International Airlines Group

# Empirical Tests of the Starting Scarcity Rent Hypothesis at Heathrow

Submission to CAA and DfT for review and consideration

Prepared for regulatory and policy review

**Core conclusion**

The claimed scarcity rent is not evidenced in realised airline profitability, cost structures outside of airport charges, seat factors, or like-for-like fare comparisons.

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# 1 Executive Summary

1.1 The Department for Transport (DfT) is seeking to establish a starting ''scarcity rent'' (also described as a ''congestion premium'' or ''shadow cost'') captured by airlines for its Heathrow expansion cost benefit analyses, and is liaising with the Civil Aviation Authority (CAA) on an independent estimate. This paper presents evidence that no material scarcity rent is captured by airlines at Heathrow and that incorporating one as a starting term in DfT modelling would be unsupported by the empirical record.

1.2 The starting scarcity rent concept originates in work commissioned by Heathrow from Frontier Economics (Frontier), which has argued since at least 2017 that the DfT is wrong to omit such a rent from its models. Frontier estimated the starting scarcity rent, over and above required economic profits, at £2bn for 2016, rising to at least £3.5bn by 2024, which represents more than 10% of IATA's estimate of total global aviation profits for that year.[1]

1.3 **The primary test of whether a starting scarcity rent exists is whether it appears in airline profitability, and it does not.** Heathrow-based carriers, British Airways and Virgin Atlantic, are best placed to capture any such rent: they serve London-based passengers with more direct destinations and more frequencies than their overseas competitors. Realised, audited profitability for both carriers in 2024, and across the period 2016–2024, does not support the existence of a material scarcity rent. Moreover, the estimate of total profitability for all carriers operating at Heathrow falls short of the required returns to fully pay for the cost of capital and growth.

1.4 The rent is not absorbed by elevated airline costs either. Benchmarking shows that Heathrow-based carriers are cost-efficient relative to direct competitors, and overseas airlines operating at Heathrow are similarly efficient in their Heathrow-deployed operations.

1.5 Nor is it visible in seat factors. If a meaningful scarcity premium existed, one would expect systematically higher seat factors at Heathrow than at comparable airports. Heathrow ranks 7th out of 10 airports in the Frontier 2019 comparator set, which provides no support for this hypothesis.

1.6 Finally, a scarcity premium should be visible in fares. Controlling for airport charges passed through to passengers, there is no persistent, material fare difference between Heathrow and Gatwick for overseas carriers operating equivalent routes. The fare premium observed on some British Airways routes at Heathrow reflects hub revenue management, specifically the competition between direct and connecting passengers for seats across a global network, rather than any structural scarcity premium.

1.7 **In aggregate: the claimed scarcity rent is not visible in profits, high non-airport costs, seat factors, or fares. The simplest explanation is that it does not exist.** Accordingly, a scarcity rent should not be used as a starting term in DfT cost benefit models, and regulators and policy makers should not rely on Frontier's estimates when assessing the Heathrow Expansion Cost Benefit Analysis or related decisions.

1.8 A further structural concern warrants attention. DfT has consistently forecast that scarcity rents would emerge as a consequence of slot constraints at Heathrow. Heathrow has been fully slot-constrained for over 20 years, yet no such rent is observable. **This sustained absence of evidence is itself evidence that the underlying modelling methodology is flawed.**[2] DfT should fundamentally review its approach, as the current framework does not adequately account for the primary constraint governing airline capacity deployment: the commercial requirement to generate profit across the airline's network.

[1] Frontier's framing links Heathrow scarcity to airline margin capture; see [Frontier Economics, 2025, pp. 25,64].

[2] Refer to the DfT NAPAM modelling approach [Department for Transport, 2024, pp. 41-42]

# Contents

Part I

# Context and framing

Purpose, Frontier's claim, and the analytical decision rule used in this submission

## 2 Purpose and Regulatory Context

2.1 This submission assesses whether the ''scarcity rent'' embedded in airline fares at London Heathrow (LHR)[3] is evidenced in realised airline profitability, cost structures, seat factors, or fares, and therefore whether it should be treated as a benefit in the Heathrow expansion cost-benefit analysis (CBA). The point is policy relevant: if the scarcity rent cannot be credibly identified in the data, or is not retained as supernormal profit, then the passenger benefits attributed to its removal require re-specification in the CBA framework.

2.2 The institutional setting is asymmetric. Heathrow Airport Limited (HAL) is subject to economic regulation because the Civil Aviation Authority (CAA) has determined it has substantial market power (SMP).[4] By contrast, airlines operating at LHR are generally treated by regulators as competing in contestable markets, and therefore are not subject to sector-wide retail price regulation. This asymmetry matters because an airport-level scarcity rent narrative implicitly reallocates surplus capture from the regulated airport to the unregulated airline sector, and therefore requires proportionately stronger evidence.

2.3 Frontier Economics (Frontier), commissioned by HAL, argues that LHR fares include a substantial scarcity rent and that expansion would remove it because the capacity expansion would bring substantially lower fares. In the Heathrow expansion CBA update, this scarcity rent is reported as approximately ''20%'' or ''roughly £3.5bn/year'', and the net present value of the associated passenger benefit from eliminating the premium is stated as ''up to £79 billion''.[5]

2.4 Frontier also frames the scarcity rent as a correction to modelling assumptions in the Department for Transport (DfT) aviation demand framework. Specifically, Frontier argues that the DfT model baseline assumes zero congestion (and therefore zero scarcity rent) in the base year, despite LHR being ''full since the mid-2000s.'' Frontier's implication is that expansion should be credited not only with avoiding future price increases, but with reducing current fares by removing an existing scarcity rent.[6]

2.5 This submission does not dispute that LHR is slot capacity constrained, nor that seat scarcity relative to demand is associated with higher fares in some markets. The core question is evidential and regulatory: whether observed average annual fare premia at LHR are (i) properly attributable to a scarcity rent captured by airlines, and (ii) retained as supernormal profit in realised airline financial performance. The maintained hypothesis in this submission is that Frontier's claimed scarcity rent is not evidenced in realised airline profitability; observed average annual fare premia can be explained by higher airport operating costs at Heathrow, higher premium cabin mix at Heathrow, and an underlying product mix. The appropriate regulatory implication is that airport-level annual average fare differentials are not, on their own, sufficient to infer scarcity rent capture by airlines or to book large passenger ''benefits'' from its elimination.

[3] Frontier Economics describes this as a ''congestion premium''; the DfT uses the term ''shadow cost''. This submission treats the terms as synonymous and uses ''scarcity rent'' throughout.

[4] This submission does not restate those determinations in [Civil Aviation Authority, 2014, pp. 41-42]; it takes the existence of SMP regulation of HAL as given in the policy baseline described in the CBA documents. Furthermore, the Competition Commission also came to the same conclusion regarding Heathrow's SMP in 2009. See [Competition Commission, 2009, p. 133].

[5] The scarcity-rent magnitude and the stated passenger-benefit channel are set out in the Heathrow CBA update; see [Frontier Economics, 2025, pp. 10, 50]. The associated charts at [Frontier Economics, 2025, p. 50] show a premium of approximately 33% for short haul and 13% for long haul.

[6] Frontier's discussion of baseline congestion assumptions and the ''full since the mid-2000s'' framing appears at [Frontier Economics, 2017, p. 11]; the associated claim about reducing current fares appears at [Frontier Economics, 2017, p. 32].

# 3 Frontier/HAL Scarcity Rent Claim Summary

3.1 Heathrow Airport Limited (HAL) and Frontier advance a central premise in the Heathrow expansion cost–benefit analysis (CBA): that passengers at London Heathrow (LHR) pay fares that embed a material *scarcity rent* (also described as a ''congestion premium'') attributable to slot and capacity constraints at LHR.[7]

3.2 The CBA then treats the removal of this scarcity rent under expansion as a major source of net benefits, principally delivered as lower fares to customers.[8]

## Scarcity Rents: How? How big? Who benefits now and when removed?

3.3 **How does the scarcity rent arise?** Frontier's mechanism is that LHR scarcity (slot and capacity constraints) allows airlines to charge higher fares than would prevail absent scarcity, after accounting for observable service and demand factors. Operationally, this is presented as a residual premium that remains after controlling for route and airport characteristics (e.g., frequency/schedule depth, business class share, low-cost carrier (LCC) share as a service-model proxy, transfer share, average seats, airport competition, airline concentration on routes, and Skytrax route ranking).[9]

3.4 **How large is the scarcity rent?** Frontier/HAL quantify the scarcity rent as an LHR fare premium of approximately 20%, and the premiums appear to be approximately 33% for short haul and 13% for long haul. The CBA update further expresses this as ''around £3.5bn'' per year.[10]

3.5 **Who would benefit if the scarcity rent is removed?** The CBA treats the scarcity rent primarily as a transfer: expansion increases capacity, the scarcity rent is competed away as passengers receive lower fares. HAL/Frontier report NPV of passenger benefits ''up to £79 billion'' under this channel.[11]

## Frontier identification approach relied upon in the CBA

3.6 **Residual-fare premium approach.** The core empirical step is a regression framework for average annual fares in which an LHR indicator is interpreted as an ''unexplained'' premium after conditioning on observable covariates and fixed effects; Frontier attributes this residual premium to scarcity rent.[12]

3.7 **Treatment of passenger mix and network effects.** Frontier's framework includes controls intended to proxy for passenger willingness-to-pay and service quality (e.g., frequency, average seats) and for product mix (e.g., LCC share; business class share). [13] Frontier's own description of this regression

[7] Frontier's CBA articulation of this scarcity-rent premise appears at [Frontier Economics, 2025, p. 50].

