

Whose Heathrow is it anyway? The changing Scottish international aviation market – and where rail can make a contribution!

Ross Clark, Rail Performance Manager, Transport Scotland
ross.clark@transport.gov.scot

INTRODUCTION

One continuing issue of concern in Scottish transport policy is Scotland's access to London Heathrow Airport (LHR)¹. Being able to fly to Heathrow to be able to connect to the international services going to or coming from destinations which can only be accessed or accessed easily via that airport, is regarded as being of critical importance for the Scottish economy². This applies to both outbound traffic (Scotland to the rest of the world and return), and inbound traffic (tourism and other traffic from the rest of the world to Scotland, and return). A related concern is the use of Heathrow for domestic journeys; that is, those between Scotland and the London area proper. Faced with the decline in both numbers of flights and passenger loads between Scotland and Heathrow since 2004, it is no surprise that the Scottish Ministers³, as well as many in the business community, have quite actively supported a third runway at Heathrow. And even with the approval of the third runway, in June 2018, it could take up to ten years to build and come into operation, so access will remain an issue until it is built; and quite possibly thereafter as well.

In a paper presented to the May 2014 STAR conference⁴, I argued that the reason for the decline in services between Scotland and Heathrow during the period 2003-2013, was because the overall market itself was declining (shifting to other airports or another mode); rather than the market being 'squeezed out' of Heathrow. At that stage I was of the view that if international passengers could avoid Heathrow, and especially if direct services were available, they would do so. In a further paper presented to the May 2016 STAR conference⁵, I looked at the market between Scotland and Heathrow, as part of a discussion on travel between Scotland and London proper. I argued that the decline in the specifically domestic market which uses Heathrow, could be explained in terms of the traffic moving across to London City (sometimes Gatwick), or to taking the train.

It is now timely to concentrate on the situation for interlining traffic; how it is behaving, and why. To do so, we will first look at the overall context; that of Scotland's total international air travel market. Second, we will look at the nature of the transferring or interlining market; that is, those journeys for which a transfer via a hub is needed. Third, we will comment on the likely explanations for the changes. Fourth, we will identify some fundamental questions, in order to help argue Scotland's case better, including showing how rail has more of a role to play in this market than is realised.

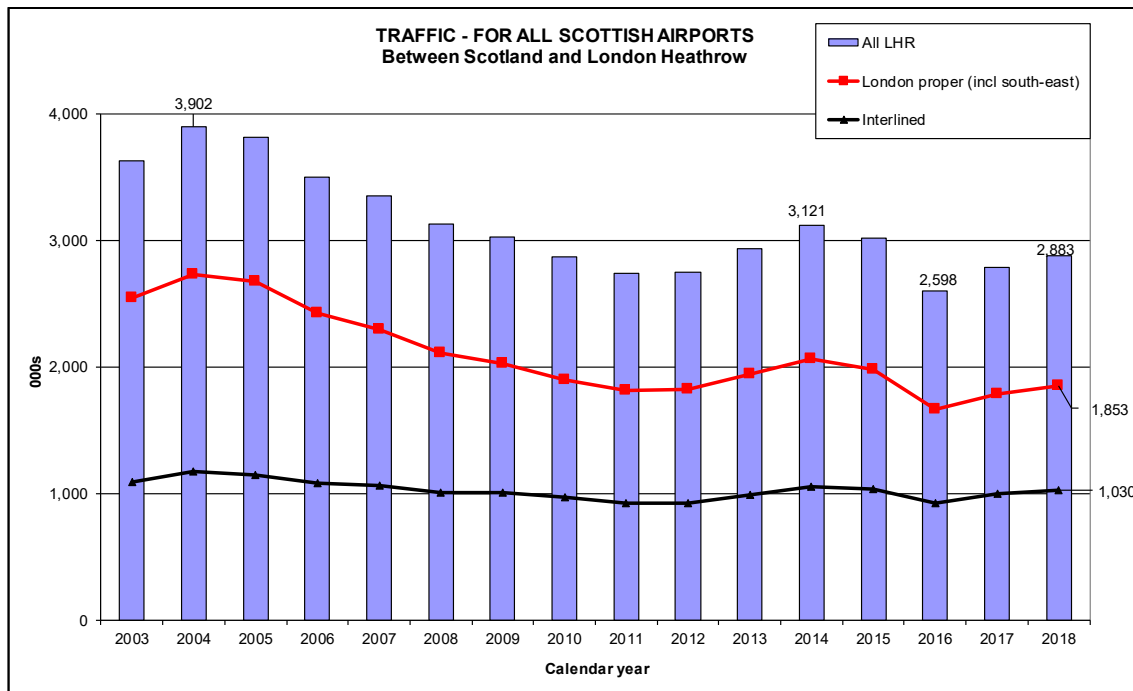
NB: this paper has been produced in a personal capacity; it is not an official Transport Scotland research project; and that its views do not necessarily reflect official Transport Scotland policy.

1. The overall situation

We begin by looking at the situation for Scotland-Heathrow as a whole⁶, in order to provide the context for the discussion. Chart 1a following shows that total demand fell from 3.9m passengers in calendar-2004 to 2.9m passengers in 2018, a decline of somewhat more than a quarter. Note in particular, though, that the main driver of the overall market change is in terms of domestic traffic, which fell from 2,732,000 to 1,853,000 trips (-32 percent)^{*} in the years 2004-2018. Interlining traffic only fell from 1,171,000 to 1,030,000 journeys over this time (-12 percent), which is still very close to the long-term average for interlining traffic between Scotland and Heathrow, of just over 1m passengers per year. Hence, the decline in domestic traffic volumes represented over 80 percent of the decline in all traffic volumes. 2004 is used as the referent in this analysis because that year was the historic peak of the Scotland-Heathrow market. If 2007 is used as a referent, there has been almost no change in interlining volumes relative to then.

^{*} My 2014 paper discusses in more detail how the split between domestic and international traffic is made in the analysis, cf. [endnote#14](#) in that paper, but the usual "health warning" applies about estimated traffic allocations!

Chart 1a Scottish airline traffic to Heathrow – overall



Now, the bulk of the absolute change in the market has been in terms of domestic travel, as-shown in Chart 1a. The change in the specific domestic market can be explained by the volumes of domestic passengers who have shifted across to using London City (sometimes Gatwick), or who are now using the train instead (refer Clark, 2016, for an extended discussion of this point ⁷). The following table documents the changes:

Table 1 Changes in the Scotland-Heathrow market 2004-2018

All data in 000s

	2004	2018	Variance	
Scotland-Heathrow	3,902	2,883	-1,019	-26%
- Domestic	2,732	1,853	-879	-32%
- Interlined	1,171	1,030	-140	-12%
Domestic share of change:				86%
Domestic share of the traffic	70%	64%		
- Domestic (LHR and LCY)	2,974	2,623	-350	-12%
- Rail demand, Scotland to London	1,069	2,516	1,447	135%
Central Belt-Heathrow	3,232	2,110	-1,122	-35%
- Domestic	2,262	1,312	-951	-42%
- Interlined	970	798	-171	-18%
Domestic share of change:				85%
Domestic share of the market:	70%	62%		
- Domestic (LHR and LCY)	2,455	2,028	-427	-17%
- Rail demand, Central Belt to London	790	1,977	1,187	150%

Rail demand is as-reported by the ORR for the 2017/18 year. Where rail is time-competitive for a journey to London, as it is for the Central Belt, then the growth in rail's traffic has been correspondingly the higher.

Total domestic demand including London City, is reported because the two airports have very similar domestic markets. On the other hand, Aberdeen demand levels were stable when 2004 and 2018 were compared.

The immediate situation for Scotland-Heathrow demand over the last five years has been as follows:

Chart 1b Scottish airline traffic to Heathrow – overall since December 2013

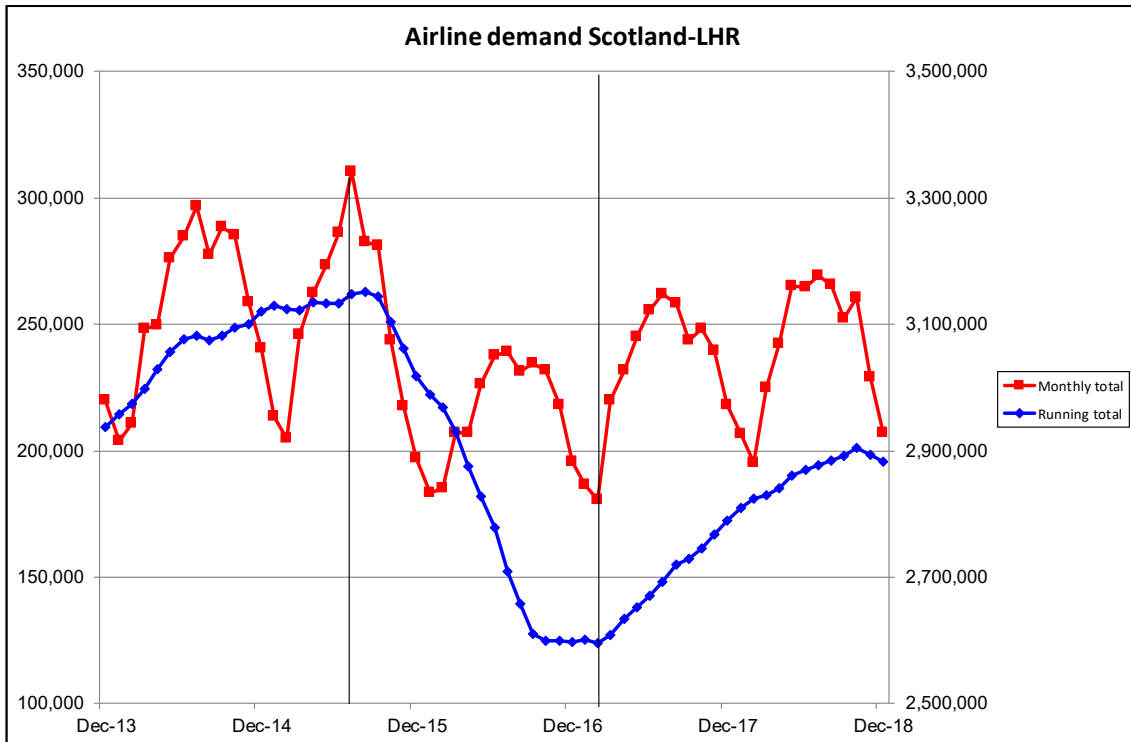
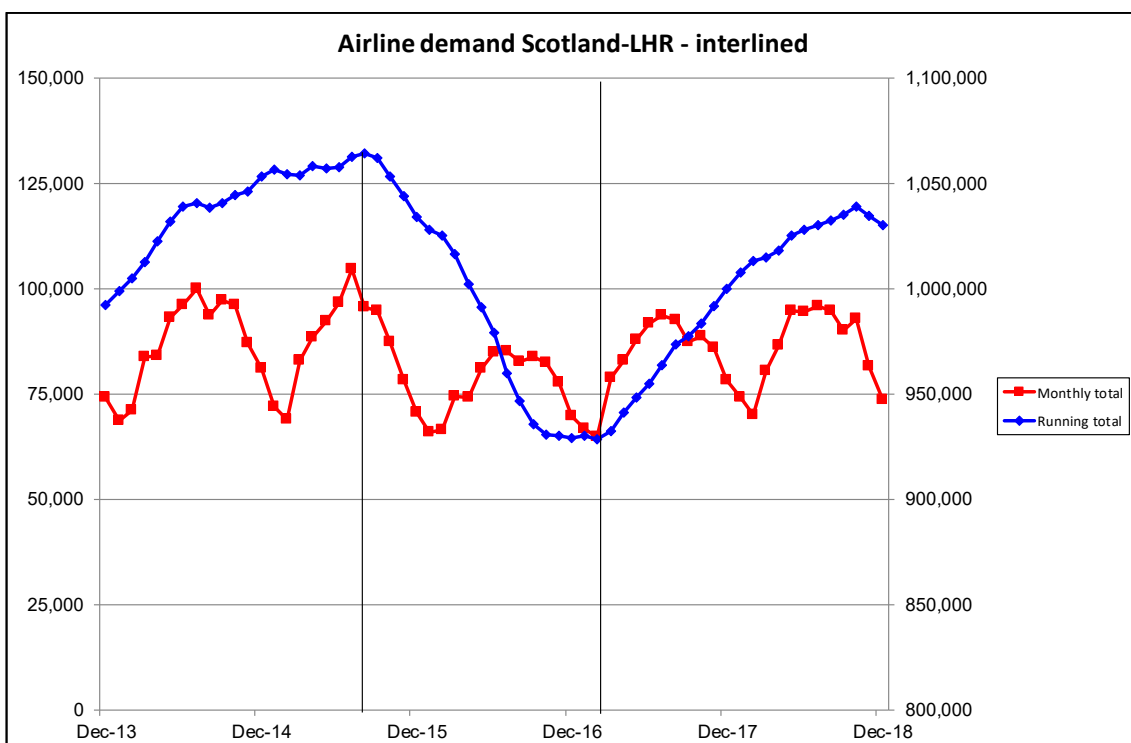
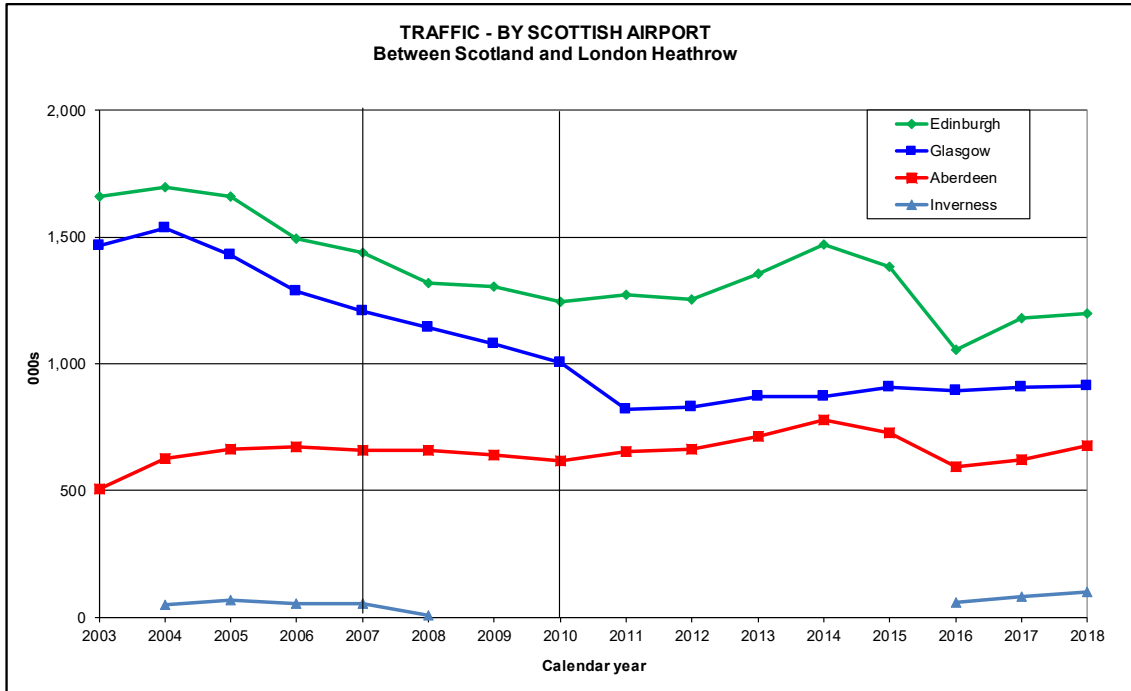


