, allow this kind of substitution. They automatically steer carbon abatement efforts towards those sectors which have the greatest concentration of low-hanging fruit. Imposed capacity constraints do not.

But even if imposed capacity constraints could be justified in some way, they would still be wholly unnecessary in the context of the UK, where externalities in aviation are already dealt with. Air Passenger Duty is an *ersatz*-Pigouvian tax, and its rates already exceed available estimates of the social cost of carbon. This means that air passengers are already overcharged. Their APD payments more than repay the environmental costs they impose on others.

Yet what is strangest about the current arrangement of dealing with externalities is that two approaches which cannot be meaningfully combined are being combined nonetheless. Externality-inducing activities can either be taxed, or capped – but not both. Yet in the

UK, both approaches are being employed side by side. Aviation is now covered by the EU Emissions Trading Scheme, a cap-and-trade system, which means that aviation emissions are capped. The sector can only increase its emissions above the cap by buying permits from other sectors, thus paying for offsetting emission reductions elsewhere. The sector's emissions are capped, but they are also taxed. The government should settle for either one of those methods, but not both at the same time. At the very least, there is definitely no case for a 'triple-whammy', i.e. for limiting air travel through airport capacity constraints, APD *and* ETS.

Capacity constraints are not justifiable on the basis of global environmental externalities, but as the literature review in this paper has shown, arguments against air travel are not made on the basis of externalities alone. Many papers that take a critical view of air travel begin with a discussion of environmental problems, but then quickly morph into an aesthetic critique of mass tourism. The latter is presented as vulgar, tacky, superficial, and on the whole, pursued by the wrong people for the wrong reasons. These are legitimate views, but they have nothing to do with the environmental impacts. Educational tourism has the same carbon footprint as 'booze tourism' to the same destination. Whether one purpose is more valuable than the other is a matter of personal taste. It should not be a criterion for legislation.

Yet the moralistic brand of environmentalism with its rhetoric of guilt and shame has succeeded in setting the tone of the debate. Attitude studies show that people have successfully been talked into feeling guilty about their travel habits, and become defensive when questioned about them. Airport expansion has plenty of supporters, but few are prepared to defend air travel as a consumer good, and a leisure industry. Instead, the rhetoric has shifted to presenting airport capacity as a determinant of economic success – an input in a production function. There is no doubt that a well-developed airport infrastructure is an asset for an economy, but basing the case for airport expansion on this side effect makes a weak and unconvincing argument at best. At worst, it provides fertile ground for an industrial policy-style approach to aviation, in which airports

become strategic tools to be deployed in order to improve the economy's position in an imagined 'global race'. From there, it is only a small step to the commitment of public funds to politically desired *grands projets*. But governments have a poor track record in subsidising airports, or in infrastructure projects in general. It is easy to sneer at Spain's 'ghost airports' as manifestations of crass political misjudgement, but that would be a wise-after-the-event fallacy, as each of these airports appeared viable at some point. It is not that the politicians who backed these projects with public guarantees were especially incompetent, but rather, large infrastructure projects are rarely no-brainers. It is an area in which malinvestment, and occasionally spectacular failures, will occur under *any* system of decisionmaking. The best we can do is to eliminate systematic biases towards vanity projects and excessive risk-taking. To minimise moral hazard incentives, it should be a non-negotiable principle that the taxpayer should not have to underwrite a commercial investment risk in this area. Risk-taking and liability should be in the same hand. That is difficult enough to achieve without state involvement. The principal-agent problems inherent in sectors which require such a high degree of capitalisation are difficult enough to keep under control in the private sector. State involvement, and the blurring of responsibilities it entails, cannot but exacerbate the risks. Airport expansion should be depoliticised; it should happen without the state.

In order for a non-political approach to airport expansion to work, the involved parties – airports and noise-affected residents – have to be given the means to reach collaborative agreements. At the moment, political decisions on airport expansion are winner-takes-it-all decisions for both the airport and the residents. If the airport is given approval for expansion, it has no incentives to keep the noise impact below the permitted level, or respond to residents' objections in other ways. If the airport is not given approval, residents have no reason to make any concessions, for example with regard to those aspects of airport noise that they find tolerable.

Ideally, this mismatch should be overcome by formalising residents' rights to moderate noise levels (or alternatively the airport's right

to emit noise), and turning them into fungible and tradable rights akin to copyright. This would be a Coasean solution, in which airport providers could buy the right to emit noise, in the same way as a record company can buy the right to re-publish protected material.

Given the absence of appropriate organisational infrastructure for such a collaborative solution, this paper has proposed two second-best solutions, both of which use the local councils comprising the affected residents as mediators. The broader solution would be to match the political rhetoric of 'localism' with the political reality in the UK, and adopt a much more decentralised system of governance, predicated on a decentralised fiscal architecture. Most of the tax revenue raised by airport activity would then remain in the local area, and the surroundings of large airports could become low-tax areas. When considering an application for airport expansion, residents and their representatives would then always be aware of both the costs and the benefits. Noise and other forms of disruptions would be weighed against the additional tax revenue, which would enable decisionmakers to strike the proper balance given the preferences of the residents they represent.

A narrower solution within the current overcentralised fiscal architecture would be the injection of a dose of direct democracy, combined with the ability of airports to offer compensation payments. Airports would be given the right to initiate a referendum, and put their proposal to the popular vote. All of this has, necessarily, been presented at a very tentative level. The purpose of this paper is not to present a fully worked out proposal for a new decisionmaking mechanism. It is to show that the issue of airport capacity can, and should, in principle, be taken out of the hands of policymakers at the national level altogether.