[8] The transfer framing and associated passenger-benefit treatment are described at [Frontier Economics, 2025, p. 10].

[9] Frontier's residual-premium mechanism and model-control description are set out at [Frontier Economics, 2025, pp. 50–51] and [Frontier Economics, 2019, pp. 51–52]. Frontier used a different set of variables for their regression in their 2017 study [Frontier Economics, 2017, pp. 53–54]

[10] Frontier's stated magnitude assumptions are reported at [Frontier Economics, 2025, p. 50]. The associated charts at [Frontier Economics, 2025, p. 50] show a premium of approximately 33% for short haul and 13% for long haul.

[11] This framing and the associated benefit figure are reported at [Frontier Economics, 2025, p. 10].

[12] For the CBA treatment of the residual premium, see [Frontier Economics, 2025, p. 50]; for the linked methodology in Frontier's 2019 work, see [Frontier Economics, 2019, p. 78].

[13] For the CBA treatment of controls, see [Frontier Economics, 2025, p. 50]; for related control specification in Frontier's 2019 work, see [Frontier Economics, 2019, pp. 5, 51–52].

acknowledges that estimating the Heathrow premium as a residual exposes the result to omitted-variable bias: any relevant cost or product drivers that are not controlled for will be mechanically absorbed into the LHR term.[14] The CBA narrative further relies on assumptions about the effect of transfer passengers on yields (i.e., that transfer traffic tends to dilute average yields), which interacts with how any ''scarcity'' premium is mapped into welfare.[15]

3.8 **Slot-value triangulation (supporting evidence).** Frontier in their 2019, 2022 and 2025 reports also draws supporting inference from observed LHR slot transaction values, treating them as consistent with material scarcity rent.[16]

## Why does this matter to policy makers and regulators?

3.9 If the asserted starting scarcity rent is (i) large, (ii) systematically captured by airlines, and (iii) persistent, it should be reconcilable with realised airline profitability. A scarcity rent hypothesis requires evidence of structural, not temporal, price elevation.

3.10 HAL's status as having substantial market power in the airport services market (as referenced in the project context) is relevant background to why the CBA focuses on passenger welfare impacts.[17] However, the scarcity rent narrative implies a reallocation of surplus capture from the regulated airport to the unregulated airline sector; therefore, the evidential standard for inferring scarcity rent should be commensurately high, and should require transparent reconciliation to observed profit pools before being relied upon as a benefit in the CBA.

[14] For Frontier's discussion of omitted-variable bias, see [Frontier Economics, 2019, pp. 48–49].

[15] For the CBA narrative on transfer effects, see [Frontier Economics, 2025, p. 50]; for related Heathrow slots/context material used in this submission, see [Frontier Economics, 2022b].

[16] Frontier discusses their slot-value triangulation at [Frontier Economics, 2019, pp. 36-45], [Frontier Economics, 2022a, p. 56], [Frontier Economics, 2025, p. 50].

[17] CAA findings are available at [Civil Aviation Authority, 2014, pp. 41-42]. Competition Commission findings on Heathrow's market power are cited at [Competition Commission, 2009, p. 133].

# 4 Our Testable Framing: Do Scarcity Rents at Heathrow Appear in Realised Airline Profitability?

4.1 This submission treats the Frontier Economics starting scarcity premium as an empirically testable hypothesis rather than an established fact. By **scarcity rent** we mean profit in excess of a normal return on capital that is causally attributable to slot scarcity at Heathrow, after accounting for incremental operating costs, differences in product and cabin mix, and standard hub revenue management practices.

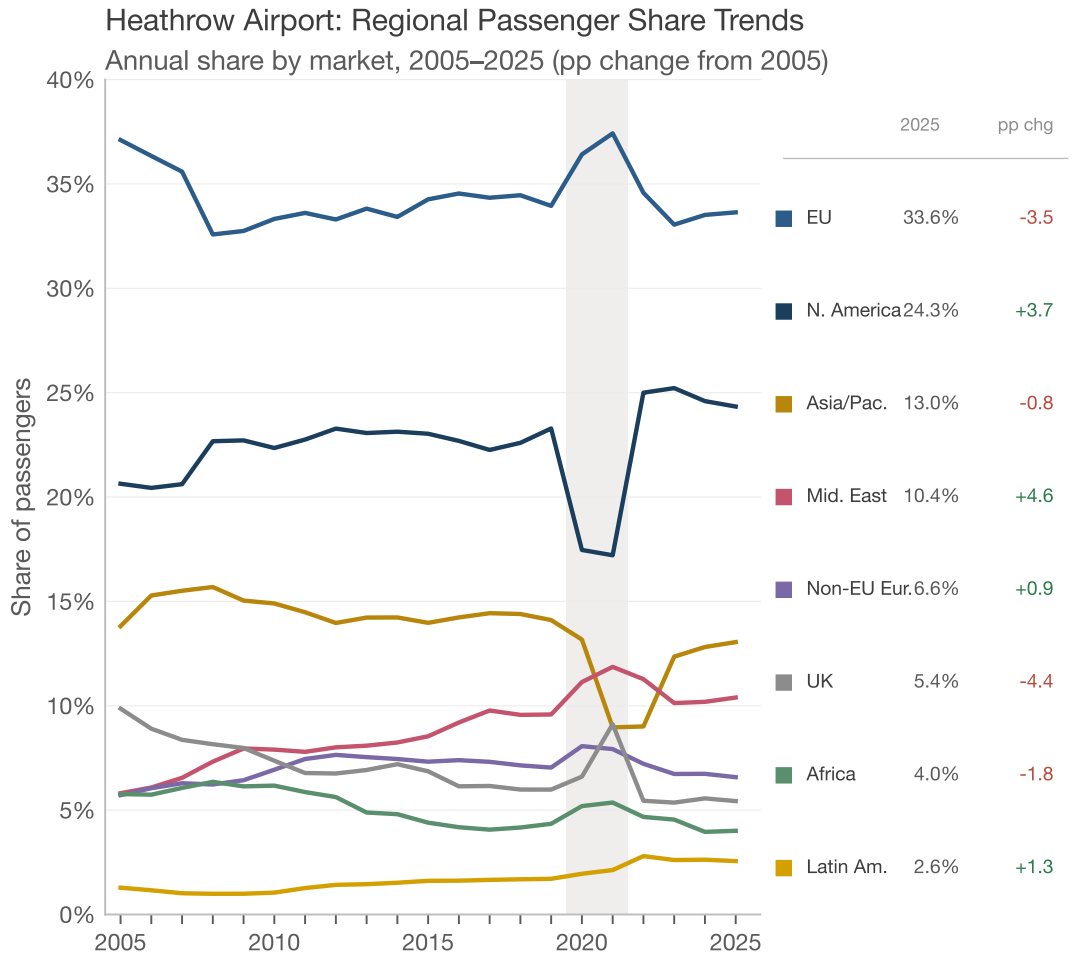
4.2 We accept that Heathrow is slot-constrained. We do not accept that slot constraint and capacity constraint are the same thing. Over the past twenty years, passenger numbers at Heathrow have grown at a compounded annual rate of 1.1%, as airlines have deployed larger aircraft, the mix of carriers and capacity has changed, and the route networks of London-based carriers have evolved. Table 1 sets out the historical passenger and ATM data with compound growth rates calculated from 2005; Figure 1 shows the evolution of the regional passenger mix with the decline of shorter-haul Europe and UK passenger shares offset by increases in Middle East and North American passengers.