Chart 1c Scottish airline traffic to Heathrow – interlined component since December 2013



The situation by individual Scottish airport is as follows:

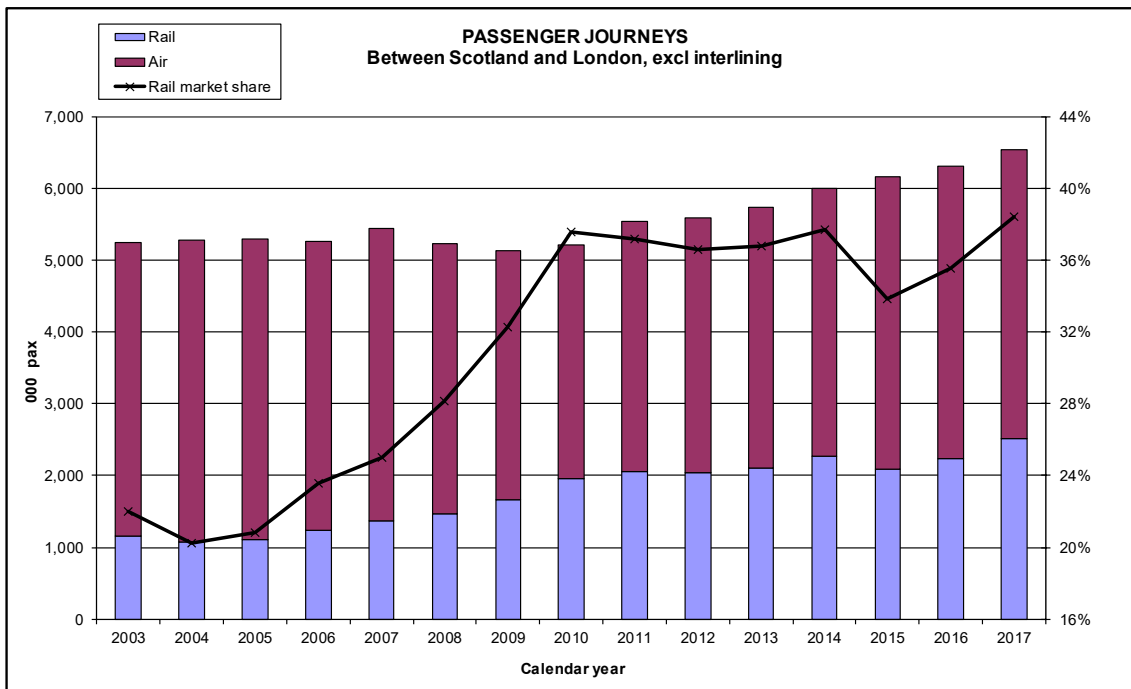
Chart 1d Scottish total airline traffic to Heathrow – by airport



The decline in the Aberdeen traffic after 2014 can be separately explained in terms of its localised recession.

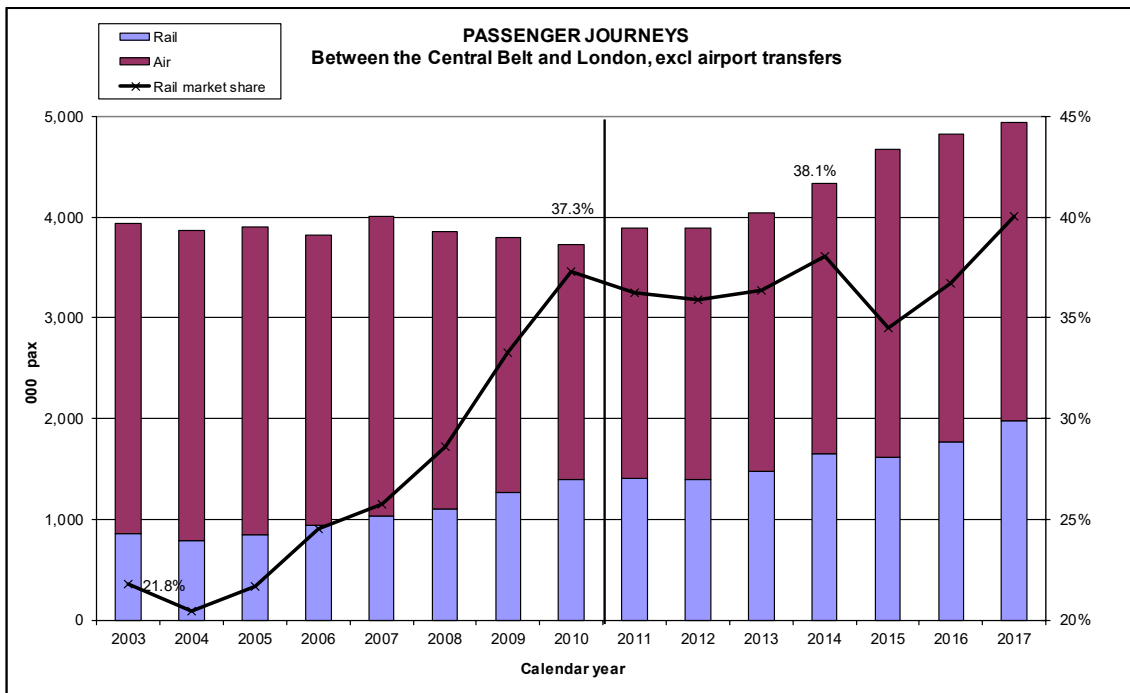
The decline in domestic demand through Heathrow does not appear to have created particular issues for the Scottish market in terms of its access to London proper; total travel demand has increased quite steadily since the end of the recession in 2010:

Chart 2a The market between Scotland and London



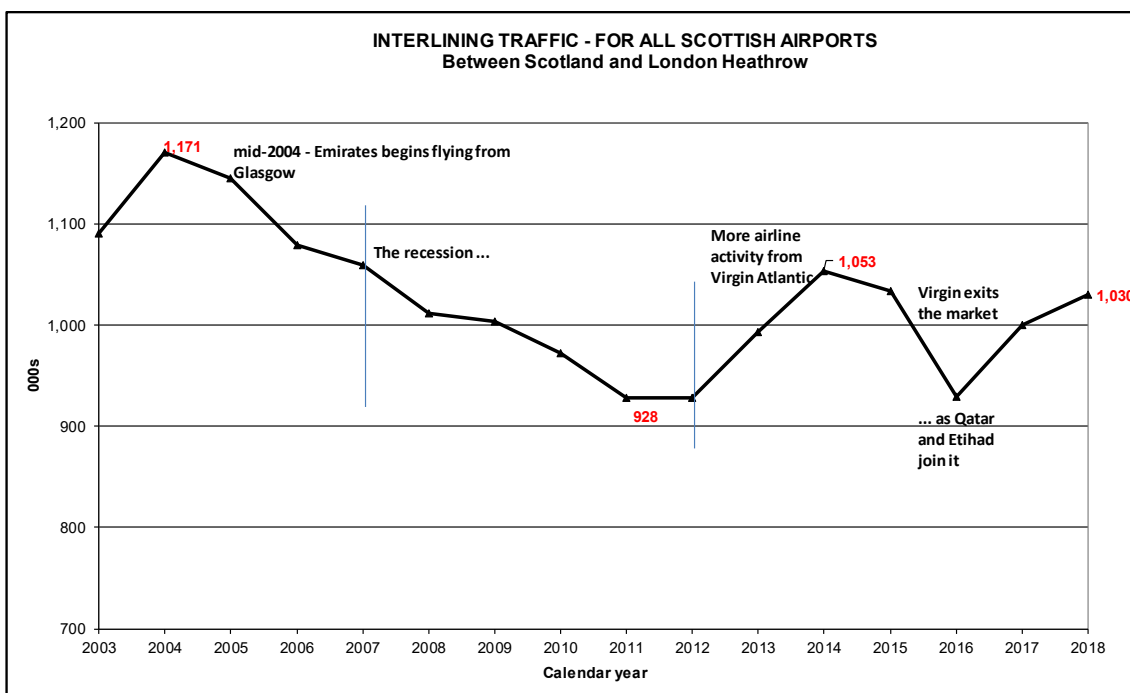
If we look only at the Central Belt – so the effects of additional and faster rail services can be highlighted, and the effects of Aberdeen’s recession netted out – the trends are as follows:

Chart 2b The market between the Central Belt and London



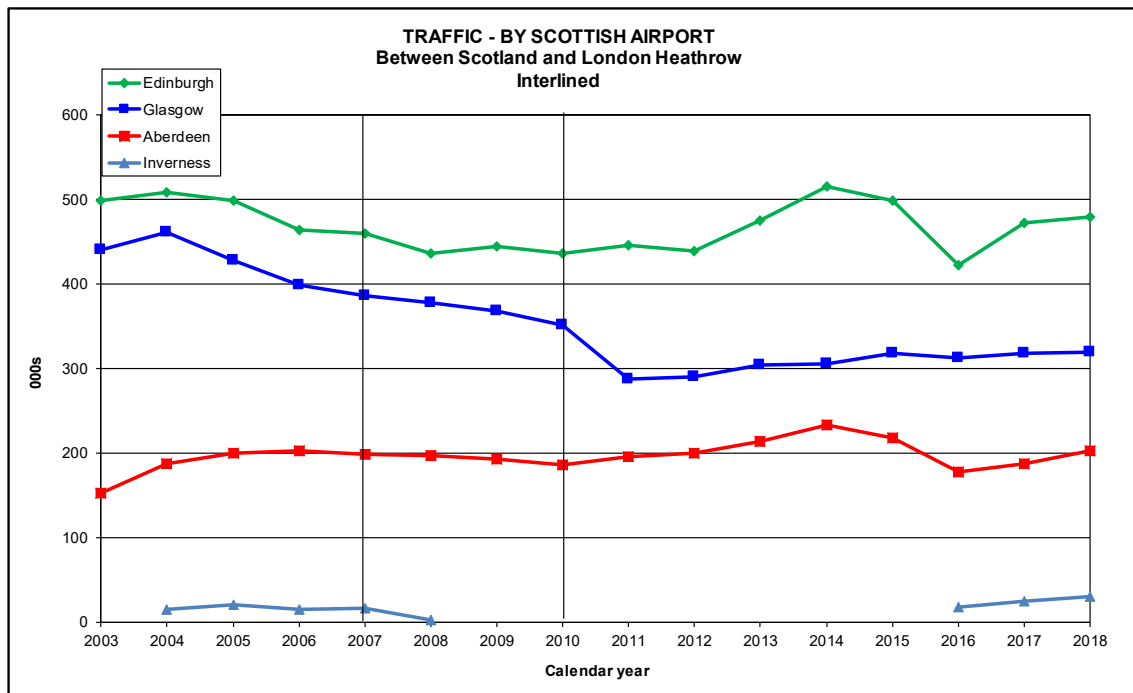
So, it can be fairly argued that access through Heathrow to the London area is not the major policy concern, although its specific importance is picked up at the end of this paper. Instead, we will look at the situation for the Scottish traffic which is specifically interlining, because this is where the key issues lie:

Chart 3a The situation for interlining traffic – overall



Now, even if the total transfer volumes are almost back to 2014, it is the long-term decline in this traffic which has concentrated attentions. The situation by individual Scottish airport is as follows:

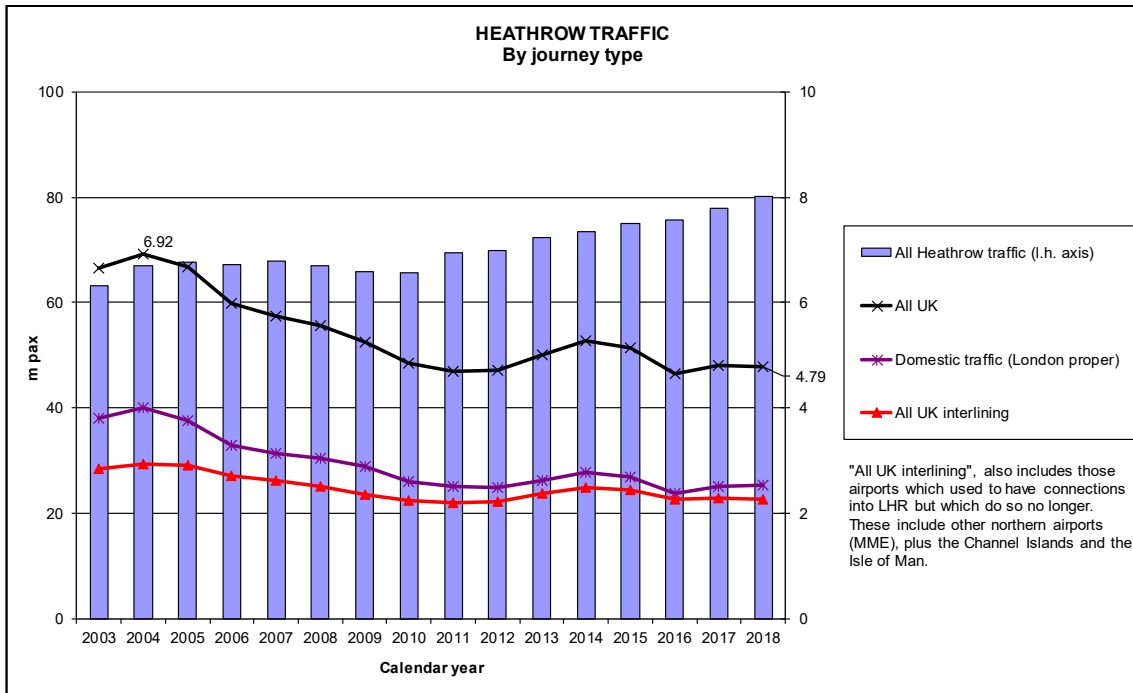
Chart 3b The situation for interlining traffic – by airport



Edinburgh and Aberdeen both grew in the period post-2012 but the market fell away after Virgin’s exit; and a further factor affecting Edinburgh’s situation was the arrival in the market of Qatar Airways in mid-2014 and Etihad in mid-2015, who themselves left in October 2018, to be replaced on the spot by Emirates. In contrast, Glasgow had to face the exit of BMI in March 2011, but did eventually see its Heathrow market stabilise. Over the long term, the decline in interlining demand can be more than explained by Emirates’ arrival in the market in mid-2004; it now handles at least 350,000 transfer passengers every year, most of whom otherwise would be going through Heathrow. With the commencement of services between Edinburgh and Dubai, this value will rise to 450,000 transfer passengers per year, with a further 100,000 transfer passengers per year travelling between Edinburgh and Doha.