Presumably, two types of groups will be opposed to these proposals: local anti-airport protest groups and environmentalist groups. The former will be opposed because a Coasean solution would put their claim that to be speaking for 'the local community' to the test. Of course, other things being equal, everybody prefers lower noise levels to higher noise levels. But a Coasean solution would make

it crystal clear that other things are *not* equal. It is one thing to persuade somebody to sign a petition or a pre-prepared letter to an MP, or to express opposition to airport expansion in an opinion survey. But if that opposition is not all that strongly felt, persuading the same people to willingly forego a tax cut is an altogether different matter. Anti-airport activists represent the part of the community which is most noise-averse, and which would not be swayed by the prospect of lower taxes. But most other residents might be more flexible on this issue, which is why anti-airport groups can be expected to oppose Coasean arrangements. They will probably perceive the offer of tax cuts in exchange for accepting noise as a 'bribe' that would unnecessarily 'tempt' the public the make the 'wrong' choice. A close parallel here would be anti-housing 'nimby' groups. These groups also present themselves as champions of localism, but only as long as 'localism' means the right of communities to obstruct residential development within a fiscal framework in which the cost of obstructionism is collectivised at the national level. They are explicitly opposed to the more authentic brand of localism which also includes greater fiscal autonomy of the local level (for example, CPRE, 2006: 20), precisely because of the greater transparency that this entails. Under a system of local autonomy over local finances, residents would observe not just the costs (loss of green space etc.) but also the benefits of development. This would enable a more balanced evaluation of development, which would also encourage a more balanced attitude towards it. People would, of course, still be interested in preserving attractive natural landscapes, but the extreme obstructionism of 'nimby' groups might no longer look so appealing. If the comparison with anti-housing 'nimbys' is anything to go by, anti-airport 'nimbys' can be expected to oppose the transparency and autonomy of genuine localism.

A similar logic holds for environmentalist groups, albeit for different reasons. There is no principal reason why environmentalists *must*, always and everywhere, be opposed to airport expansion. In principle, environmentalists could argue that all available estimates of the social cost of carbon are wrong, that the 'true' cost is infinitely higher, and that APD rates should be hiked again to reflect this. They could shift all their attention from airport capacity to the taxation

of aviation. Why are they so concerned with airport capacity at all, given that even from an environmentalist perspective, constraining airport capacity is such a crude way of restraining growth? What could capacity constraints possibly achieve that aviation taxes could not also achieve, and at a fraction of the economic cost?

The major difference between these approaches is in their degree of transparency. Excise taxes are not especially transparent, but many airlines are providing rough breakdowns of the components of a ticket price, listing the tax share separately. There are no surveys inquiring about the extent to which airline passengers are aware of the tax burden, but a degree of awareness can be expected. If APD rates are hiked further and further, taxpayers will eventually begin to ask uncomfortable questions about what they are paying these taxes for, and whether punitive levels are really justifiable on environmental grounds.

The effect of capacity constraints is a much more subtle one. If these constraints are not eased, airport charges and ticket prices will rise, marginally profitable flight connections will disappear, new flight connections that would otherwise have been opened will not be opened, the frequency of flight delays and cancellations will increase, airports will generally become more crowded, and the experience of flying will generally become more unpleasant. But it will not be possible to definitely link any given change to capacity constraints, because it will be unknowable what exactly the counterfactual would have been. What is more, constraining capacity does not even require active political decisions; it is the default option that will result from inaction. People will notice the changes and respond by flying less frequently, but the responsible policymakers will not be held to account. It will be rationing through the backdoor. The attraction of capacity constraints could well lie in this opaqueness.

Supporters of airport expansion should therefore, all the more, drive home the point that market outcomes in aviation are still to a very large extent shaped by politics. In making the case for airport expansion, they should stop hiding behind 'global race' phrases, they should stop limiting their defence to an instrumental one. They

should not evade, but actively confront the mindset of Malthusian miserabilism that stands behind the environmentalist opposition to air travel. They should explicitly challenge a mindset which stigmatises pleasure as 'excess', enjoyment as 'hedonism', progress as 'hubris', voluntary adopted consumption habits as 'addictions', and discerning consumers as 'brainwashed'. In doing so, they will also need to go beyond the economic arguments presented in this paper, and coin a counter-narrative. This narrative should celebrate the plurality of motives for travelling, rather than bemoaning the fact that some people travel for the 'wrong' reason. It should welcome mass air travel not despite, but precisely because of the fact that it is not, strictly speaking, 'necessary' – for what is the point of economic progress, if not the ability to consume things for the sake of enjoyment rather than necessity? Supporters of air travel should not downplay the risks of climate change, they should not fall into the trap of trying to find faults with scientific papers just because they find their implications uncomfortable. Instead, they should simply introduce some sense of proportion. Climate change is one challenge among many; it should be addressed through measures that are cost-effective, targeted, and above all, proportionate. But climate change is not a reason to clamp down on leisure habits that millions of people enjoy; it does not offer a justification for a state-imposed, neo-puritanical asceticism.

The Duke of Wellington opposed the newly emerging mass transport medium of his day – railway travel – on the grounds that it would 'only encourage the lower classes to move about needlessly'.[22] British aviation policy should not be shaped by the Duke's latter-day intellectual heirs.

22 Gabriel Roth: 'Privatising roads would benefit drivers and taxpayers', IEA Blog, 14 June 2013.

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