Table 1: Heathrow Airport Traffic Statistics, 2005–2025

| Year | ATMs | Δ ATM (%) | Passengers | Δ Pax (%) | Pax/ATM | Δ Pax/ATM (%) | Pax CAGR (%) |
|---|---|---|---|---|---|---|---|
| 2005 | 471,986 | – | 67,686,450 | – | 143.4 | – | – |
| 2006 | 474,324 | 0.5 | 67,342,859 | −0.5 | 142.0 | −1.0 | −0.5 |
| 2007 | 475,713 | 0.3 | 67,855,058 | 0.8 | 142.6 | 0.5 | 0.1 |
| 2008 | 471,224 | −0.9 | 65,619,626 | −3.3 | 139.3 | −2.4 | −1.0 |
| 2009 | 460,403 | −2.3 | 65,864,957 | 0.4 | 143.1 | 2.7 | −0.7 |
| 2010 | 449,220 | −2.4 | 65,747,173 | −0.2 | 146.4 | 2.3 | −0.6 |
| 2011 | 476,197 | 6.0 | 69,391,448 | 5.5 | 145.7 | −0.4 | 0.4 |
| 2012 | 471,341 | −1.0 | 69,984,868 | 0.9 | 148.5 | 1.9 | 0.5 |
| 2013 | 469,552 | −0.4 | 72,332,919 | 3.4 | 154.0 | 3.7 | 0.8 |
| 2014 | 470,695 | 0.2 | 73,374,825 | 1.4 | 155.9 | 1.2 | 0.9 |
| 2015 | 472,067 | 0.3 | 74,959,058 | 2.2 | 158.8 | 1.9 | 1.0 |
| 2016 | 473,231 | 0.2 | 75,676,223 | 1.0 | 159.9 | 0.7 | 1.0 |
| 2017 | 474,033 | 0.2 | 77,988,752 | 3.1 | 164.5 | 2.9 | 1.2 |
| 2018 | 475,624 | 0.3 | 80,102,017 | 2.7 | 168.4 | 2.4 | 1.3 |
| 2019 | 475,874 | 0.1 | 80,886,671 | 1.0 | 170.0 | 0.9 | 1.3 |
| 2020 | 200,831 | −57.8 | 22,111,009 | −72.7 | 110.1 | −35.2 | −7.2 |
| 2021 | 190,032 | −5.4 | 19,393,145 | −12.3 | 102.1 | −7.3 | −7.5 |
| 2022 | 376,847 | 98.3 | 61,599,199 | 217.6 | 163.5 | 60.2 | −0.6 |
| 2023 | 454,089 | 20.5 | 79,151,723 | 28.5 | 174.3 | 6.6 | 0.9 |
| 2024 | 473,965 | 4.4 | 83,859,729 | 5.9 | 176.9 | 1.5 | 1.1 |
| 2025 | 477,883 | 0.8 | 84,463,061 | 0.7 | 176.7 | −0.1 | 1.1 |

Pax CAGR: compound annual growth rate in passengers from 2005 base.
Source: Heathrow Airport Ltd, Monthly Traffic Statistics (January 2026 release)

Figure 1: Passengers at Heathrow by region, 2005–2025.




Source: Heathrow Airport Ltd, Monthly Traffic Statistics (January 2026 release)

4.3 The capacity that matters for the scarcity rent claim is not runway movements in isolation, but the total passenger-carrying capacity of the aircraft deployed at the airport. Observed fare premia at Heathrow are therefore not treated here as evidence of a scarcity rent; they are treated as a question that requires testing. An observed fare premium is consistent with both a scarcity rent and with a competitive market in which higher fares are required to recover higher costs and serve a more premium product mix. Only profitability data can distinguish between these explanations.

4.4 A scarcity rent of the scale claimed by Frontier Economics does not hide easily. If it exists at £3.5bn[18], it must be observable across multiple independent measures. The five sections that follow each test a necessary implication of the hypothesis. Failure on any one test weakens the case for the rent; failure across multiple tests is decisive.

[18]IATA estimated 2024 global airline after-tax profits at $32.4bn on a 3.4% margin [IATA Sustainability and Economics, 2025, p. 12]. At 1.2781 USD per GBP, this equates to £25.2bn. A £3.5bn scarcity rent at Heathrow, taxed at 25%, would represent 10.4% of global airline profits. Heathrow only accounted for 2% of 2024 global departing available seat kilometres.

## The Structure of the Argument

4.5 **Section 5: Do BA and Virgin margins show evidence of scarcity rents?** The most direct implication of the hypothesis is elevated profitability. This section applies three distinct tests. First, in 2024, the combined profits of British Airways and Virgin Atlantic should exceed a normal return on capital by an amount consistent with the Frontier Economics rent estimate: the two carriers together account for more than half of direct passengers at Heathrow and are best placed to capture any available rent. Second, if the rent has grown from £2bn in 2016 to £3.5bn in 2024 as Frontier Economics claims, British Airways' margins should show a rising trend over the same period and both Virgin Atlantic and British Airways should show margins that are sufficient for ROIC to exceed their WACCs. Third, because Frontier's methodology attributes approximately three times as much premium per round trip to long-haul passengers as to short-haul, Virgin Atlantic, whose network is almost entirely long-haul, should earn materially higher profit per passenger than British Airways. None of these predictions is supported by the data.

4.6 **Section 6: Do less constrained hubs outperform Heathrow?** If slot scarcity generates a meaningful rent of the scale discussed (e.g. 10.4% of total estimated global airline profits on 2% of departing capacity), the profitability of the home based hub carriers should significantly exceed all benchmarks. This section tests that prediction against two other IAG subsidiary company operating margins: Iberia's margin at Madrid and Aer Lingus's margins at Dublin. In 2024 and 2025, Iberia's airline margins exceeded British Airways' margins. This shows that similar or higher margins are achievable in less constrained environments, which is inconsistent with the scarcity rent hypothesis.

4.7 **Section 7: Do Heathrow-based carriers have competitive costs?** If the rent exists but is not visible in margins, the only remaining explanation consistent with Frontier's framework is that costs at Heathrow are so elevated as to fully dissipate it. This section tests that claim using flight-level cost data. Unit costs at Heathrow are higher than at comparator airports, but the explanation is structural: airport charges and lower cabin density. Furthermore, British Airways and Virgin Atlantic are cost-efficient relative to their head-to-head competitors at Heathrow. The cost dissipation explanation fails.

4.8 **Section 8: Are seat factors higher at Heathrow?** Under binding slot scarcity, the incentive to fill every available seat is strong: the marginal cost of an additional passenger is far below the claimed rent per passenger. Seat factors at Heathrow should therefore be consistently higher than at comparator airports. They are not. Gatwick records higher seat factors than Heathrow, and Heathrow ranks seventh out of ten airports in the Frontier Economics 2019 comparator set.

4.9 **Section 9: Are airlines charging higher prices at Heathrow than Gatwick for the same product?** If the rent is extracted through fares, like-for-like selling prices on routes served from both airports should show a persistent Heathrow premium after netting out the difference in airport charges. After this adjustment, overseas carriers show no systematic premium at Heathrow. The fare premium observed on some British Airways routes at Heathrow reflects hub revenue management, specifically the competition between direct and connecting passengers for seats across a global network, rather than any structural scarcity premium.

## Decision Rule

4.10 Observed fare premia alone are insufficient to infer a scarcity rent captured by airlines. For the existence of an airline captured scarcity rent to be taken into account in any policy or regulatory-related decision making, it must be robustly tested and proven, including through a reconciliation to realised profitability inclusive of the cost of capital, and robustness to difference in any product mix and operating cost. The five sections above show that the airline captured scarcity rent does not appear in any of the measures through which it would be expected to manifest. The weight of evidence supports an alternative explanation: observed fare premia at Heathrow reflect the higher cost of operating at the airport and the more premium cabin configurations deployed there, consistent with a competitive market in which no supernormal profits are available for capture by airlines.

Part II

# Empirical evidence

Five empirical tests of whether a Heathrow scarcity rent is visible in observed outcomes

# 5 Do BA and Virgin Margins Show Evidence of Scarcity Rents? No

5.1 **Claim tested:** If a large, £3.5bn scarcity rent exists at Heathrow and is captured by airlines, it must appear as persistently elevated operating profits at the carriers best positioned to capture it. British Airways and Virgin Atlantic are those carriers: they are the top 2 carriers in terms of flights and seats operated at Heathrow, they have corporate contracts and loyalty programmes, and they serve the greatest share of the direct passengers impacted in the Frontier scarcity rent hypothesis.[19] If the starting scarcity rent exists, it should be visible in their accounts.