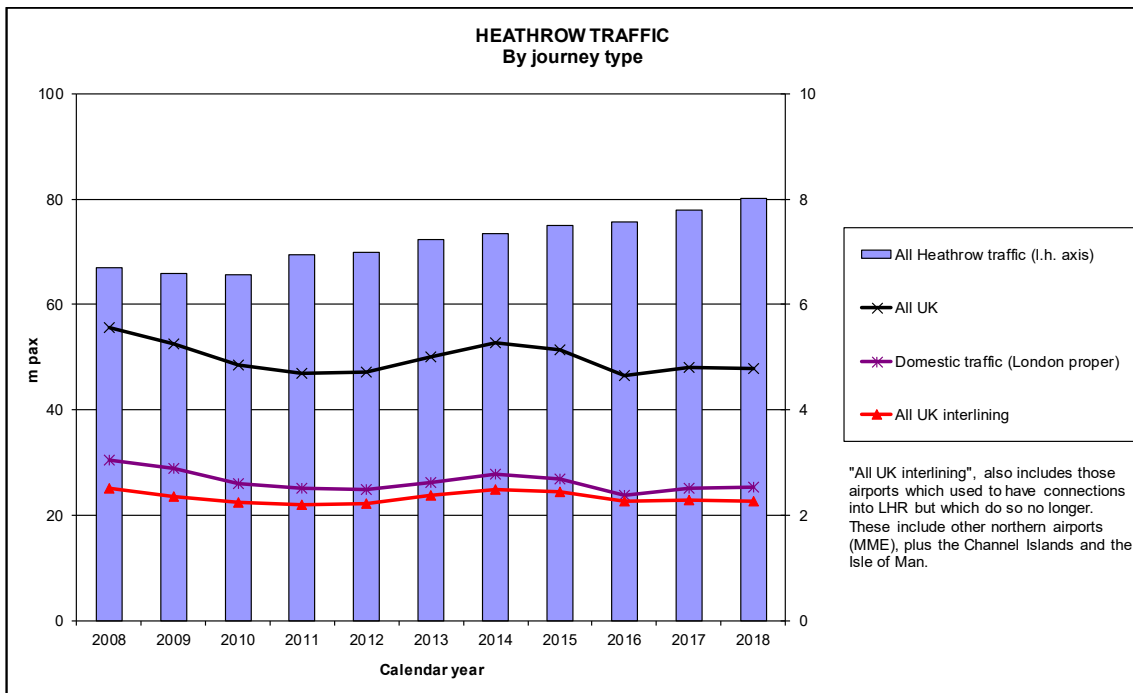
Much the same can be seen looking at the overall UK regional demand into Heathrow, which we need to do in order to put our discussions about Scotland’s Heathrow access into a wider context again. While the traffic has declined since 2004 by about 30 percent (-2.1m passengers), purely domestic traffic has fallen by about 1.46m passengers (37 percent); in absolute terms this comprises about 70 percent of the net decline. The balance of the decline, about 600,000 interlining passengers, represents a fall of nearly 23 percent in this specific market. This essentially replicates the findings for Scotland, which comprises nearly half the total UK interlining at Heathrow. Heathrow’s total international volumes have grown steadily since 2010, by nearly 25 percent (+14.4m passengers) ⁸.

Chart 4a Heathrow's market since 2003



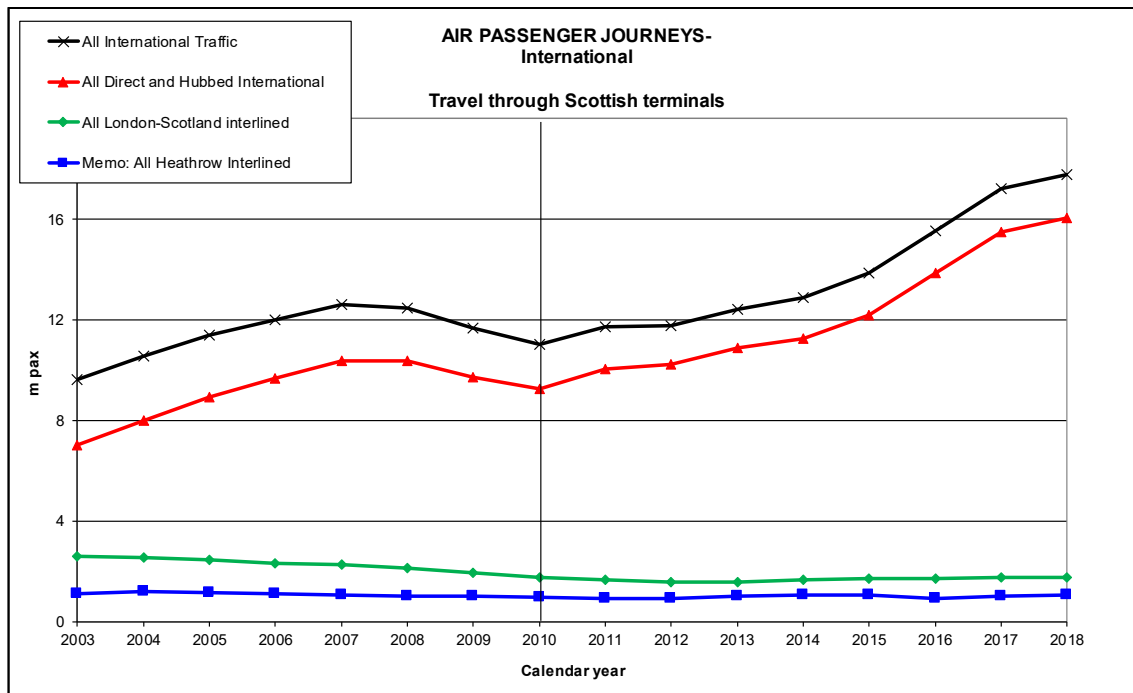
In the last ten years the situation has trended as follows:

Chart 4b Heathrow's market since 2008



Now, we also need to look at the Scottish foreign travel task as a whole. As shown in Charts 5a and 5b following, since 2003, foreign traffic has grown quite steadily. The total traffic (black) is made up of the direct market between Scotland and the rest of the world (red), and then the additional traffic which transfers through a London airport (green), or specifically Heathrow (blue). What this means for Heathrow's share of that international market, as distinct from the volumes it serves, is discussed at the start of section 4 (following).

Chart 5a The changing patterns within the Scottish foreign travel market – first view



Note also that the bulk of the Scottish international travel task is Scots travelling abroad and returning (“outbound traffic”). These data are from the CAA’s *Passenger Survey*, undertaken in October 2013, which are the most recent data available in the public domain. This is shown in Table 2 following.

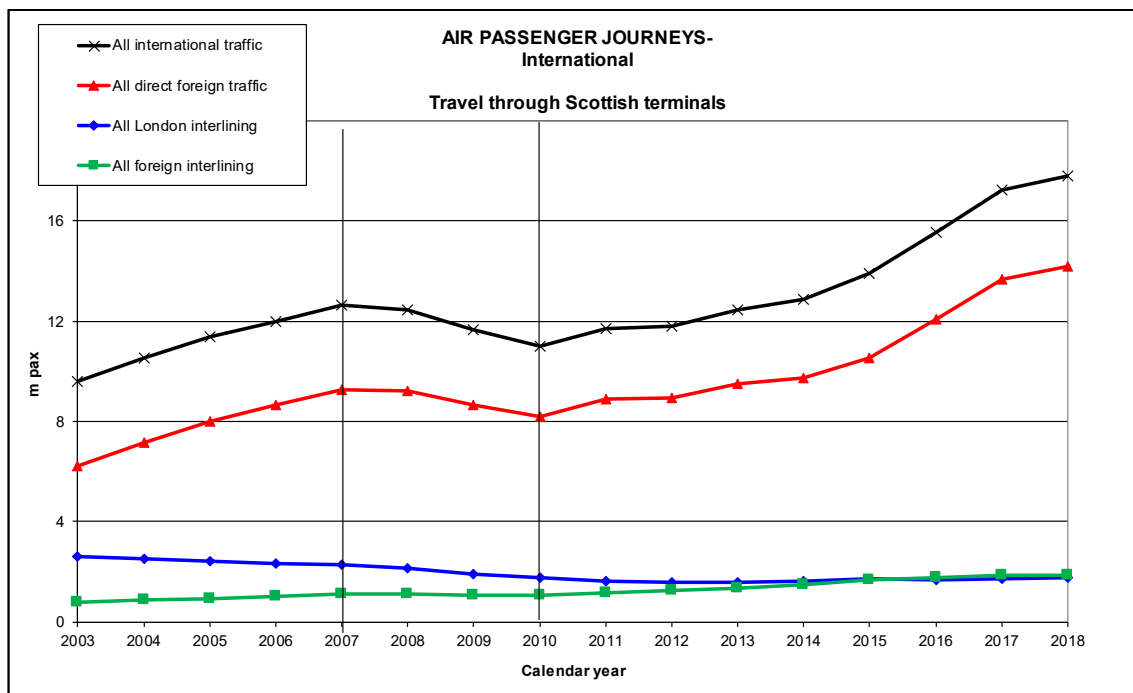
Table 2 The origins of Scottish international traffic, 2013 (m pax)

Residence: -->	Int'l business		Int'l leisure		Total international	Outbound	Inbound	
	UK	Foreign	UK	Foreign				
Airport								
Edinburgh	0.43	0.35	2.57	1.73	5.08	3.00	2.08	41%
Glasgow	0.18	0.15	2.79	0.52	3.64	2.97	0.67	18%
Aberdeen	0.32	0.21	0.27	0.14	0.95	0.60	0.35	37%
Inverness	0.01	0.00	0.01	0.02	0.04	0.02	0.02	57%
Prestwick	0.03	0.04	0.61	0.39	1.08	0.65	0.43	40%
	0.97	0.75	6.25	2.79	10.77	7.23	3.55	33%
		44%		31%			33%	
		1.73		9.04				

That is, 7.2m of our 10.8m direct international journeys in 2013 were UK residents travelling for either business or pleasure. The balance, 33 percent of the total (3.55m) were inbound. The proportion in 2009 of inbound traffic was very similar (34 percent). Note also that a much higher proportion of Edinburgh’s international traffic was inbound (41 percent), than in Glasgow’s case (18 percent).

Now, what we can also do with these data is to net out the share of traffic which transfers through *foreign* hubs, with the share of the market which transfers through London as a whole:

Chart 5b The changing patterns within the Scottish foreign travel market – second view



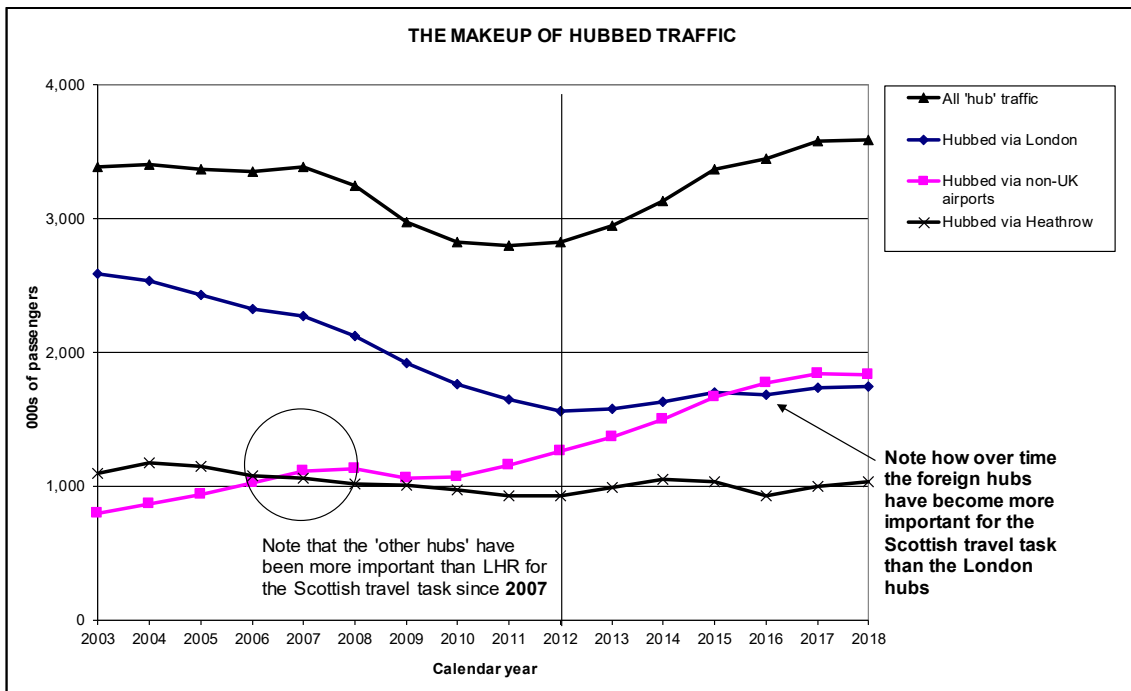
At this stage in the discussion, the important consideration is the foreign travel market as a whole (both direct and through hubs). In 2010, as the recession came to an end, the market was sitting at 11.7m passengers per year. In the 2016 year, it reached well 15.5m passengers in total – forty percent growth in six years. In 2018, it reached 17.8m passengers through all airports, meaning that the market has grown by half since the end of the recession.

So, the bulk of the growth has been in the direct market, which over this time has grown by nearly fifty percent, as new services have been added. This should not be surprising; all the evidence from the aviation industry, and indeed in other transport modes, is that if travellers can access a direct service, they will prefer to do so – even if a significant surface connecting journey is required (for example and until very recently, from Edinburgh across to Glasgow to catch a flight to Dubai; from the Central Belt down to Manchester International by train, to catch a flight to the West Coast of the United States) ⁹.

2. The interlining market, through Heathrow and elsewhere

We now look further at that part of the market which interlines in the journey. The basic trend here is that of the number of foreign journeys which require a transfer within the journey has increased slightly, over time, fewer are going through any of the London airports and more are going through the external hubs. The Scottish travel market in 2018 which ‘hubbed’ somewhere within in the journey was about 3.6m journeys.

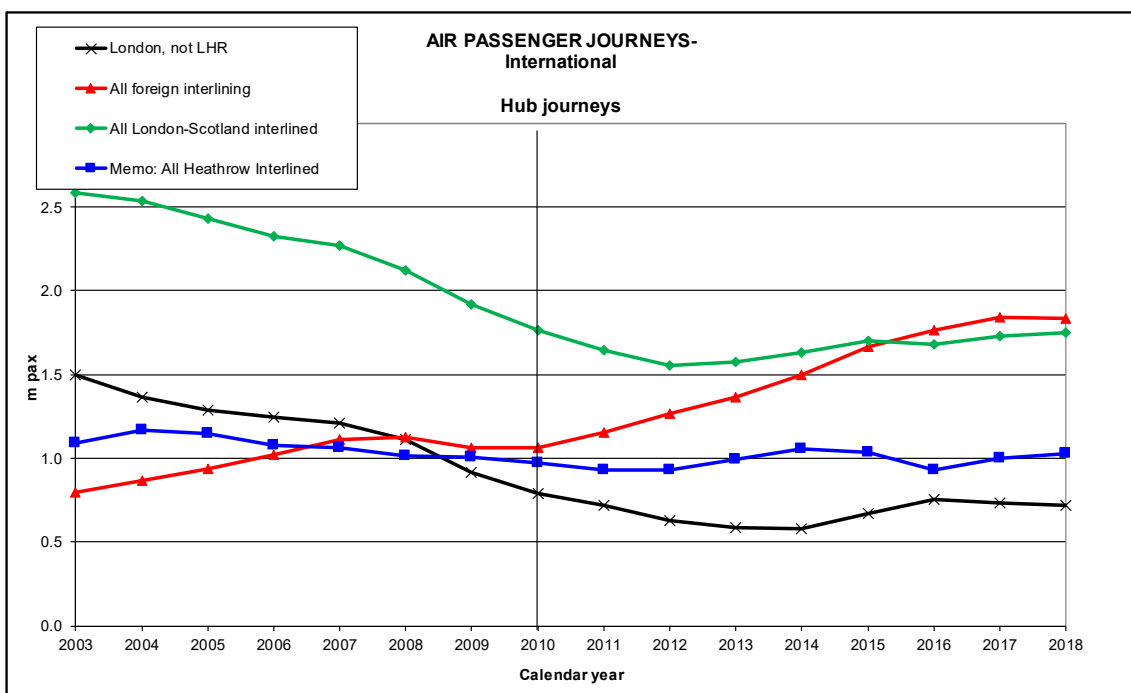
Chart 6a The use in Scotland of the major hubs



So, since 2004, the market requiring a transfer in the journey has ebbed and flowed, declining during the recession and then starting to grow again after 2012. Now, the trends of interest are as follows:

- The big decline in transit patterns as a whole has been in the non-Heathrow London hubs – over time, Heathrow demand itself has fallen only slightly.
- The ‘other’ (external) hubs have seen the real growth. By 2007 they were more important as a whole to the Scottish travel task than Heathrow, and by 2015 they were more important than the London hubs as a whole. Chart 6b following shows the detail of the hubbing traffics.

Chart 6b The use in Scotland of the major hubs – detail



This chart breaks out the situation for the other London hub airports (Gatwick, Stansted, Luton, but not London City). This market has fallen by about half since 2004, basically as the low-cost carriers and other airlines have added more direct services from Scotland (the growth in the last couple of years has arisen from the expansion of Ryanair services through Stansted).

So, to set the discussion on Heathrow in context, we need to look at the foreign hubs themselves, and the share of the Scottish traffic they have captured from Heathrow ¹⁰. The following table is based on data from Suau-Sanchez *et al* ¹¹, which identifies the origin or final destination of the traffic. This paper analysed trends for May 2013 for the UK as a whole; hence the reporting of the Scottish data for that full year using his approach, as a way of grounding the analysis.

Table 3a The use in Scotland in 2013 of the major hubs, by market

	Heathrow	Amsterdam	Dubai	Frankfurt	Paris CDG	Gatwick	Newark	Dublin	ALL
EEA	299,462	292,734		132,082	50,994	85,388		48,120	908,781
Rest of Europe (non-EEA)	38,820	12,555		15,208	4,786	2,984		486	74,838
Africa	47,176	35,709	17,606	11,737	34,957	6,576			153,762
Middle East	68,782	36,151	25,110	11,671	5,559	5,990			153,264
Latin America and Caribbean	15,345	12,069		3,758	10,698	15,915	2,586		60,370
North America	309,152	75,960		0	15,152	21,960	113,117	24,348	559,690
Asia-Pacific	138,388	83,903	182,416	13,726	21,826	1,758			442,017
BRIC	75,590	37,752	36,704	14,304	14,992	1,026			180,368
	992,715	586,833	261,837	202,486	158,964	141,597	115,703	72,954	2,533,090
	39%	62%	73%	81%	87%	93%	97%	100%	
		AMS/DXB: 848,670						External: 1,398,778	

That is, looking *across* Table 3a, one can see that Amsterdam handles almost as much traffic to the remainder of the European Economic Area as Heathrow does, with Frankfurt handling much of the rest. The next largest market is North America, and here, Heathrow handles much more traffic (309,000 journeys) than Amsterdam (76,000 journeys) or even Newark (113,000 journeys). For the Asia-Pacific region, however, Dubai is the single largest transit hub. Looking *down* the tables, one can see the traffic makeup of each hub airport. Heathrow's traffic is dominated by the EEA and North America. Amsterdam's traffic is dominated by the EEA and then the Asia-Pacific region. For Frankfurt, it is mostly the EEA. Dubai is dominated, as one would expect, by traffic to the Asia-Pacific region, and then India and China. These data can also be combined with the data from a comparison of the Scottish traffic, both direct and to foreign hubs, with the share of Scottish traffic going through Heathrow and the other London airports (of the other London airports, the Suau-Sanchez analysis included only the traffic directly (same-booking) interlining through Gatwick; Luton and Stansted were not included in the research). When combined with the equivalent data for Heathrow, we can derive an airport market share in terms of geographical market catchment. Some totals might not add due to rounding.

Table 3b The use in Scotland in 2013 of the major external hubs – summary

SCOTTISH FOREIGN HUBBING, 2013

By hub airport	By final destination (external hubs)		For comparison: LHR	Total	LHR share
Amsterdam	587,000	42% EEA	299,000	823,000	36%
Dubai	262,000	19% Rest of Europe (non-EEA)	39,000	72,000	54%
subtotal	849,000	61% Africa	47,000	147,000	32%
		Middle East	69,000	147,000	47%
Frankfurt	202,000	14% Latin America and Caribbean	15,000	44,000	34%
Paris CDG	159,000	11% North America	309,000	538,000	57%
Newark	116,000	8% Asia-Pacific	138,000	440,000	31%
Dublin	73,000	5% BRIC	76,000	180,000	42%
Doha/Abu Dhabi	0	0%			
total	1,399,000		992,000	2,391,000	41%
			Other LON	586,000	
				2,977,000	33%

Dubai and Amsterdam summed together were not far behind Heathrow in terms of volumes handled, with 849,000 Scottish hubbing passengers.

That Dubai and the other Gulf airports are so dominant in terms of travel to the Asia-Pacific region or the Middle East, is a pattern not restricted to Scotland or the wider United Kingdom. The Gulf carriers have become dominant in terms of the weight of traffic they handle between the Gulf and Europe as a whole – the three airlines handling much more traffic than the legacy carriers do. This has become a source of considerable tension between the European airlines, and the respective Gulf governments and their airlines¹². Why this is interesting in our context, is that it confirms that the shift of market share away from Heathrow, which is congested, has also happened for airports and airlines which do not have Heathrow's congestion issues. Ergo, the underlying reason(s) for the shift in traffic at Heathrow are not necessarily about its congestion.

What this shows of the Scottish foreign travel task in 2013 is as follows:

- More than 75 percent of the foreign travel task was direct.
- Of the share of it which hubbed through Heathrow, the traffic was dominated by Europe and North America
- Of the total traffic between Scotland and North America which interlines, about twenty percent hubbed at Newark.

Now, the data can be scaled up, with some other corrections, to provide an indicative view of how the market behaved in 2018; in five years, quite a lot has changed. This is done as follows:

- The Heathrow demand is rescaled up, and also corrected for the effects of the new Gulf services on specific parts of its traffic.
- We allow that 80 percent of the volume into the Gulf from Edinburgh will transit in the Gulf to fly further afield.
- We assume that half of this transit market has been abstracted off Heathrow, with the remainder abstracted off other interlining services, including that of Emirates' Glasgow-Dubai operation.

Thus, this provides a distribution and derivation (see below) of the 1,030,000 Heathrow interlining passengers; the effects of the new Gulf services is clear. To that, we distribute the modelled interlining flow through the other London airports of 717,500 journeys per year, following the percentages reported in the Suau-Sanchez study for Gatwick. This assumes that the market base of Stansted and Luton is similar to Gatwick.

Table 4a London interlining flows in 2018

Heathrow, 2018, by market	Numbers	Less Gulf, new	Modelled LHR, 2018	Other London, 2018
EEA	344,130	0	344,130	432,690
Rest of Europe (non-EEA)	44,610	0	44,610	15,121
Africa	54,213	7,417	46,796	33,323
Middle East	79,042	10,579	68,463	30,354
Latin America and Caribbean	17,633	0	17,633	80,646
North America	355,265	0	355,265	111,281
Asia-Pacific	159,030	76,852	82,178	8,910
BRIC	86,866	15,464	71,402	5,197
	1,140,790	110,312	1,030,478	717,523
<i>Scalar on 2013 result - LHR</i>	<i>1.149</i>	110,312	1,030,478	717,523
			Modelled	Modelled
	50% of the new Gulf traffic abstracted from LHR		33%	60%
			4%	2%
			5%	5%
			7%	4%
			2%	11%
			34%	16%
			8%	1%
			7%	1%
			100%	100%
			Makeup of LHR traffic	Makeup of other London traffic

Table 4b All interlining flows in 2018

Heathrow, 2018, by market	Numbers	Less Gulf, new	Modelled LHR, 2018	Other London, 2018	External hubs	ALL
EEA	344,130	0	344,130	432,690	646,461	1,423,281
Rest of Europe (non-EEA)	44,610	0	44,610	15,121	40,712	100,443
Africa	54,213	7,417	46,796	33,323	130,788	210,906
Middle East	79,042	10,579	68,463	30,354	106,808	205,625
Latin America and Caribbean	17,633	0	17,633	80,646	35,777	134,057
North America	355,265	0	355,265	111,281	282,518	749,064
Asia-Pacific	159,030	76,852	82,178	8,910	449,431	540,519
BRIC	86,866	15,464	71,402	5,197	143,769	220,368
	1,140,790	110,312	1,030,478	717,523	1,836,264	3,584,265
<i>Scalar on 2013 result - LHR</i>	<i>1.149</i>	110,312	1,030,478	717,523	1,836,264	3,584,264
<i>Scalar on 2013 result - external</i>	<i>1.234</i>		Modelled	Modelled	Modelled	Modelled
	50% of the new Gulf traffic abstracted from LHR		33%	60%	35%	40%
			4%	2%	2%	3%
			5%	5%	7%	6%
			7%	4%	6%	6%
			2%	11%	2%	4%
			34%	16%	15%	21%
			8%	1%	24%	15%
			7%	1%	8%	6%
			100%	100%	100%	100%
			Makeup of LHR traffic	Makeup of other London traffic	Makeup of extl hub traffic	

Seen in this light, we can begin to see where Heathrow's market strengths lie. So, while it has quite a large market to the remainder of the EEA, the other London airports handle quite a bit more traffic, and the external hubs handle much more again. On the other hand, somewhat less than half the traffic to North America which requires to be interlined, goes through Heathrow. Finally, the external hubs are quite dominant for traffic to the Asia-Pacific region. Table 4c following provides an update of the information in Table 3b. To note, Scottish use of the other London hubs is mostly to other destinations in Europe for which Scotland does not have direct access, or convenient direct access. Some totals might not add due to rounding.

Table 4c The hub airports and the equivalent direct and foreign-hubbed Scottish traffic, 2016 – summary

SCOTTISH FOREIGN HUBBING, 2018

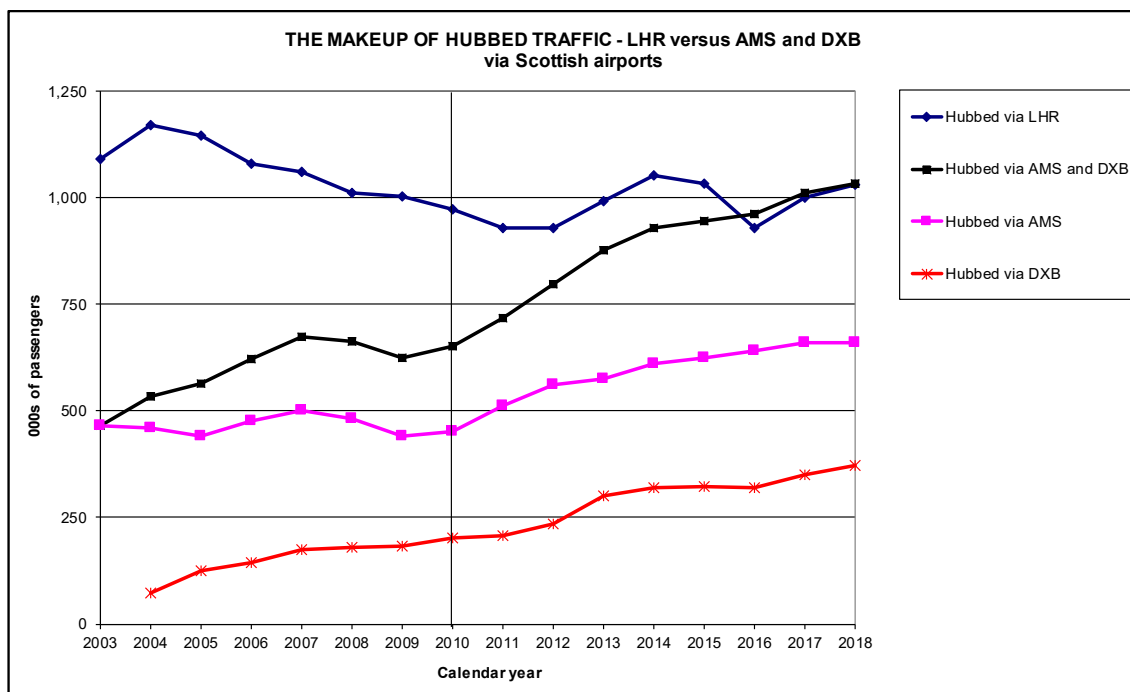
By hub airport			By final origin/destination (external hubs)		For comparison: LHR	Total	LHR share
Amsterdam	661,000	36%	EEA	646,000	344,000	990,000	35%
Dubai	372,000	20%	Rest of Europe (non-EEA)	41,000	45,000	86,000	52%
subtotal	1,033,000	56%	Africa	131,000	47,000	178,000	26%
			Middle East	107,000	68,000	175,000	39%
Frankfurt	131,000	7%	Latin America and Caribbean	36,000	18,000	54,000	33%
Paris CDG	185,000	10%	North America	283,000	355,000	638,000	56%
Newark/JFK	130,000	7%	Asia-Pacific	449,000	82,000	531,000	15%
Dublin	178,000	10%	BRIC	144,000	71,000	215,000	33%
Doha/Abu Dhabi	180,000	10%					
total	1,836,000	100%		1,836,000	1,030,000	2,867,000	36%
					Other LON	717,000	
						3,584,000	29%

The percentage shown, is Heathrow’s share of the combined Heathrow-plus-external hub market

Note, in particular, that the subtotal of interlined demand through Amsterdam and Dubai alone is now very slightly greater than that through Heathrow. This is consistent with what is known for the UK regional market as a whole ¹³.