5.2 **Finding:** It is not. In 2024, British Airways and Virgin Atlantic together collected £1,333m less than the level of profit above normal returns that the Frontier Economics rent estimate implies they should have earned. That shortfall represents 71.9% of the predicted premium. Virgin Atlantic, which under the Frontier Economics methodology should earn a *higher* profit per passenger than British Airways because of its greater exposure to long-haul flying, in practice earns substantially less. The margin evidence does not support the existence of a material scarcity rent in either its level or its distribution across carriers.

## What Level of Operating Profitability Do Airlines Require?

5.3 To assess whether operating margins are elevated, it is first necessary to define a benchmark for normal profitability. Airlines are cyclical, capital-intensive businesses and, over time, must earn a return sufficient to cover their cost of capital. IATA estimates the global airline industry weighted average cost of capital (WACC) at 8.3%.[20] Bloomberg and investment banks also publish company-specific WACC estimates. However, a WACC expressed as a return on capital is not directly comparable to the operating margins reported in airline accounts. We need to ask a connected question to translate the WACC to a required threshold margin: what operating profit (EBIT) margin must an airline earn over the cycle to cover its cost of capital, replace its aircraft at the end of their economic lives, and fund moderate growth?

5.4 This threshold margin is not academic. Airlines that persistently fail to cover their cost of capital do not survive indefinitely. Most of the component companies in the major United States international network carriers filed for Chapter 11 protection after 2002[21]. Philippine Airlines (2021), Avianca (2003 and 2020), LATAM (2020), Aeromexico (2020), SAS (2022), Thai Airways (2020), Air Canada (2003), Norwegian (2020), Jet Airways (2019), and Virgin Australia (2020) all entered insolvency or restructuring. Monarch Airlines, Thomas Cook Airlines, and Flybe collapsed without successful restructuring. Even IAG, Lufthansa, and Air France-KLM required emergency equity issuance to survive the COVID crisis. Earning a required margin over the cycle is therefore a genuine constraint, not a notional benchmark.

5.5 To find the threshold operating margin for individual airlines, IAG has developed a model to estimate the required operating margin for different airlines. The model takes into account the cost of capital, the fleet size and economic life of aircraft, the undepreciated capital invested in the fleet (which depends on fleet age), and the annual revenue generated by a given aircraft.

5.6 IAG's modelling indicates that, for most carriers, the minimum required threshold EBIT margin is 10 to

[19] Frontier's expectation of material airline capture is cited at [Frontier Economics, 2025, p. 25], with margin implications at [Frontier Economics, 2025, p. 64].

[20] IATA's global airline WACC estimate is cited at [IATA Sustainability and Economics, 2025, p. 20].

[21] The major US airlines are formed from prior mergers or acquisitions. US Airways and United Airlines filed for Chapter 11 in 2002. US Airways filed again in 2004. Delta Air Lines and Northwest Airlines filed in 2005. American Airlines filed in 2011

12%. European carriers generally require margins toward the upper end of this range, mainly because revenue per flight is lower in Europe than in the United States. This reflects the influence of low-cost carriers and lower average labour costs on the European fare environment.

5.7 Table 2 sets out the required margins for a selected group of carriers using two invested capital assessment approaches: one based on assuming the fleet is at its midpoint in it lifecyle[22], and the other based on the current age of aircraft in service. Airlines with newer than half-life fleets require higher returns because their assets are carried at higher values.[23] The approach used in this paper is to use both invested capital estimates which helps cover the ''across the cycle'' timeframe, apply the lowest cost of capital from the three available sources, and then average the two estimates to arrive at a conservative estimate of the required margin for each carrier. Typically airlines have other elements of invested capital in addition to their fleet, such as hangars, spare engines, spare parts, ground service equipment, lounges, capitalised software development, other real estate, and spare liquidity. The green text color shows which WACC estimate was used to arrive at the low end of the margin requirement. The industry average operating margin requirement is estimated to be at least 10.5% at the low end of the range and 13.5% at the medium point in the WACC estimates.

[22] In other words, assuming the fleet is approximately 12 years old

[23] To earn a return on invested capital equal to the WACC, an airline must generate sufficient EBIT to satisfy ROIC = $\frac{\text{EBIT} \times (1-t)}{\text{Invested Capital}} \geq$ WACC. A newer fleet has a higher net book value (less accumulated depreciation), which increases invested capital. For a given level of revenue, a larger capital base means the airline must produce a higher absolute EBIT—and therefore a higher EBIT margin—to achieve the same ROIC. In effect, newer aircraft of the same type raise the denominator of the return calculation, lifting the margin threshold required to cover the cost of capital.

Table 2: Derived Operating Margin Requirements Across Three WACC Estimation Methods