The major change over time has been the rise of Gulf airports in the interlining process, especially Dubai, as the following chart shows:

Chart 7 The overall trends in Scottish interlining – growth in the use of Amsterdam and Dubai



In 2004, Heathrow, and even more so the London airports as a whole, were dominant in the interlining process and still important in the overall travel process. Amsterdam was well behind at about 500,000 passengers per year. Fifteen years on, the Amsterdam market has grown (but not by nearly as much as the overall direct market between Scotland and the world, refer Chart 3b above) ... and the big change has been the emergence of Dubai – the service only commenced in mid-2004. It reached its current level in 2014, and would in all likelihood have kept growing if Qatar and Etihad had not commenced services from Edinburgh. What is clear is the extent of the market which Dubai, and now Doha, have secured from Heathrow: that is, travel to the Asia-Pacific region – about seventy percent of the total traffic going through the Gulf will be flying to or coming from there.

3. Explaining the changes

So, although it is not the major part of the Scottish international aviation task, or even the bulk of the overall Heathrow task, interlining traffic is still important. A recent study by OAG, a consultancy firm ¹⁴, indicates that Heathrow's connectivity index, while it is a lot larger than its main European competitors, is static at a time when other hubs are gaining on it. The sum of that competition mounts up rapidly ¹⁵, given that much Scottish long-haul traffic will need to go through a hub anyway. When seen in this light: while Heathrow's position is still strong, the sum of options available to the Scottish market is such that LHR provides little that the other hubs don't already provide. This state of affairs – more options from elsewhere – is only likely to increase over time.

So, this is what has happened; but why? The first hypothesis we must test is that Scotland is being priced out of the Heathrow market for its international traffic.

A fares survey, comparing return domestic fares (those for journeys to and from London proper) with domestic interlined fares, was undertaken in July 2016, in this case repeating a survey first undertaken in 2013. The details for this earlier work are in Clark, 2014. A domestic interlined fare was defined as the marginal cost of flying through Heathrow to a foreign destination, over what was paid to fly from Heathrow to that destination (same day, generally the same flight). The destinations surveyed included:

Europe

Paris CDG, Madrid, Budapest

United States of America

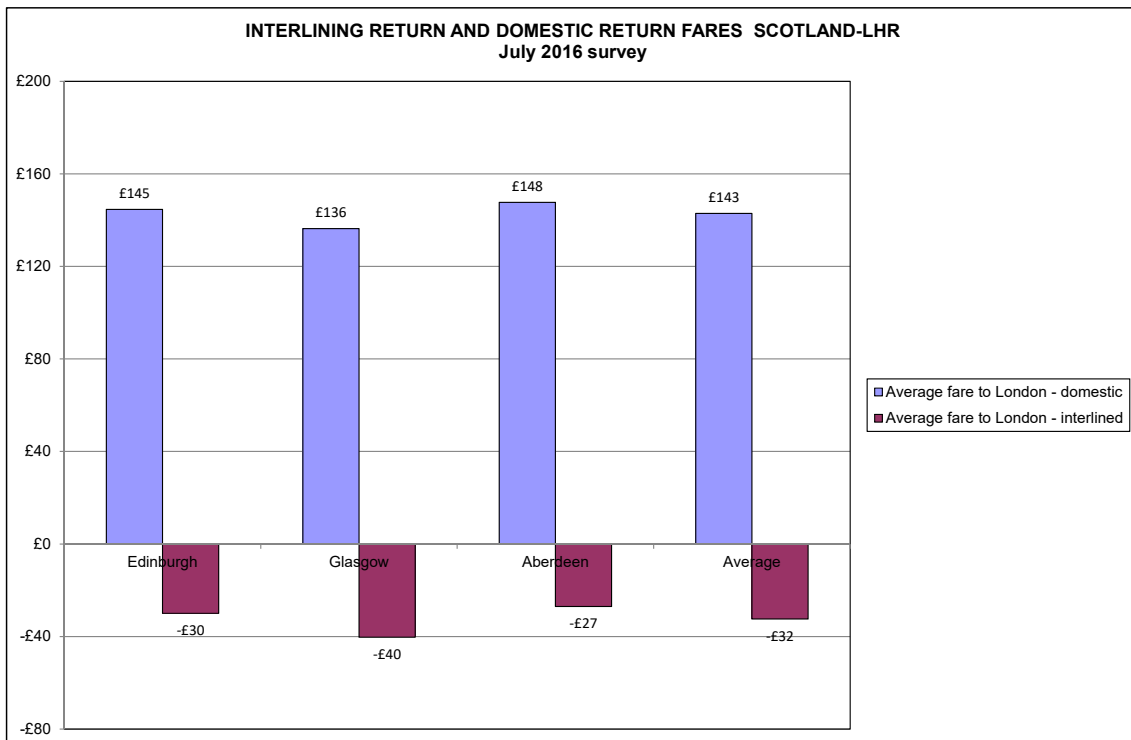
New York JFK, Atlanta, Los Angeles

Africa & Asia

Johannesburg, Beijing, Singapore, Tokyo NRT

The results of the survey, averaging across three different booking horizons, are shown in Chart 8a following.

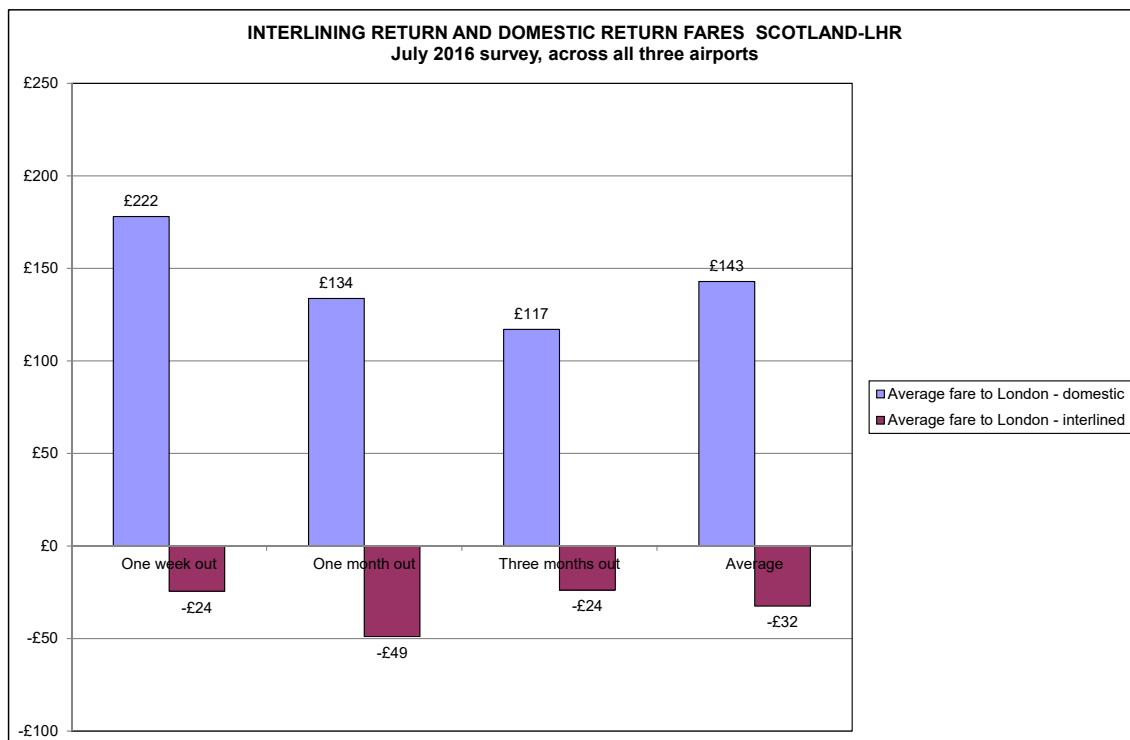
Chart 8a Return airfares to (and through) Heathrow, surveyed July 2016



What this chart shows is, across three 'booking horizons' the average airfare between each of the Scottish airports and Heathrow itself. Its findings basically compare the average 'return fare' for a domestic return journey with the marginal cost of flying from each Scottish airport via Heathrow to further afield. In this sampling, the average marginal cost across the ten airports surveyed was actually negative – that is, it was cheaper to fly from Scottish airports to the final destination than it was to fly from Heathrow to the same final destination, even if a connecting flight through Heathrow was involved.

Another way of reporting the data, is to look at it across all three airports, and report the marginal cost by booking horizon.

Chart 8b Return airfares to (and through) Heathrow, surveyed July 2016 – by booking profile

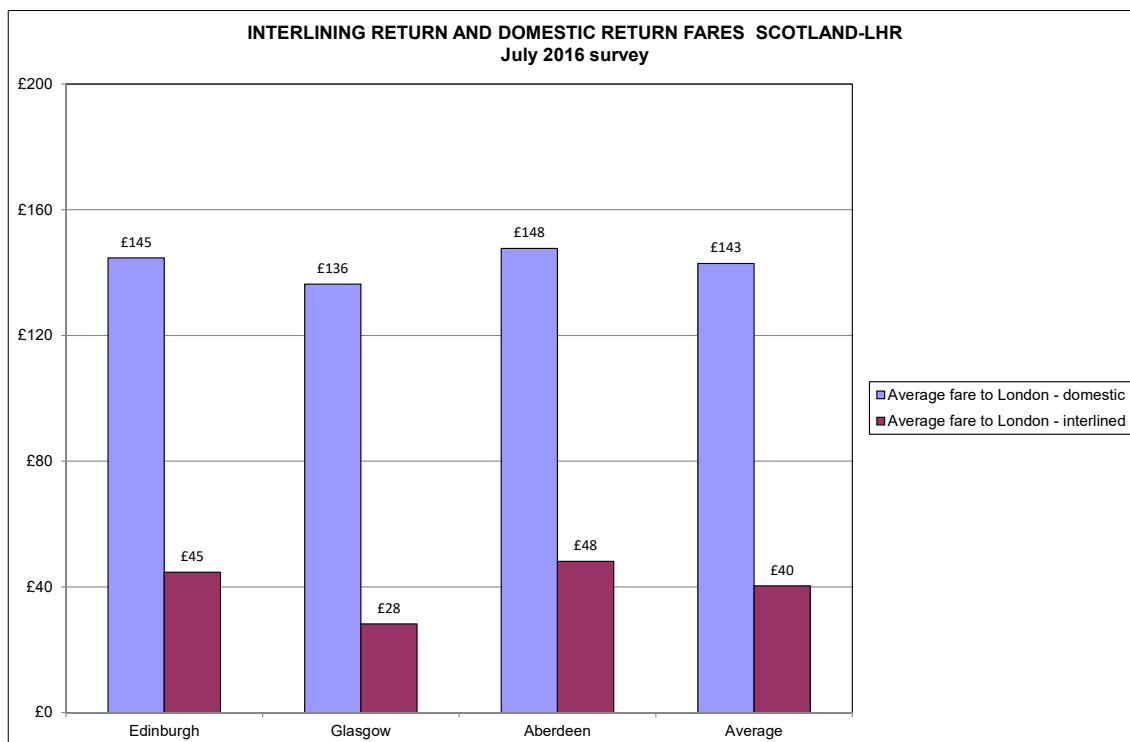


As a 'negative' fare for an interlined journey – that is, the direct trip from Scotland costs less than the same direct trip from Heathrow – they need to be explained.

- The three European destinations in the sample were priced quite consistently – that is, the marginal cost of flying from a Scottish airport via Heathrow, compared with Heathrow itself, was about half a standard return fare.
- The three American destinations in the sample, on the other hand, reflected a variety of pricing practices by BA. For short-horizon bookings, BA charged quite a high price for direct services, but provided some significant discounts if passengers were prepared to go via an intermediate airport, such as Dublin. For journeys to New York JFK, the Scottish fares were consistently cheaper than the Heathrow fare, partly reflecting competitive pressures from United (which flies from both Central Belt airports to Newark, twenty miles west of New York). Fares from Edinburgh were priced on the basis of the market using the direct American Airlines flight, on which BA code-shares. This fare was a lot cheaper than what BA was offering via LHR, and the direct journey is a major part of its appeal as well.
- In one case (Beijing), the fare charged in the Scottish market was less than for a direct fare from Heathrow, perhaps reflecting the competition provided from the Gulf carriers. In another (Tokyo NRT), while the marginal cost of flying from Scotland compared with flying from Heathrow was positive, BA offered a heavily discounted option from Heathrow, flying with Finnair via Helsinki. This involves a trade-off for passengers of a longer journey for a cheaper fare, but it is quite an appropriate way of segmenting the market, given travellers' preferences to fly direct where possible.
- For Johannesburg and Singapore, the marginal cost of flying from Scotland compared with flying from Heathrow was positive, but not strongly so.

The examples here reflect the suppliers' response under conditions of a short booking horizon and constrained supply; pricing is therefore used to make better use of the space available, including on BA's codeshare partners. With the American 'outliers' excluded, to allow for a better like-with-like comparison, the fares profile was as follows:

Chart 8c Return airfares to (and through) Heathrow, surveyed July 2016 – by Scottish airport – outliers excluded



The ratio of interlined return fares to ‘domestic’ return fares, is more or less consistent with the results of the July 2013 survey (reported in Clark, 2014).

This begs the immediate question: why would BA discount the interlining traffic so significantly, when it charges much higher fares to London-origin/destination traffic, not least because the market can bear those fare levels? There are two main reasons:

First, the business model of the ‘legacy’ carriers, like BA, requires significant discounting for connecting fares in order to maximise operating revenues

It would be helpful at this point to provide a summary of the business model generally used by the big legacy carriers like BA, as well as KLM/Air France and Lufthansa. Think of it as a three-legged stool. The first leg of the stool is a short-haul market generally handling point-to-point traffic but with a significant number of passengers, generally at least 30 percent, transferring onto or from longer-haul international services. The second leg of the stool is the medium- and longer-haul international market. The third leg of the stool is, or was, a regulatory environment which restricted competition in the international sector and previously the domestic sector as well.