| # | Airline | Fleet Count | Invested Capital | | Turnover | | Uniform WACC (8.3%) | | | | Bloomberg WACC | | | | Broker Sourced WACC | | | | Margin Req. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Avg IC/AC ($m) | Cur IC/AC ($m) | Avg (x) | Cur (x) | WACC (%) | Avg Life (%) | Current (%) | Average (%) | WACC (%) | Avg Life (%) | Current (%) | Average (%) | WACC (%) | Avg Life (%) | Current (%) | Average (%) | Low (%) | Median (%) | High (%) |
| 1 | British Airways | 267 | 53.3 | 50.3 | 1.13 | 1.20 | 8.3 | 11.9 | 11.3 | 11.6 | 13.8 | 18.3 | 17.4 | 17.9 | 6.9 | 10.3 | 9.8 | 10.0 | 10.0 | 11.6 | 17.9 |
| 2 | Virgin Atlantic | 42 | 77.9 | 104.8 | 1.00 | 0.74 | 8.3 | 13.5 | 17.5 | 15.5 | 9.4 | 15.0 | 19.5 | 17.2 | 9.3 | 14.9 | 19.4 | 17.1 | 15.5 | 17.1 | 17.2 |
| 3 | American Airlines | 1,357 | 30.2 | 27.4 | 1.21 | 1.34 | 8.3 | 10.6 | 9.8 | 10.2 | 5.5 | 7.7 | 7.1 | 7.4 | 5.7 | 7.9 | 7.3 | 7.6 | 7.4 | 7.6 | 10.2 |
| 4 | Aer Lingus | 58 | 36.0 | 36.6 | 1.21 | 1.19 | 8.3 | 9.8 | 9.9 | 9.9 | 13.8 | 15.0 | 15.2 | 15.1 | 7.2 | 8.7 | 8.9 | 8.8 | 8.8 | 9.9 | 15.1 |
| 5 | Lufthansa | 334 | 45.8 | 42.9 | 1.05 | 1.12 | 8.3 | 13.6 | 12.8 | 13.2 | 7.1 | 12.0 | 11.3 | 11.6 | 6.7 | 11.4 | 10.7 | 11.1 | 11.1 | 11.6 | 13.2 |
| 6 | United Airlines | 1,190 | 35.6 | 32.4 | 1.14 | 1.25 | 8.3 | 11.3 | 10.5 | 10.9 | 8.4 | 11.5 | 10.6 | 11.0 | 7.8 | 10.8 | 10.0 | 10.4 | 10.4 | 10.9 | 11.0 |
| 7 | SAS | 100 | 37.6 | 47.6 | 0.92 | 0.73 | 8.3 | 14.1 | 17.4 | 15.8 | 5.2 | 9.8 | 11.9 | 10.9 | 4.9 | 9.4 | 11.3 | 10.4 | 10.4 | 10.9 | 15.8 |
| 8 | Swiss | 112 | 45.3 | 46.8 | 1.15 | 1.11 | 8.3 | 10.5 | 10.8 | 10.7 | 7.1 | 9.3 | 9.5 | 9.4 | 7.0 | 9.2 | 9.5 | 9.3 | 9.3 | 9.4 | 10.7 |
| 9 | Eurowings | 117 | 26.8 | 23.9 | 1.00 | 1.13 | 8.3 | 14.2 | 12.8 | 13.5 | 7.1 | 12.5 | 11.3 | 11.9 | 6.7 | 11.8 | 10.7 | 11.3 | 11.3 | 11.9 | 13.5 |
| 10 | Delta Air Lines | 1,105 | 30.9 | 27.8 | 1.36 | 1.51 | 8.3 | 9.5 | 8.7 | 9.1 | 9.4 | 10.6 | 9.7 | 10.1 | 8.8 | 10.0 | 9.2 | 9.6 | 9.1 | 9.6 | 10.1 |
| 11 | Iberia | 156 | 46.0 | 56.2 | 1.19 | 0.98 | 8.3 | 11.3 | 13.4 | 12.4 | 13.8 | 17.4 | 20.9 | 19.2 | 6.9 | 9.8 | 11.6 | 10.7 | 10.7 | 12.4 | 19.2 |
| 12 | Air Canada | 282 | 40.5 | 40.0 | 1.08 | 1.09 | 8.3 | 12.5 | 12.4 | 12.4 | 7.2 | 11.1 | 11.0 | 11.1 | 5.8 | 9.5 | 9.4 | 9.4 | 9.4 | 11.1 | 12.4 |
| 13 | KLM | 118 | 56.2 | 54.2 | 1.30 | 1.35 | 8.3 | 10.5 | 10.1 | 10.3 | 5.2 | 7.2 | 7.0 | 7.1 | 4.7 | 6.7 | 6.6 | 6.7 | 6.7 | 7.1 | 10.3 |
| 14 | Qatar Airways | 225 | 77.2 | 90.1 | 1.00 | 0.86 | 8.3 | 10.7 | 12.1 | 11.4 | 9.2 | 11.5 | 13.2 | 12.4 | 7.8 | 10.2 | 11.6 | 10.9 | 10.9 | 11.4 | 12.4 |
| 15 | Emirates | 246 | 98.0 | 105.5 | 1.24 | 1.16 | 8.3 | 8.6 | 9.1 | 8.9 | 7.7 | 8.1 | 8.6 | 8.4 | 8.2 | 8.5 | 9.1 | 8.8 | 8.4 | 8.8 | 8.9 |
| 16 | Air France | 251 | 53.3 | 49.8 | 1.17 | 1.25 | 8.3 | 11.5 | 10.9 | 11.2 | 5.2 | 8.0 | 7.6 | 7.8 | 4.8 | 7.5 | 7.1 | 7.3 | 7.3 | 7.8 | 11.2 |
| 17 | Turkish Airlines | 354 | 44.9 | 53.3 | 1.17 | 0.98 | 8.3 | 11.5 | 13.4 | 12.5 | 16.6 | 21.0 | 24.6 | 22.8 | 16.2 | 20.6 | 24.1 | 22.4 | 12.5 | 22.4 | 22.8 |
| 18 | TAP Portugal | 100 | 37.0 | 43.9 | 1.17 | 0.99 | 8.3 | 11.0 | 12.7 | 11.9 | 4.6 | 7.0 | 8.0 | 7.5 | 8.2 | 10.9 | 12.6 | 11.7 | 7.5 | 11.7 | 11.9 |
| 19 | Saudia | 160 | 60.8 | 68.8 | 0.78 | 0.69 | 8.3 | 16.4 | 18.2 | 17.3 | 8.1 | 16.1 | 17.9 | 17.0 | 8.0 | 16.0 | 17.8 | 16.9 | 16.9 | 17.0 | 17.3 |
| – | Other LHR Operators | 5,513 | 44.1 | 50.4 | 0.82 | 0.72 | Mixed | 16.4 | 18.4 | 17.4 | Mixed | 25.0 | 25.6 | 25.3 | Mixed | | | | 17.4 | 21.4 | 25.3 |
| – | Simple Average (n=20) | | 48.9 | 52.6 | 1.11 | 1.07 | – | 12.0 | 12.6 | 12.3 | – | 12.7 | 13.4 | 13.1 | – | 10.7 | 11.4 | 11.1 | 11.1 | 12.3 | 13.1 |
| – | Revenue-Weighted Avg (by rev) | | 43.1 | 46.1 | 1.00 | 0.93 | – | 13.2 | 13.9 | 13.5 | – | 16.8 | 17.1 | 17.0 | – | 10.5 | 10.6 | 10.5 | 10.5 | 13.5 | 17.0 |

*Source:* IAG analysis workbook ‘‘airline_comparison_20260227.xlsx’’, sheet ‘‘Summary’’.

## How Large Should the Margin Uplift Be if Frontier Economics Is Correct?

5.8 Frontier Economics estimates a congestion premium of up to £80 per round trip for short-haul direct passengers and up to £250 per round trip for long-haul direct passengers[24], and a minimum total starting scarcity rent of £3.5bn across Heathrow.[25] IAG has re-expressed these estimates using IATA Direct Data Solutions (DDS) passenger volumes for 2024, which record an estimated 81.9 million passengers at Heathrow, consistent with the 83.9 million reported in Heathrow's 2024 financial statements.[26] Unfortunately, based on the number of direct passengers in the DDS data set using the quoted estimates from Frontier would result in an overall congestion premium that is higher than the total they quote. We calibrate these per passenger numbers down to hold constant the £3.5bn congestion premium and express it as a £107 per long-haul direct passenger and £34 per short-haul direct passenger.

5.9 Based on their share of direct traffic, British Airways and Virgin Atlantic should together collect approximately £1,865m per annum in profit above normal economic returns if the rent exists as claimed. Table 3 shows the passenger volumes and implied total scarcity-rent by carrier (labelled ''Premium (£m)'') and per direct passenger (labeled ''£/P2P'').

5.10 Note on data in Table 3: The figures are rounded to the nearest hundred thousand passengers, million pounds, and pound per passenger. Carriers that show zero passengers in a given category may have a very small direct share percentage, reflecting that some of their operations an on ad-hoc basis may have been less than 2,000 miles.

[24] £40 per direct one-way, short-haul passenger and £125 per direct, long-haul passenger

[25] Frontier's per-passenger estimates are cited from [Frontier Economics, 2025, p. 50].

[26] Heathrow's 2024 reported passenger figure is cited at [Heathrow Airport Holdings Limited, 2024, p. 151].

Table 3: P2P Passenger Journeys & Predicted Congestion Premium by Carrier at London Heathrow, 2024

| | Carrier | SH P2P (m) | LH P2P (m) | P2P (m) | % All P2P | SH P2P % | LH P2P % | P2P % | Premium (£m) | £/P2P |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | British Airways (BA) | 17.0 | 8.5 | 25.5 | 50.2% | 71.0% | 55.6% | 65.0% | 1,494 | 59 |
| 2 | Virgin Atlantic (VS) | 0.0 | 3.3 | 3.3 | 6.6% | 54.5% | 72.7% | 72.7% | 360 | 107 |
| 3 | American Airlines (AA) | 0.0 | 1.4 | 1.4 | 2.8% | 66.7% | 39.6% | 39.6% | 152 | 107 |
| 4 | United Airlines (UA) | 0.0 | 1.6 | 1.6 | 3.2% | 66.0% | 70.1% | 70.1% | 173 | 107 |
| 5 | Aer Lingus (EI) | 1.6 | 0.0 | 1.6 | 3.2% | 79.7% | — | 79.7% | 56 | 34 |
| 6 | Emirates (EK) | 0.0 | 0.9 | 0.9 | 1.9% | 100.0% | 46.3% | 46.3% | 101 | 107 |
| 7 | Lufthansa (LH) | 1.3 | 0.0 | 1.3 | 2.5% | 66.2% | — | 66.2% | 44 | 34 |
| 8 | Qatar Airways (QR) | 0.0 | 0.3 | 0.3 | 0.6% | 48.5% | 16.5% | 16.5% | 31 | 107 |
| 9 | Air Canada (AC) | 0.0 | 1.0 | 1.0 | 2.0% | 0.0% | 59.7% | 59.7% | 107 | 107 |
| 10 | SAS (SK) | 1.0 | 0.0 | 1.0 | 2.0% | 72.3% | — | 72.3% | 34 | 34 |
| 11 | Delta (DL) | 0.0 | 0.6 | 0.6 | 1.2% | — | 56.0% | 56.0% | 67 | 107 |
| 12 | Iberia (IB) | 0.8 | 0.0 | 0.8 | 1.6% | 73.5% | 0.0% | 73.5% | 28 | 34 |
| 13 | SWISS (LX) | 0.9 | 0.0 | 0.9 | 1.8% | 82.7% | — | 82.7% | 31 | 34 |
| 14 | Etihad (EY) | 0.0 | 0.3 | 0.3 | 0.5% | 7.2% | 24.6% | 24.5% | 28 | 107 |
| 15 | Eurowings (EW) | 0.9 | 0.0 | 0.9 | 1.8% | 90.5% | 100.0% | 90.5% | 31 | 34 |
| 16 | Saudia (SV) | 0.0 | 0.6 | 0.6 | 1.2% | 100.0% | 62.3% | 62.3% | 65 | 107 |
| 17 | Air India (AI) | 0.0 | 0.4 | 0.4 | 0.8% | — | 43.1% | 43.1% | 44 | 107 |
| 18 | Cathay Pacific (CX) | 0.0 | 0.6 | 0.6 | 1.2% | — | 67.9% | 67.9% | 64 | 107 |
| 19 | KLM (KL) | 0.4 | 0.0 | 0.4 | 0.9% | 59.2% | 68.8% | 59.2% | 15 | 34 |
| 20 | TAP Portugal (TP) | 0.5 | 0.0 | 0.5 | 0.9% | 72.6% | — | 72.6% | 16 | 34 |
| | All other (75 carriers) | 2.2 | 4.5 | 6.7 | 13.2% | 57.5% | 55.8% | 56.4% | 560 | 84 |
| | **Total** | **26.6** | **24.1** | **50.7** | **100.0%** | **70.6%** | **54.4%** | **61.9%** | **3,500** | **69** |

*Source:* IAG analysis of IATA DDS data with Frontier Economics £3.5bn overlay.