Now, the traditional business model for the legacy carriers relies significantly on the transfers traffic, both in the short-range (from the hub’s domestic catchment) and over the longer-range services (that is, connecting two large airports with transfer traffic at either end). Essentially, both the short-haul and the long-haul parts of the business have to rely on each other. Generally, this means that the longer-range service is only viable with the connecting domestic regional traffic; but in order to secure this traffic it has to be priced at a discount if it is to be secured at all. This is still a logical strategy, because the marginal cost of carrying the *n*th passenger will generally be a lot less than the average cost of carrying the said *n*th passenger, at least until the aircraft is full; because the airline’s priority is to secure the overall revenues achieved from carrying the passenger over the long-distance sector ¹⁶.

Because airline seats cannot be 'stored' for sale, this provides a very strong incentive to price in such a way that the seats are sold, although there is a careful balancing act required in order to ensure that yields are not 'cannibalised' (that is, fares are set lower than what the customer would already be prepared to pay). So, it is hardly a surprise that as shown above, the marginal cost of flying Edinburgh-Heathrow as *part of a wider journey* should be less and often much less, than flying return on its own discrete booking. Separate exercises in 2014 and 2015 showed that KLM's pricing practice for journeys from Edinburgh to and through Amsterdam was very similar to that identified for BA; that is, a return flight to Amsterdam, when it was part of a wider booking, was priced at between 40-45 percent of a normal return flight¹⁷. As Nigel Dennis (2012) commented¹⁸:

"[Some] airlines place more of a presumption in favour of transfer passengers and will offer the best connection at the best price, as they know that otherwise they are going to lose the business altogether. This is particularly true of ... the airlines with a heavy dependence on transfers, such as KLM or Lufthansa. Whereas 47% of BA passengers at Heathrow make a transfer connection, for KLM at Schiphol it is almost 70 percent (CAA and KLM data). Here the airline is prioritising transfer passengers, especially long-haul ones, possibly at the expense of a higher-yielding short-haul business passenger. The critical issue is to maximise revenues to the network".

That prioritisation is done via the pricing structure. It is reinforced by the known pattern of customer preferences for direct airline and other travel services, which also results in significant discounting for connecting fares. The UK Civil Aviation Authority commented in 2009:

Increased airline yields could arise directly, where connecting fares are higher than point to point fares on the same route, although this is rare. Passengers who have the alternative of a direct or a connecting route between two points, can be expected to prefer the direct one, other factors being equal. Typically, therefore, the fare for a connecting journey from a network airline will be lower than the sum of the point-to-point fares for the two individual legs of that journey. This effect can be observed through the fares quoted on airline websites, and indicates that most network airlines would benefit from selling two direct tickets rather than one connecting ticket at the same class and conditions. Airline yield benefits from connectors are therefore more likely to arise indirectly, where average passenger yield rises through the greater range and frequency of services offered.

(Civil Aviation Authority, 2009; para 7.14).

Second, the competitive environment facing these carriers

The Johnson *et. al.*, analysis (2013) noted above¹⁹ provides further support for this view, because it also showed how traveller preference translates into a higher willingness-to-pay for direct flights; and it is surely noteworthy that most of the growth in the Scottish travel task over the last few years has been in terms of direct services. This provides further insight as to why BA and the other airlines need to provide a significant discount on their interlining services from LHR to the UK regions. As Dennis comments further, "Many of the connecting airports will be strongly contested whereas at dominated hub airports ... a premium can be extracted from passengers for the convenience benefits of a direct flight. This leads to the anomaly that a through fare across a hub may be less than the fare for the journey starting from the hub to the same destinations"²⁰. Which, of course, is the pattern which were often illustrated in the above data, driven by the variety of competitive options now available from the 'peripheral' airports.

As a result, the hub & spoke operating and pricing model employed by the legacy airlines has been under pressure for quite some time. This model was developed at a time when direct services between any two 'secondary' airports were only rarely viable, and viability for services between a secondary airport and a hub, when based only on direct traffic, was uncommon. The load factors required under this business model were around 70 percent (to cover operating costs) and 75 percent (to make a profit), although fares were significantly higher than today's. Generally, about thirty percent of any given flight was made up of transfer passengers, either on short- or long-haul operations.

However, over shorter ranges, the low-cost-carriers have eaten into a lot of the market once held by the legacy carriers, as has high-speed rail, and in many cases, such as BA's European services, the services are really only kept to feed into the airlines' wider networks²¹. And now, the same sort of

pressure is evident in the longer-range markets. What the low-cost/short-haul carriers discovered with the Boeing 737 and Airbus 319/320/321 – fill the aircraft up with point-to-point traffic and you don't need transfer traffic – is now being repeated over longer ranges by the Boeing 777 and 787^{*}, and the Airbus A350. Again, it is about filling the aircraft up by offering lower fares, but this time, and in contrast to the legacy and LCC models, *with* transfer traffic; around 75 percent of the traffic on Glasgow-Dubai services will be transferring in Dubai to fly further afield, or vice versa²². As a further example, 80 percent of the Edinburgh-Doha traffic is thought to be transferring onto, or coming from, other destinations²³. This approach provides connections for regional airports, which don't then need the big historic hubs, especially Heathrow, for access to the wider world. Effectively, the Gulf carriers have actually re-invented the hub & spoke model – and in doing so upended the longer-range 'leg' of the traditional operating model – by placing almost the whole world within one flight of their hubs, as that is the range of the B777-200LR and the planned B777-800²⁴. A similar range is reported for the B787-900²⁵.

So, carriers like BA are having to further discount their regional (short-haul) services which provide the transfer traffic, in order to secure it at all. Carriers like Emirates are now providing much additional competition, including in the UK regions and certainly for KLM's own 'backyard' at Amsterdam. This has been the case for some time, as is demonstrated by this report published in 2014 by the European Airports Council International (ACI) trade group²⁶.

Accordingly, one can conclude that the argument that Scotland is being 'squeezed out' of Heathrow is 'not proven'. The alternative hypothesis, that the market has moved out of Heathrow, is what we must consider as our main option (refer Clark, 2014, where I argued this point of view at some length). To support this argument, three additional points can be made:

- Heathrow is not that popular with the travelling public. Data from the *Airline Quality* website rates it at 4/10; better than JFK or Paris CDG (3/10) and on a par with Dubai, but behind Amsterdam (5/10) and certainly Hong Kong (6/10), Singapore (7/10), or the new Doha Hamad terminal (7/10). From the point of view of an international-to-domestic transfer passenger, the arrangements within Terminal 5 work well enough, but the sheer layout of the airport makes inter-terminal transfers an often-tedious process. So, other hub airports do have an appeal for that reason alone²⁷.
- The market's preference for direct services is quite clear and the desire for more of them is accepted.
- Finally, if Heathrow got so crowded that services from the UK regions were severely curtailed for 'commercial' reasons, it is more than likely that at that stage, many more services through other hubs would become viable, if they are not already; as well as a number of direct services between Scotland and foreign destinations which are presently not viable.

4. Arguing the case for Scottish access to Heathrow: the fundamental factors

The last fifteen years have seen significant market change; not just in response to the market pressures arising from restricted Heathrow access, but because increased market demand has intersected with a pattern of technological change which has made many potential services commercially viable, where previously they would not have been. A comparison of the airport market of 2004 with some of the key years thereafter is insightful:

^{*} In other words, the medium- to long-range twinjet sector developed in the shadow of the B747, which was the perfect aircraft for a 'hubbing' business model. However, technological change rendered the aircraft obsolete, and market change has since rendered the A380 uneconomic as well.

Table 5a The changing patterns of Scottish international air traffic

<i>All data in 000s</i>	2003	2004	2010	2013	2018	Change since 2003
Direct international	6,225	7,139	8,176	9,494	14,204	128%
Through foreign hubs	<u>795</u>	<u>870</u>	<u>1,064</u>	<u>1,365</u>	<u>1,836</u>	131%
	7,020	8,009	9,240	10,859	16,041	129%
Via Heathrow	1,090	1,171	972	993	1,030	-5%
Via Prestwick	721	591	225	0	0	-100%
Via other London airports	776	772	567	586	718	-7%
	9,607	10,543	11,003	12,438	17,789	85%
Proportions of the traffic:						
Direct international	65%	68%	74%	76%	80%	
Through foreign hubs	8%	8%	10%	11%	10%	
All international services	73%	76%	84%	87%	90%	
Via Heathrow	11%	11%	9%	8%	6%	
Via Prestwick	8%	6%	2%	0%	0%	
Via other London airports	8%	7%	5%	5%	4%	
<i>Commentary:</i>	Referent	Heathrow's high point	End of the recession	Prior to EDI-Gulf services	Last year	

These data also allow a comparison over time of market shares across the different traffic channels, and we can project a 'counterfactual' of what the traffic distribution would have looked like in 2018, if the market shares which applied in 2004, had continued through to 2018.

Table 5b The changing patterns of Scottish international air traffic – projected against actual

<i>All data in 000s</i>	2004 actual	2018 projected	2018 actual	Variance	
Direct international	7,139	11,089	12,791	1,702	303 ex PIK, other LON
Through foreign hubs	<u>870</u>	<u>1,351</u>	<u>1,836</u>	485	
All international services	8,009	12,440	14,628	2,187	
Via Heathrow	1,171	1,818	1,030	-788	788
Via Prestwick	591	918	0	-918	
Via other London airports	772	1,200	718	-482	-2,187
	10,543	16,376	16,376		
		55%	1,413	Plus new traffic	
			17,789	QED	
			7,065	actual growth in international demand	
			20%	as a result of generated traffic from new services	
			5,652	real economic growth	

To explain the analysis. First, we must allow for and net out 'generated' traffic, as a result of more direct services – I have assumed that relative to 2004, 20 percent of the growth in the current total direct international market, has been created by the new services. This means that the 'base' load of demand in 2018 was 12.8m journeys; actual demand was 14.2m direct journeys. The modelled data shows what the market would have looked like had the 2004 market shares still applied; the 'variance' shows the difference between the 2018 actual volumes and the expected volumes had market shares remained stable.

This shows:

- Actual *direct* international demand was 1.7m journeys higher than expected; and this has come from traffic which formerly went through Prestwick (918,000 journeys) or the other London hub airports (482,000 journeys). The balance is some 303,000 journeys.
- If we add to that number the growth in traffic through the foreign hubs (485,000 journeys), we come to a total of 788,000 trips, which is the loss in Heathrow's interlining traffic relative to where it would have been in 2018 [QED]. So, this means that Heathrow's loss of market share was more to foreign hubs than it was to additional direct services.
- In 2004, Dubai handled some 74,000 hubbed Scottish journeys; in 2018, Dubai, Doha and Abu Dhabi between them handled some 552,000 hubbed Scottish journeys, growth of 478,000 trips. This matches closely to the modelled decline to foreign hubs in Heathrow's Scottish hub traffic, and would seem intuitively correct.
- Identifying the changes in market share as well as volume, also helps identify how the fundamentals of the market have shifted over time. The absolute growth in some parts of the market has to be seen in the context of growth in the market as a whole.

The detail of the foreign hub traffic, and its market share, can also be looked at in more detail:

Table 5c The changing patterns of Scottish international air traffic – the main hubs

All data in 000s

	2003	2004	2010	2013	2018
European hubs	743	721	756	968	1,154
Newark & JFK	51	75	106	95	130
Gulf	0	74	201	302	552
	795	870	1,064	1,365	1,836
<i>Market shares (of total international traffic)</i>					
European hubs	7.7%	6.8%	7.0%	8.1%	7.0%
Newark & JFK	0.5%	0.7%	1.0%	0.8%	0.8%
subtotal	8.3%	7.5%	8.0%	8.9%	7.8%
The Gulf hubs	0.0%	0.7%	1.9%	2.5%	3.4%
	8.3%	8.3%	9.9%	11.4%	11.2%
Heathrow	11.3%	11.1%	9.0%	8.3%	6.3%

Over time, the market shares of our total international traffic show some changes – the American and European hubs are slightly less important, probably because of additional direct services – but the real change has been from the arrival of the Gulf services, and their specific effect on Heathrow's market share is apparent. The growth in the traffic through the other hubs does need to be seen in the context of a nearly stable market *share*, even if the volumes have grown.

Markets do adapt in mitigation of, for example, capacity restriction and they are far more resilient than we appreciate. They also have a way of changing “under their own steam” – my own judgement, which the analysis supports, is that even if Heathrow already had its third runway, at least some of its 2004 market would have moved out. If and when the new capacity is there, at least some of the demand will come from traffic which currently is flying through the rest of the London airport system ²⁸.

It must be stressed that the shift over time to direct services has not gone unnoticed. As Humza Yousaf MSP, formerly the Scottish Minister for Transport and the Islands, pointed out in 2018: “While growing direct international air routes to Scotland remains our priority, Heathrow's plan addresses how all Scottish airports benefit from the new runway capacity by providing a significant boost to the country's connectivity” ²⁹. This leads to a discussion of what might be regarded as the key questions:

First, what does access to Heathrow provide Scotland in the way of international connectivity, which cannot be provided, or provided easily, any other way?

This is the most significant question in the whole debate. It is not enough to say that access to Heathrow is “vital”; we need to be able to explain why it is vital, and – of interest, given the current changes in the market – what Heathrow provides that other hub airports, especially Amsterdam and Dubai, cannot provide.






We have at least some answer to that question, thanks to the work of Suau-Sanchez *et al.* noted above ³⁰. In this paper it shows the key markets for the Scottish transfers traffic, and it also shows how the traffic is distributed for these hubs. What it shows is that for some travel markets Heathrow is still dominant; but that it has much less share in other markets. For the overall transit task, the situation is as follows: Heathrow is really only the dominant hub for travel to North America, and is well in front of Newark; cf. the view of the Airports Commission that Heathrow, as a hub, was dominant in terms of flights to North America, and in certain developing markets ³¹.

Having shown that much of the market has alternatives to Heathrow, what is the part of the market that then *wants* or indeed *needs* to fly through Heathrow?

It would appear that the business travel market has much more enthusiasm for Heathrow than the outbound leisure & VFR markets do, which explains both why and where the ‘direct’ travel markets have grown, and where the concern for our Heathrow access is coming from as well. It is understood that the business market needs the frequencies which Heathrow provides, especially for travel across the North Atlantic ³².

That said, the answer to a lot of our questions about the Heathrow market, and why we still need access, preferably guaranteed, is found by looking at our *inbound* travel task (that is, foreign visitors to Scotland).

Table 6 The sources of the inbound Scottish tourist market (2015)

	Pax 000s		Spend £m		Spend/pax
Europe, main countries	1,079	42% 	592	35%	£549
North America	507	20% 	457	27%	£901 *
Australia	142	5%	126	7%	£887
Rest of the world	750	29% 	456	27%	£608
BRIC	114	4% 	64	4%	£561
	2,592		1,695		£654
All medium/long-haul	1,513 	58%	1,103	65%	£729

* £956/pax for USA; £673/pax for Canada

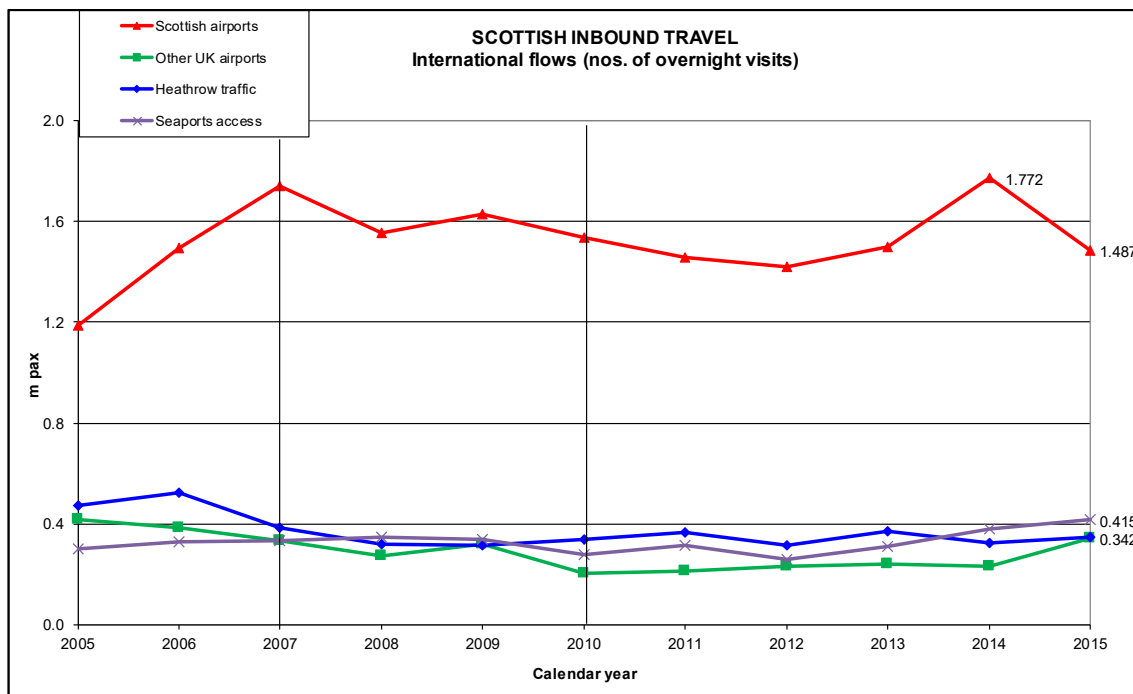
Now, we also have some data as to the points of entry to the UK for Scottish inbound travel. A paper presented at STAR in 2006 ³³ noted that of the 1.88m overseas visitors to Scotland in 2004, some 515,000 arrived via Heathrow (27 percent), compared with some 652,000 who arrived through either Glasgow or Edinburgh (35 percent). In 2015, the inbound international travel task had grown to 2.6m trips per year ³⁴, excluding traffic entering via UK seaports or the Channel Tunnel. Using these data, we can track the share of Scottish international tourism and other inbound traffic, which enters the UK at Heathrow ³⁵:

Table 7 The sources of the inbound Scottish tourist market: ports of entry

Total inbound journeys, in 000s	Calendar year:										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Other UK airports	417	385	333	274	318	205	211	233	240	230	342
Scottish airports	1,189	1,495	1,743	1,553	1,630	1,535	1,460	1,420	1,501	1,772	1,487
Heathrow traffic	471	523	384	318	314	339	365	313	369	325	348
Seaports access	302	330	331	346	337	280	314	259	311	378	415
Total tourism/inbound travel flows	2,379	2,732	2,791	2,492	2,600	2,358	2,350	2,225	2,421	2,704	2,592
Excluding seaport travel	2,077	2,402	2,460	2,145	2,262	2,079	2,035	1,966	2,110	2,327	2,177

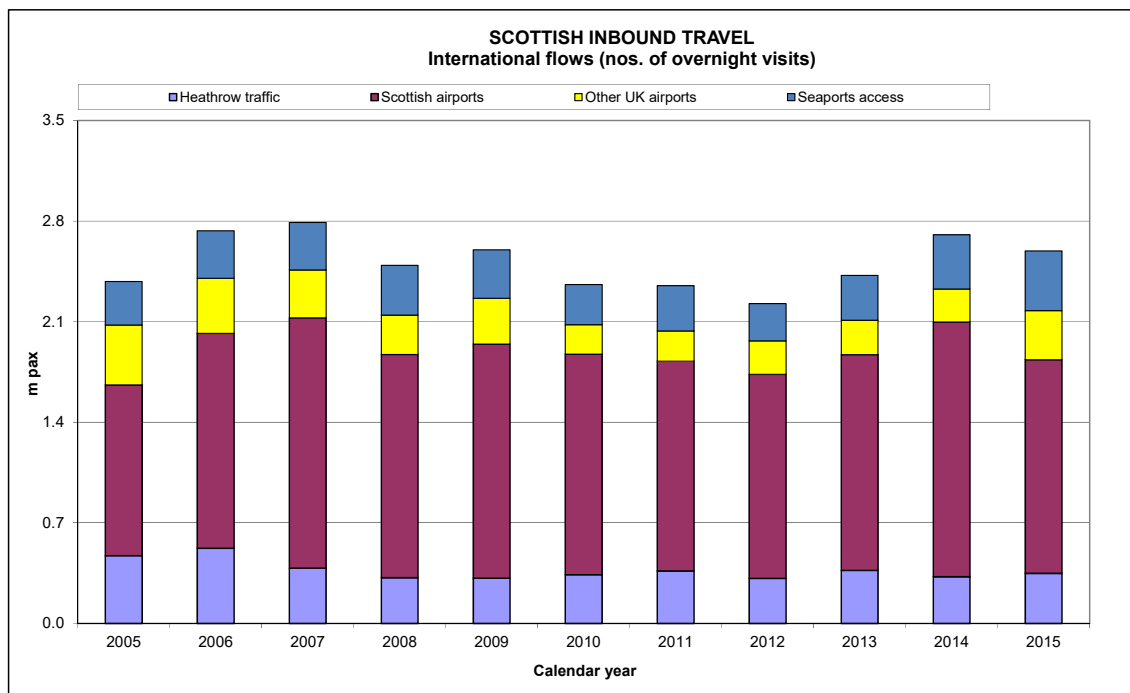
The flows information and the markets origin information can be correlated as follows. It would appear that the Heathrow traffic is mostly long-haul and indeed much of the long-haul traffic as a whole enters at Heathrow – it has recently been pointed out that forty percent of long-haul visitors to Scotland travel via Heathrow³⁶. Of this market, it appears that the bulk of it is American. Conversely, the European market would fly in directly to Scotland, with much of the Republic of Ireland market arriving by sea, at Cairnryan, in Scotland’s south-west.

Chart 9a Points of entry to the UK for Scottish international inbound tourism



The traffic entering via Heathrow will have either flown directly to Scotland; or, broken their journey in London and found their way to Scotland thereafter. Total interlining is relatively stable, and it is clear that the foreign (inbound) travel market is still a significant component of it³⁷. Otherwise, the growth in the Scottish tourism task over the years has been in terms of direct services into the Scottish airports, and through other UK airports.

Chart 9b Points of entry to the UK for Scottish international inbound tourism – in total



Over time, the market has ebbed and flowed, with the big decline in the use of Heathrow occurring from 2006 to 2007, but stable thereafter; and a matching increase at that time in access through Scottish airports is apparent. The effects of the 2008-2010 recession were evident for several years as well. The growth in the market after 2012 correlates with the growth in Heathrow interlining traffic as a whole (refer Chart 1a above), with the pickup in 2014, which was probably to do with the Commonwealth Games. It was paralleled by a similar increase in overall Scotland-Heathrow traffic, and a distinct spike in Glasgow-London rail traffic as well. Hence, the comments above about what Heathrow provides that only Heathrow can provide, must now admit of a significant corrective. The outbound market is 'spoilt for choice'. The *inbound* market, and especially the long-haul inbound market, is another matter. And this means that our argument that the market has moved out of Heathrow, must be further nuanced.

A related issue is how much market dominance Heathrow exercises – certainly, in the view of the Civil Aviation Authority, there is no question that it does³⁸. They comment, "... the CAA has also been told there are reputational/marketing barriers to switching from Heathrow to another London airport, as inbound passengers' awareness of other London airports acts as a barrier to attracting passengers to fly to alternative airports"³⁹. At this point, the question becomes: does the market have a natural preference for flying through Heathrow that at present is at risk of being blocked? If so, a clear potential for market failure is present (that is, where people would like to travel through Heathrow in preference to other airports, but find that they cannot⁴⁰).

This also explains how Heathrow's 'comparative advantage' is derived. The nature of the traffic movements is that incoming tourists to Scotland will arrive in London and then head up to Scotland by air – either directly, as part of the air booking, or as part of a separate booking. Thus, the evidence available suggests that the volume of inbound tourism, and especially long-haul inbound tourism, is more dependent on Heathrow access than the equivalent outbound passenger flows. If two-thirds of the direct market is outbound, it would be fascinating to find out how much of the Heathrow market is inbound, either interlining directly or travelling on a separate domestic booking. I would hypothesise: at least half.

Understanding this market dynamic is important to arguing the case for Scottish access to Heathrow. The outbound market could quite easily find travel options were access to Heathrow to be restricted or become more expensive, and in volume terms this is still the dominant part of the market as a whole. However, the inbound market, especially American, still expects to be able to fly to and through Heathrow; the airlines do not seem to have succeeded in finding a way to encourage this traffic to look at other options. A further factor, in terms of travelling domestically within Great Britain, is that that American market would expect to fly, and that through Heathrow as well.

If this is the case, then it means that our advocacy has to be much more around promoting access for these specific markets – inbound tourism, and business traffic – rather than expecting Heathrow to be the be-all and end-all for our longer-haul international travel task, which historically it was. While we can show that the volume of our inbound foreign tourism which uses Heathrow is stable, we could also argue that the constraints on Heathrow's growth are such that it could be costing Scotland more inbound tourism.

To sum up – Scotland does need access to Heathrow, and will continue to do so for the foreseeable future. But it is not, for the most part, the outbound (Scottish-resident) market which needs this access, especially the leisure market. Rather, it is the inbound leisure traffic which is the more concerned for our Heathrow access. For the inbound leisure market, it is because of the market preference to enter the UK through London, and Heathrow in particular, rather than, say, flying into Manchester⁴¹, and getting to London from there. This is a general reflection of how inbound tourists move around the UK. For the business market, outbound or inbound, it is because of the frequencies to some key markets which Heathrow allows.

And this is where rail comes into the picture.

Now, we don't think of rail as a convenient way to get between Heathrow and Scotland and generally it is not. Longer-haul tourists who are coming to Scotland will often arrive via Heathrow and then want to fly straight to Scotland. However, it is also eminently possible that they will wish to break their journey in London, either to recover from the length of the flight, to see London itself, or both.

Having been in London, this market may then want to fly to Scotland. The known pressures on domestic access between Heathrow and Scotland is such that we might well have a situation where foreign tourists are being discouraged from heading here. If so, it would seem to me that much more could be done by rail operators to work with this market in order to promote rail as a travel option, and joint ticketing arrangements would be a good place to start.

This approach would meet two policy goals of the Scottish Ministers. First, it would promote the use of rail as a mode for travel within Great Britain – this has been policy for well over ten years. Second, it could take some of the market pressure off our Heathrow links and would redistribute enough of it to the point that there is enough capacity for the remaining market. While the third Heathrow runway will allow substantial growth in domestic UK access, it is still ten to fifteen years away, and the market pressures on access will remain at least until then, which may also create opportunities for other airports in Great Britain. That said, markets can and do adapt; the changes which may not be possible in the short-term will be possible in the medium term and be very likely beyond that.

Second, how much access to Heathrow do we need?

We need to be able to quantify how much access we need; and in that, we also need to take cognisance both of the volume of seats provided, and the frequency with which those seats are provided. The reason for this is that the service frequencies need to be of a sufficient level to make the international transfers market work. Even if sufficient seat capacity is provided for the transfers market, a restricted service frequency will work against what the transfers market would be trying to achieve. So a discussion about service frequency as well as capacity is necessary, as well as timely. There is also a potential question about fares to keep in mind as well. I have observed previously that, "Scotland can have all the access to Heathrow that it wants, as long as it is prepared to pay for it"; but there are limitations in ability-to-pay as well as willingness to pay.

Finally, is a third Heathrow runway actually affordable?

It should not be assumed that Heathrow's owners will have a straightforward time in building the third runway, even if the current planning and political issues, not to mention the environmental concerns, can be surmounted. Several commentators have noted that Heathrow's financial structure is quite heavily 'geared' (that, a high ratio of debt to equity), meaning that funding the extension will be quite challenging. To pay for the extension, the owners will need to extend their own equity commitment (not something they would easily countenance); or ask the Regulator to allow pre-funding of the extension (loading the landing charges in advance of the work's completion – not something the airlines would easily countenance). And no matter how the third runway is funded, any sort of cost blowout would flow straight into the landing charges. This prospect is already of concern ⁴².

So it is possible that access will remain an issue – because if higher landing charges are needed to pay for the third runway, this will affect the viability of the many proposed UK regional services, not only Scotland's, whose expansion is a part of the case for the third runway's business case. If the landing charges were too high, many of these services, including the proposed additional and even current Scottish ones, would simply not be viable. The historical record bears out this point: the fate of the BMI link between Glasgow and Heathrow in 2011, and indeed the fate of the Virgin Atlantic operation between Edinburgh/Aberdeen and Heathrow in 2015, are both a good reminder that even with guaranteed access, there is still no certainty that *any* Heathrow operation will cover its costs.

CONCLUSION

In my paper at STAR 2014 I argued:

The evidence provided in this paper shows a market moving itself out of LHR from various "pull factors", much more than it being priced out ("push factors"). This 'moving out' has come about because of strong growth in the [Central Belt to] London railway market and also the direct international air services market, and both of these changes [came] from improvements in services.

The paper had more detail on the changes in the domestic market, which was then updated in a separate 2016 paper. However, the interlining market is separate and behaves quite differently. Here, the loss of the Heathrow transit traffic to direct international flights, as well as transits through other hubs, is unavoidable. This clearly represents a shift in market preference rather than deliberate reductions in capacity on the airlines' part; as they need the connecting traffic to make their overall international traffic more viable. That said, there is a part of the market which does need specific access to Heathrow – that is, the inbound long-haul travel market; the paper concludes by arguing that our advocacy should be focussed on this market segment, and then as a second priority, the contribution of Heathrow to the Scottish international travel market, outbound and inbound, as a whole. It also argues that rail can do more to connect to Scotland the longer-haul traffic arriving in London.