5.11 Table 4 confirms the scale of British Airways and Virgin Atlantic's presence at Heathrow: in 2024, they together accounted for 55.3% of scheduled flights, 52.1% of scheduled seats, and 45.4% of scheduled available seat kilometres.

Table 4: Scheduled Carrier Capacity at London Heathrow, 2024

| | Carrier | Flights | % | Seats (m) | % | ASKs (bn) | % |
|---|---|---|---|---|---|---|---|
| 1 | British Airways (BA) | 243,073 | 50.6% | 48.4 | 46.0% | 151.4 | 35.1% |
| 2 | Virgin Atlantic (VS) | 22,373 | 4.7% | 6.4 | 6.1% | 44.4 | 10.3% |
| 3 | American Airlines (AA) | 16,408 | 3.4% | 4.7 | 4.5% | 31.8 | 7.4% |
| 4 | Aer Lingus (EI) | 14,856 | 3.1% | 2.7 | 2.6% | 1.4 | 0.3% |
| 5 | Lufthansa (LH) | 14,405 | 3.0% | 2.6 | 2.5% | 2.0 | 0.5% |
| 6 | United Airlines (UA) | 13,463 | 2.8% | 3.0 | 2.8% | 21.0 | 4.9% |
| 7 | SAS (SK) | 10,459 | 2.2% | 1.9 | 1.8% | 2.3 | 0.5% |
| 8 | SWISS (LX) | 8,703 | 1.8% | 1.4 | 1.3% | 1.1 | 0.2% |
| 9 | Eurowings (EW) | 8,386 | 1.7% | 1.3 | 1.3% | 0.8 | 0.2% |
| 10 | Delta (DL) | 7,100 | 1.5% | 1.7 | 1.6% | 11.2 | 2.6% |
| 11 | Iberia (IB) | 6,388 | 1.3% | 1.3 | 1.3% | 1.7 | 0.4% |
| 12 | Air Canada (AC) | 6,104 | 1.3% | 1.9 | 1.8% | 11.6 | 2.7% |
| 13 | KLM (KL) | 5,648 | 1.2% | 0.9 | 0.9% | 0.3 | 0.1% |
| 14 | Qatar Airways (QR) | 5,254 | 1.1% | 2.0 | 1.9% | 10.4 | 2.4% |
| 15 | Emirates (EK) | 4,942 | 1.0% | 2.4 | 2.3% | 13.0 | 3.0% |
| 16 | Air France (AF) | 4,872 | 1.0% | 0.7 | 0.7% | 0.3 | 0.1% |
| 17 | Turkish Airlines (TK) | 4,602 | 1.0% | 1.2 | 1.2% | 3.1 | 0.7% |
| 18 | TAP Portugal (TP) | 4,286 | 0.9% | 0.8 | 0.8% | 1.3 | 0.3% |
| 19 | Loganair (LM) | 4,004 | 0.8% | 0.2 | 0.2% | 0.1 | 0.0% |
| 20 | Saudia (SV) | 3,596 | 0.7% | 1.1 | 1.1% | 5.5 | 1.3% |
| | All other (62 carriers) | 71,299 | 14.8% | 18.4 | 17.5% | 116.4 | 27.0% |
| | **Total** | **480,221** | **100.0%** | **105.2** | **100.0%** | **431.2** | **100.0%** |

*Source:* IAG analysis of OAG schedule data.

5.12 Note on data: IATA's Direct Data Service (DDS) data randomises reported fare values in markets with limited head to head competition, defined as fewer than three ticketing carriers, a single carrier holding more than 75% of an origin-and-destination market, or any two carriers combined exceeding 90%. Table 5 sets out the applicable rules. This means that the DDS data is used here solely for passenger volumes, not for fare-level analysis.[27]

[27] The fare-level analysis done by Frontier Economics is likely to suffer from significant issues due to randomisation, which could severely impact the overall quality of the Frontier work. See DDS manual at [International Air Transport Association (IATA) and Airlines Reporting Corporation (ARC), 2025, pp. 1640–1642].

Table 5: Industry Fare Calculation Rules (per True Origin and Destination, Service Class, and Purchase Date)

| Criteria | Significant Head to Head Competition | Limited Head to Head Competition |
|---|---|---|
| **Min. carriers ticketing** | $\geq 3$ | $< 3$ |
| **Single-carrier max. market share** | $\leq 75\%$ | $> 75\%$ (any single carrier) |
| **Top-2 carriers combined max. share** | $\leq 90\%$ | $> 90\%$ (any two-carrier combination) |
| **Condition logic** | All three criteria satisfied | Any one criterion violated |
| **Fare displayed** | Industry Average Fare | Regression Fare |
| **Industry Fare formula** | Industry Fare $= \frac{\text{Actual Revenue (last 7 days)}}{\text{Count of Sales (last 7 days)}}$ | |
| **Regression Fare formula** | *N/A* | Regression Fare = Industry Fare $\times R$ where $R \in [0.8,\ 1.2]$ is a randomisation factor drawn once per month per True Origin and Destination and Class combination |
| **Final Fare** | Industry Fare | Industry Fare $\times R$ |

## Did 2024 Margins Show the Predicted Scarcity Rent? No

5.13 Table 6 compares the operating profits actually reported by British Airways and Virgin Atlantic in 2024 against the level that would be required to cover the cost of capital plus the Frontier Economics scarcity rent. The required margin for each airline used in this comparison is drawn from the lowest end of the range shown in Table 2, and is therefore the lowest threshold against which to measure each airlines' performance.[28]

[28]For ease of comparison over a longer time series and to limit the number of adjustments, the full financial statements for British Airways PLC were used on the 2024 presentation, which excludes the BA Holidays business. This does include BA Euroflyer and BA Cityflyer operations, which if excluded would increase BA's margins by 0.5 pts in 2024 and 0.3 pts in 2023. Audited financial statements for both BA CityFlyer and BA EuroFlyer are available at Companies House. [BA EuroFlyer Limited, 2024] [BA CityFlyer Limited, 2024]. Virgin Atlantic's airline operating margins are calculated from its segment reporting to exclude the impact of the Virgin Holidays business.

Table 6: Test of LHR Based Carriers Margins vs. Congestion Premium Predictions, 2024

| | Concept | Virgin Atlantic | British Airways | Combined |
|---|---|---|---|---|
| | Reported Revenues (£M)[a] | 2,784 | 14,568 | 17,352 |
| ÷ | Estimated EBIT (£M)[a] | 144 | 2,060 | 2,204 |
| = | Reported Operating Margin (%)[a] | 5.2 | 14.1 | 12.7 |
| | Total Revenues (£M) | 2,784 | 14,568 | 17,352 |
| − | Predicted Congestion Premium (£M) | 360 | 1,494 | 1,854 |
| = | Adjusted Revenues (£M) | 2,424 | 13,074 | 15,498 |
| × | Required Margin (%) | 15.5 | 10.0 | 10.9 |
| = | Threshold EBIT (£M) | 376 | 1,307 | 1,683 |
| + | Add Back: Congestion Premium (£M) | 360 | 1,494 | 1,854 |
| = | Expected EBIT (£M) | 736 | 2,801 | 3,537 |
| − | Estimated EBIT (£M) | 144 | 2,060 | 2,204 |
| = | Excess vs. Threshold (£M) | −592 | −741 | −1,333 |
| | Below Expectation (%) | -164.4 | -49.6 | -71.9 |
| | **Shortfall (EBIT Margin pts)** | −21.3 | −5.1 | −7.7 |
| | Passengers (m)[b] | 5.6 | 46.2 | 51.8 |
| | Operating Profit per Passenger (£)[b] | 26 | 45 | 43 |
| | Expected Operating Profit per Passenger (£) | 131 | 61 | 68 |
| | **Shortfall in Operating Profit per Passenger (£)** | −106 | −16 | −26 |

*Source:* IAG analysis of Virgin Atlantic and British Airways financial statements.

[a] Reported revenues, estimated EBIT and estimated margins are sourced from analysis of Virgin Atlantic Annual Report and Financial Statements 2024, Note 5 (Segment information) and Alternative Performative Measures [Virgin Atlantic, 2024, pp. 119,138-140], and from British Airways Annual Report and Accounts 2024 (Companies House filing), Consolidated Income Statement [British Airways Plc, 2024, p. 42].

[b] Passenger and operating-profit-per-passenger inputs are sourced from Virgin Atlantic Annual Report and Financial Statements 2024 [Virgin Atlantic, 2024, p. 17], and from IAG Full Year Results 2024 (management report release) [International Consolidated Airlines Group (IAG), 2024, p. 11].

5.14 The result is unambiguous. The two carriers together earned £1,333m less than the predicted premium above normal returns, a shortfall of 71.9% against what the Frontier Economics estimate implies. The scarcity rent hypothesis faces a logical dilemma from which it cannot escape: either the rent does not exist in any material form, or it is being entirely dissipated by elevated costs (outside of Heathrow's airport charges) and inefficiency. The latter explanation is directly contradicted by the cost benchmarking evidence in Section 7, which shows that British Airways and Virgin Atlantic are cost-competitive against their head-to-head peers.

5.15 Frontier's own stated mechanism offers a third exit/option: scarcity rents exist but are competed away to passengers immediately through pricing competition and therefore never accumulate as profit. This explanation is not available to Frontier, because their own mechanism requires rents to accumulate as profits before expansion removes them; if they are competed away immediately, there is no welfare transfer for expansion to unlock, and the £79bn NPV benefit from lower fares collapses regardless.

## Has the Rent Been Consistently Present Over Time, Just Absent in 2024? No

5.16 Frontier Economics has been estimating an increasing scarcity rent at Heathrow since at least 2017, with the figure rising from £2bn for 2016[29] to £3.5bn for 2023 and 2024.[30] If this trajectory were correct, one would expect to observe a rising trend in British Airways' operating margins and profit per passenger over the same period.

5.17 The data show no such trend. British Airways' operating margin and profit per passenger have remained broadly stable at approximately 14 to 15% and £40 to £45 per passenger respectively across the period 2016 to 2024, excluding the COVID years. Margins have not risen in line with the claimed growth in the rent pool. The time series is inconsistent with a scarcity rent that has grown by 75% over eight years.

Table 7: Operating Profit per Passenger and Operating Margin, 2016–2024

| Year | Virgin Atlantic Operating Profit per Passenger (£)[a] | Virgin Atlantic Operating Margin (%)[a] | British Airways Operating Profit per Passenger (£)[b] | British Airways Operating Margin (%)[b] |
|---|---|---|---|---|
| 2024 | 26 | 5.2 | 45 | 14.1 |
| 2023 | −5 | −1.1 | 33 | 10.0 |
| 2022 | −16 | −2.5 | 9 | 2.7 |
| 2021 | −254 | −30.2 | −184 | −51.4 |
| 2020 | −452 | −62.1 | −189 | −58.2 |
| 2019 | 12 | 2.5 | 40 | 14.5 |
| 2018 | 15 | 3.0 | 42 | 15.0 |
| 2017 | −2 | −0.5 | 39 | 14.4 |
| 2016 | 7 | 1.5 | 33 | 12.9 |

*Source:* IAG analysis of Virgin Atlantic and British Airways financial statements.
[a] Passenger and operating-profit-per-passenger inputs are sourced from Virgin Atlantic Annual Report and Financial Statements 2016–2024.
[b] Passenger and operating-profit-per-passenger inputs are sourced from British Airways PLC Annual Reports 2016–2024.

## Does Virgin Atlantic Outperform British Airways Per Passenger? No

5.18 The Frontier Economics methodology attributes a congestion premium of approximately three times as much per round trip to long-haul passengers as to short-haul passengers. Virgin Atlantic operates an almost entirely long-haul network, whereas British Airways operates a substantial short-haul network alongside its long-haul services. Under the scarcity rent hypothesis, Virgin Atlantic should therefore earn a materially higher profit per passenger than British Airways.[31]

5.19 The evidence is directly contrary to this prediction. Virgin Atlantic's estimated airline operating profit per passenger was £26 in 2024 and negative £5 in 2023.[32] British Airways' airline operating profit per passenger was £45 in 2024 and £33 in 2023.[33]

5.20

[29] See Frontier's 2016 estimate at [Frontier Economics, 2017, p. 5] and their 2018 estimate at [Frontier Economics, 2019, p. 64].
[30] See the 2023 estimate in Frontier's Heathrow Cost Benefit Analysis at [Frontier Economics, 2025, p. 50].
[31] This profit-per-passenger implication is linked in this submission to [Frontier Economics, 2025, p. 64].
[32] Estimated from figures disclosed in the 2024 Virgin Atlantic Annual Report, Note 5 and Alternative Performance Measures [Virgin Atlantic, 2024, pp. 119, 138–140].
[33] Calculated from figures disclosed in the 2024 British Airways PLC audited financial statements [British Airways Plc, 2024, p. 2].

This cross-carrier comparison constitutes a second, independent falsification of the scarcity rent hypothesis. It is not sufficient for Frontier Economics to argue that the rent exists but is dissipated, because the dissipation would need to fall disproportionately on the carrier with the greatest long-haul exposure, which is precisely the carrier the methodology predicts should benefit most. There is no plausible mechanism that produces this outcome under the scarcity rent framework.

## Margin Conclusion: Two Independent Tests Both Reject the Scarcity Rent

5.21 The margin evidence falsifies the Frontier Economics scarcity rent hypothesis on two independent grounds. First, the aggregate profit earned by British Airways and Virgin Atlantic in 2024 falls £1,333m short of the level predicted by the Frontier Economics rent estimate, a shortfall of 71.9%. Second, the distribution of profitability between the two carriers is the opposite of what the hypothesis predicts: the carrier with the highest proportion of long-haul exposure earns less per passenger, not more.

5.22 Neither finding can be reconciled with the existence of a large, persistent scarcity rent at Heathrow. Some carriers do earn returns above their cost of capital in some years, as any competitive market will occasionally produce. Ryanair, for example, has earned margins well above its cost of capital requirements in most recent years. However, this does not imply that all carriers at a given airport do so, and it does not substitute for the specific, quantified prediction that Frontier Economics makes about British Airways and Virgin Atlantic. That prediction is not supported by the evidence.

5.23 The margin tests, considered alongside the cost benchmarking in Section 7, the seat factor analysis in Section 8, and the fare analysis in Section 9, present a consistent picture. The scarcity rent does not appear in any of the empirical measures through which it would be expected to manifest. The burden of proof lies with those who assert its existence, and that burden has not been discharged.

# 6 Do Other Tests of Heathrow Airline Economics Show Evidence of Airline Capture of Scarcity Rents? No

6.1 **Claim tested:** The starting scarcity rent hypothesis implies not only that all carriers at Heathrow earn returns in excess of their cost of capital and Heathrow-based carriers should earn elevated profits in absolute terms, but that Heathrow should be the most profitable operating environment for its home carriers relative to less constrained hubs elsewhere. The predicted scarcity rent for 2024 was ''at least £3.5bn'' which is approximately 10.4% of total airline industry profits at an airport with only 2% of global available seat kilometres of production. If slot scarcity generates a meaningful rent, British Airways should outperform carriers operating at airports with spare capacity, all else equal.[34]

6.2 **Finding:** It does not. Within IAG, Iberia, whose home airport in Madrid has meaningful spare capacity, delivered a higher 2024 estimated airline margin than British Airways and a higher margin in 2025. Aer Lingus peformed better in 2017 and 2018. Ryanair has years where they consistently have higher margins. British Airways is a well-run airline with a strong network and a competitive cost structure, but it does not deliver margins that are in the range required to demonstrate that it captures a starting scarcity rent.