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References

Airports Commission *Report*, (2013), Web reference:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/271231/airports-commission-interim-report.pdf.

Airports Commission *Report*, (2015), Web reference:

<https://www.gov.uk/government/publications/airports-commission-final-report>

Civil Aviation Authority (2014), *CAA Passenger Survey Report 2013*. Web reference:

https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Passenger_survey/CAA%20Passenger%20survey%20report%202013.pdf

Clark, Ross (2013) "The still-flying Scotsman: trends since 2000 in the Scottish aviation market". Presented at the 9th *Scottish Transport Applications and Research* (STAR) Conference, Glasgow, April 2013. <http://www.starconference.org.uk/star/2013/Clark.pdf>

Clark, Ross (2014) "The optional dawn horror: explaining the trends in Scottish access to London Heathrow Airport (LHR) in the last ten years". Presented at the 10th *Scottish Transport Applications and Research* (STAR) Conference, Glasgow, May 2014.

<http://www.starconference.org.uk/star/2014/Clark.pdf>

Clark, Ross (2016), "Letting the train take the strain: growth in the Scotland-England & Wales rail market since calendar-2000". Presented at the 12th *Scottish Transport Applications and Research* (STAR) Conference, Glasgow, May 2016. <http://www.starconference.org.uk/star/2016/Clark.pdf>

"The optimal size of a UK hub", *Independent Transport Commission* (February 2014); <http://www.theitc.org.uk/docs/113.pdf>.

Johnson, D., et al., (2013), "Understanding air travellers' trade-offs between connecting flights and surface access characteristics", *Journal of Air Transport Management* (volume XXX:pp1-8). <http://dx.doi.org/10.1016/j.jairtraman.2013.08.001>

Müller, Jürgen *et al*, (2010) "The economic market power of Amsterdam Airport Schiphol – a report prepared for the Netherlands Competition Authority" (page 94, fn. 145). Web reference: http://userpage.fu-berlin.de/~jmueller/gaprojekt/downloads/gap_papers/finalreport.pdf.

Suau-Sanchez, P., *et al*, "The role of London airports in providing connectivity for the UK: regional dependence on foreign hubs", *Journal of Transport Geography*, January 2016, pp94-104. Accessible via: <http://www.sciencedirect.com/science/article/pii/S0966692314002440>

Endnotes

¹ See, for example, the response to the July 2015 report of the Airports Commission: “Transport Minister comments on Airport Commission report”, 1 July 2015. Web reference:

<http://www.transportscotland.gov.uk/news/transport-minister-comments-airports-commission-report>

Refer also to, “Scotland would really benefit from a third Heathrow runway”, *The Scotsman*, 21 June 2018:

<https://www.scotsman.com/news/scotland-would-really-benefit-from-third-heathrow-runway-1-4757845>; and, <https://news.gov.scot/news/improved-scottish-links-to-heathrow>

² And not just for Scottish airports, as this conference in June 2018 made clear:

<http://www.anna.aero/2018/05/02/heathrow-domestic-connectivity-in-focus-free-anna-aero-raba-conference-on-heathrow-route-propositions/>. For an opposing view, however, refer here:

<https://www.theguardian.com/uk-news/2018/jun/20/uk-regional-airports-will-be-hit-hard-by-heathrows-third-runway>

³ For example, refer to this press statement from Keith Brown, then the Scottish Cabinet Secretary for the Economy, Jobs, and Fair Work, of 25th October 2016, headed, “Ministerial comment on expansion at Heathrow Airport”. Web reference: <https://news.gov.scot/news/heathrow-expansion>

⁴ Clark, Ross (2014) “The optional dawn horror: explaining the trends in Scottish access to London Heathrow Airport (LHR) in the last ten years”. Presented at the 10th *Scottish Transport Applications and Research* (STAR) Conference, Glasgow, May 2014.

<http://www.starconference.org.uk/star/2014/Clark.pdf>

⁵ Clark, Ross (2016), “Letting the train take the strain: growth in the Scotland-England & Wales rail market since calendar-2000”. Presented at the 12th *Scottish Transport Applications and Research* (STAR) Conference, Glasgow, May 2016. <http://www.starconference.org.uk/star/2016/Clark.pdf>

⁶ Based on confirmed CAA airport data for 2018.

⁷ This traffic is likely to have been lower-yield; with the known constraints on capacity it is very likely that the airlines reduced the availability of the ‘cheap’ fares over this period. However, a similar decline in demand also occurred over this between Scotland and Stansted, and Scotland and Luton; two airports also catering to this part of the market, but without Heathrow’s capacity issues. Hence my earlier argument that the lower-yield Heathrow market moved out, as much as being priced out.

⁸ Refer also to “The optimal size of a UK hub” *Independent Transport Commission* (February 2014), para. 2.8 <http://www.theitc.org.uk/docs/113.pdf>. This notes that total UK regional interlining through Heathrow in 2013 stood at about 2.5m passengers, compared with 4.5m passengers going through overseas hubs. The proportions reported in that document for the listed foreign hubs, are in line with the reported Scottish data, once the listings for the US East Coast hubs and Dublin are removed (that is, about two-thirds for Amsterdam and Dubai).

⁹ Johnson, D., et al., (2013), “Understanding air travellers’ trade-offs between connecting flights and surface access characteristics”, *Journal of Air Transport Management* (volume XXX:pp1-8).

<http://dx.doi.org/10.1016/j.jairtraman.2013.08.001>. Refer also to endnote 41 following.

¹⁰ A good introduction to the current hub airport market can be found here:

<https://www.anna.aero/2017/02/15/frankfurt-paris-cdg-lead-s17-airport-analysis/>. Also of note is that Scotland now has access to all of those hubs, including a limited service to Beijing.

¹¹ Based on Suau-Sanchez, P., et al., “The role of London airports in providing connectivity for the UK: regional dependence on foreign hubs”, *Journal of Transport Geography*, January 2016, pp94-104. Accessible via: <http://www.sciencedirect.com/science/article/pii/S0966692314002440>, or:

<http://dx.doi.org/10.1016/j.jtrangeo.2014.11.008>. The approach used here takes the percentage data from that study, which was based on the results for the month of May 2013, and scales them up to fit the likely total data for calendar-2013. If this work were to be repeated, one would ask for a separate breakdown to be provided in inbound and outbound traffic, as my judgement now is that the separate traffics behave quite differently.

¹² Refer, for example, “Emirates returns to ILA as tensions rise between Lufthansa and Gulf carriers”, *Flightglobal*, 2 June 2016. Web reference: <https://www.flightglobal.com/news/articles/ila-emirates-returns-to-ila-as-tensions-rise-between-425958/>. See also, “Europe prepares to open ‘fair flying’ talks with Gulf carriers”, *The National (UAE)*, 2 June 2016. Web reference:

<http://www.thenational.ae/business/aviation/europe-prepares-to-open-fair-flying-talks-with-gulf-carriers>

The wider context is that the Gulf carriers’ capacity has increased fourfold in the last ten years. Refer, “MEB3 in Europe +360% since 2005: Emirates, Etihad Airways, Qatar Airways now serve 48 airports in 28 countries”; *anna.aero*, 18 November 2015. Web reference:

<http://www.anna.aero/2015/11/18/emirates-etihad-airways-and-qatar-airways-in-europe-analysed/>

¹³ Refer endnote 8 above.

¹⁴ “OAG Megahubs index: The World’s most connected airports”, October 2015. Web reference: <http://www.oag.com/sites/default/files/OAG-Megahubs-Index-2015.pdf> . The paper also explains how the index is derived.

¹⁵ The index value is based on the number of inbound and outbound connections possible in a 24-hour period. The reported value for LHR is some two-thirds higher again than the *average* of its main European competition (FRA, CDG, AMS); but the *sum* of that competition mounts up extremely rapidly, and that is before the inclusion of DXB or JFK. Also of interest is that Istanbul, which is served directly from Edinburgh, has a connectivity index greater than that of Frankfurt.

¹⁶ Refer Clark, 2014, section 2.1; especially to Chart 2.

¹⁷ Data available from this author (not as yet published). This price differential is before any currency conversion charges are allowed for.

¹⁸ Dennis, Nigel (2012), “Developments in airline pricing and revenue management”; specifically, section 3.1. Presented at the 2012 European Transport Conference, Glasgow, October 2012. Web reference: <http://abstracts.aetransport.org/paper/index/id/4050/confid/18>

¹⁹ Johnson et al., 2013.

²⁰ Dennis (2012), section 3.1. I know from the work I did on KLM’s interlining fare structure (ref. endnote 17), that this sort of thing is not uncommon.

²¹ For more insight on this, refer to this paper from the Centre for Aviation on BA’s businesses: <http://centreforaviation.com/analysis/british-airways-the-parental-favourite-gets-new-toys-but-still-has-homework-to-do-110949>

²² Refer: “Emirates to add second daily flight to Dubai”, Glasgow Herald, 11 January 2012. Web reference: <http://www.heraldscotland.com/news/transport/emirates-to-add-second-daily-flight-to-dubai.16422641>

²³ “Edinburgh ‘could get second flight to Qatar’”, *The Scotsman*, 25 March 2014. Refer: <http://www.scotsman.com/news/transport/edinburgh-could-get-second-flight-to-qatar-1-3352781>. In the event, although after the “balance date” for this paper, a second service will run over much of the 2019 summer, providing ten rotations per week between July and October 2019. Refer, “Double-daily Doha”, 5th February 2019, from the Edinburgh Airport website: <https://www.edinburghairport.com/about-us/media-centre/press-releases/double-daily-doha>

²⁴ Web reference: http://en.wikipedia.org/wiki/Boeing_777. At 7,400 miles, the only excluded landmass is the western part of South America; at 9,400 miles, only a small area in the Pacific is excluded. For further details: <http://www.gcmap.com/mapui?R=9400mi@dx%0D%0A&MS=wls&DU=mi>

²⁵ Web reference http://en.wikipedia.org/wiki/Boeing_787

²⁶ “New analysis on airport connectivity reveals Europe falling behind”, *ACI Europe*, 17 June 2014. A copy of the full report can be loaded from this web reference:

<https://www.aci-europe.org/component/downloads/downloads/3954.html>

²⁷ With the exception of journeys to destinations in the United States which are served directly from Heathrow. American hub airports are not that well-regarded; in that one does not want to be put under further stress by the prospect of missing the connecting flight from the US hub, if there is any risk of being held up at the border. Better this happens at the final destination if it is going to happen at all.

²⁸ A recent assessment on *anna.aero* of the London-area routes not served by Heathrow, reported traffic volumes of nearly eighteen million passengers per year. “30 top London routes NOT served by Heathrow”, *anna.aero*, 25th April 2018: <https://www.anna.aero/2018/04/26/top-london-markets-without-heathrow-link-revealed-want-heathrow-link-come-free-hublab/>. The airlines have their own reasons for wanting to focus their traffic provision on Heathrow.

²⁹ As-quoted on the *anna.aero* website in mid-2018: <https://www.anna.aero/2018/03/28/want-a-route-to-heathrow-radical-free-conference-to-hear-easyjet-flybe-virgin-other-plans/>

³⁰ Suau-Sanchez, P., et al., *ibid*.

³¹ Refer endnote 8 above.

³² For an example of this argument, refer: “Between the lines: airport expansion matters”, David Watt, *The Scotsman*, 9 February 2015. Web reference:

<http://www.scotsman.com/business/panies/between-the-lines-airport-expansion-matters-1-3683991>

³³ Thompson, Karen and Neil Ferguson (2006), “Examining the travel behaviour of visitors to Scotland”. Presented at the 10th *Scottish Transport Applications and Research (STAR)* Conference, Glasgow, April 2006. Web reference: http://www.starconference.org.uk/star/2006/Karen_Thompson.pdf

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- ³⁴ Visit Scotland, “The key facts on tourism in 2015”, July 2016. Web reference: <http://www.visitscotland.org/pdf/Tourism%20in%20Scotland%20Factsheet%202015.pdf>
- ³⁵ The data for the ten years 2005-2015 has been reported from the International Passenger Survey.
- ³⁶ Humza Yousaf, the former Minister for Transport, quoted on the *anna.aero* website in mid-2018: <https://www.anna.aero/2018/06/14/easyjet-reveals-routes-for-potential-heathrow-base-at-anna-aero-raba-hublab-conference-18-domestic-destinations-identified/>
- ³⁷ Refer endnote 3 above.
- ³⁸ Civil Aviation Authority, “Heathrow: Market Power Assessment [non-confidential version]”, February 2012. Web reference: <http://www.caa.co.uk/WorkArea/DownloadAsset.aspx?id=4294972614>
- ³⁹ *Ibid.*, para 3.81.
- ⁴⁰ This may also be true for Scottish journeys to and from London proper.
- ⁴¹ It is also worth noting here that Manchester Airport is working hard to expand its long-haul international services, including to the West Coast of the USA and Asia. Refer: “One-to-one with Robert Smith, Head of Aviation Development, Manchester Airport”, *anna.aero*, 20 February 2019. Weblink: <https://www.anna.aero/2019/02/20/one-to-one-with-robert-smith-head-of-aviation-development-manchester-airport/>. The relevance for Scotland is that there are 7 or 8 direct trains from Glasgow to Manchester Airport on a weekday, and 8 or 9 more direct trains from Edinburgh to Manchester Airport on a weekday; this service pattern allows a very high frequency across the day if transfers are feasible. In this context, this service pattern expands Scotland’s hub access options for outbound traffic, and it would seem to me that there is plenty of scope for the rail operator (Trans-Pennine) to work more with both Manchester Airport and its airlines to promote the links through to Scotland – thus giving travellers more journey options. In 2017-18 Manchester Airport station handled a reported 4.6m passengers; the airport itself handled more than 28m passengers in calendar-2018.
- ⁴² For more information, refer to the press statements referenced at these links: <http://www.airportwatch.org.uk/2018/06/heathrow-boss-says-he-cant-guarantee-prices-wont-rise-to-pay-for-3rd-runway/>; <http://www.airportwatch.org.uk/2018/08/heathrow-airport-is-battling-debt-pile-of-13bn-enough-to-build-the-third-runway/>; this tweet from the No Third Runway coalition, of 12 July 2018: <https://twitter.com/NoR3Coalition/status/1017651992561377284>; “CAA calls for Heathrow cost transparency”, *Buying Business Travel*, 6 November 2018. <https://buyingbusinesstravel.com/news/0629544-cao-calls-heathrow-cost-transparency>; and, “Heathrow boss’s plan simply won’t fly”, *The Times*, 25 August 2018. <https://www.thetimes.co.uk/article/heathrow-boss-s-plan-simply-won-t-fly-75xx68fjc>
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