## Do Airlines Operating at Heathrow Produce Excess Margins in Aggregate? No

6.3 The independent evidence produced by Oliver Wyman in their paper published on 11 March 2026 estimates that overall operating margins at Heathrow in 2024 were 9.7%, which is less than the 10.5% as the estimated lowest WACC returning level for Heathrow carriers.[35]

## Have British Airways Margins Consistently Been the Highest in the World? No

6.4 While Oliver Wyman estimates that overall margins at Heathrow fell below the level required to fully recover the cost of capital, British Airways' margins are nonetheless cited as evidence of a scarcity rent accruing to the home carrier. This framing does not withstand scrutiny. For British Airways to deliver its pro-rata share of the Frontier Economics predicted congestion premium, it would need to earn an operating margin of at least 19.2%;[36] in 2024 it fell 5.1 percentage points short of that threshold, and in 2025 it fell 4.0 percentage points short.

6.5 Even setting aside the shortfall, margin performance alone cannot distinguish between returns driven by cost competitiveness and returns driven by congestion. Ryanair, an ultra-low-cost carrier with no presence at Heathrow, routinely outperforms British Airways margins: its operating margins were 23.0% in 2017, 23.3% in 2018, and 15.3% in fiscal year 2024 (1 April 2023 to 31 March 2024), in each case exceeding British Airways' reported figure. When efficient carriers operating entirely or predominantly outside Heathrow consistently match or exceed BA's margins, further scrutiny must be applied.

### Does British Airways Always Deliver the Highest Margins Within IAG? No

6.6 If airlines capture a scarcity rent at slot-constrained hubs, British Airways should consistently outperform carriers based at airports where capacity is more freely available. The evidence does not support this proposition.

6.7 Within IAG, neither Iberia nor Aer Lingus faces the same level of binding, system-wide slot scarcity that characterises Heathrow: both Madrid Barajas and Dublin Airport are IATA Level 3 coordinated airports, but both airports are operating under capacity and each has received movement growth over since 2019. Yet both carriers have matched or exceed British Airways' margins at different points in time. Iberia's reported 2024 operating margin of 13.6% is suppressed by a one-time charge related to the restructuring of its ground handling business and by the inclusion of its engine MRO business, which typically earns materially lower margins than airline operations. Adjusting for these factors[37] yields an estimated underlying airline margin of approximately 15.5%, above British Airways' reported figure. In 2025, Iberia's reported margin of 16.2% exceeds British Airways' 15.1% without adjustment[38]. Aer Lingus similarly outperformed British Airways in both 2017 (14.5% against 14.3%) and 2018 (16.2% against 15.6%)[39].

### Global Hub Conclusion: Heathrow Confers No Measurable Margin Advantage to Airlines

6.8 British Airways is a high-performing airline by most measures: it has a strong network, a competitive cost base, and a well-established corporate and loyalty customer base. What it does not have is the abnormally elevated profitability that would be expected if it were capturing a large starting scarcity premium. Carriers at less movement constrained airports have matched or exceeded its margins in a number of recent years. The results delivered are consistent with a competitive market in which British Airways has a good relative cost structure for its operating environment and delivers commercial performance broadly in line with the industry.

[34] This implication is linked here to [Frontier Economics, 2025, p. 64].

[35] See [Oliver Wyman, 2026, p. 8] and Table 2.

[36] See Table 6. This figure is the sum of British Airways' reported operating margin and the shortfall against the predicted premium.

[37] MRO businesses typically earn lower margins than airline operations; applying a reasonable MRO margin estimate of 8%, removing the one-time charge associated with the loss of the ground handling licenses, and adjusting Iberia's other revenue to be proportionate to that of British Airways yields an estimated underlying airline margin for Iberia of approximately 15.5%, which exceeds British Airways' reported margin.

[38] See [International Consolidated Airlines Group (IAG), 2025, p. 49] for IAG segment reporting

[39] See [International Consolidated Airlines Group (IAG), 2018, p. 14] and [International Consolidated Airlines Group (IAG), 2017, p. 14] for segment level operating margins

# 7 Do Heathrow-Based Carriers Have Uncompetitive Costs? No

7.1 **Claim tested:** If a starting scarcity rent exists but is not visible in airline margins, costs must be systematically elevated at Heathrow, sufficient to dissipate the rent. This section tests that claim using the Skailark Aviation Intelligence dataset, which reconstructs costs at the individual flight level and reconciles them against audited financial statements. It is the most granular publicly available dataset of its kind for this purpose.[40]

7.2 **Finding:** Heathrow carriers do face higher unit costs than carriers at comparator airports, but the explanation is structural: airport charges at Heathrow are materially higher, and carriers deploy lower-density cabin configurations to deliver more premium seat and service products. Once these factors are controlled for, Heathrow-based carriers are cost-efficient relative to their head-to-head competitors. The cost dissipation explanation for the missing scarcity rent is not supported.

## Are Unit Costs Higher at Heathrow Than at Comparator Airports? Yes, for Structural Reasons

7.3 To benchmark cost efficiency of carriers, the standard approach is to compare unit costs, which normalise total costs by the amount of capacity deployed. The most common unit cost metric is Cost per Available Seat Kilometre ($C/ASK$), which divides total operating costs by the total number of seat kilometres available for sale. Carriers operating at Heathrow exhibit higher Cost per Available Seat Kilometre ($C/ASK$) than carriers at the Frontier Economics 2019 comparator airports, for both long-haul and short-haul flying.

7.4 However, $C/ASK$ conflates two distinct factors: the cost of operating the aircraft independently of cabin configuration, and the commercial decision to configure and fly aircraft with fewer economy seats and more premium seats. To separate these two levels, this analysis employs a three-level metric approach:

1. $C/ASK$**:** The top-level unit cost metric, reflecting both operational efficiency and cabin configuration choices.
2. $C/ESK$ **(Cost per Equivalent Seat Kilometre):** Normalises capacity to a theoretical high-density configuration, isolating the cost of operating the aircraft independently of its interior.
3. $C/ESK$ **ex-Fuel:** Strips out fuel costs to isolate controllable managerial efficiency.

7.5 Using the Skailark dataset, we benchmark the unit costs of the Frontier 2019 comparator airports vs. the unit costs of operating at Heathrow, decomposing the gap into its constituent parts. The analysis is divided into two components, short-haul and long-haul, applying the Frontier distance threshold of 2,000 miles to distinguish between the two, consistent with the typical deployment of single-aisle and twin-aisle aircraft respectively.

7.6 Operating unit costs at Heathrow exceed those at the comparator airports in the Frontier 2019 study: long-haul unit costs are 5.5% higher and short-haul unit costs are 28.2% higher. The bridging analyses in Table 8 and Table 9 decompose the $C/ASK$ gap between Heathrow and the comparator airports into its

[40] Frontier's underlying margin-prediction reference in this submission is [Frontier Economics, 2025, p. 64].

constituent parts. These tables take the $C/ASK$ for the Frontier comparator airports as the starting point and systematically account for the differences relative to the $C/ASK$ for Heathrow operations. Given that cabin configurations and seat density differ across the comparator set, unit costs are first analysed in equivalent seat kilometres (ESKs) before translating the results into the ASK impact at the average seat density factor. The unit cost differential attributable to cabin configuration is then applied as a further adjustment. Two drivers are consistent across both haul types:

1. **Airport charges.** Heathrow's landing fees and passenger charges are materially higher than those at comparator airports, consistent with the CAA's findings in CAP 3195. For short-haul flying, airport charges account for approximately 60% of the $C/ESK$ gap between Heathrow and the comparator set (Table 9).[41] For long-haul operations, airlines operating out of Heathrow are more cost competitive on a $C/ESK$ basis[42] and less cost competitive on a $C/ASK$ basis than the flying in the Frontier 2019 comparator set. Even so, airport charges at Heathrow work against cost competitiveness for long-haul aircraft, accounting for approximately 44% of the $C/ASK$ gap.(Table 8)

2. **Cabin density.** Heathrow carriers deploy lower-density configurations, with more premium seats and fewer seats per aircraft than carriers at comparator airports. This raises $C/ASK$ mechanically: the same operating cost is spread across fewer seats. Cabin density is the most important single factor explaining the $C/ASK$ gap for long-haul flying (Table 8). Neither factor was formally accounted for in the Frontier Economics analyses.

[41] The remaining 40% of the short-haul $C/ESK$ gap relates to most of the other cost line items, with overhead and ground handling charges being the most significant.

[42] Overhead, Crew, and Navigation unit cost advantages on a $C/ESK$ basis provide the most benefit to long-haul operations at Heathrow, while Airport Charges offsets those advantages somewhat

Table 8: C/ASK Bridge — LHR vs Frontier Comparator Set (Long-haul, CY2024)

| **Step** | **C/ESK Effect (€ cents)** | **× avg(D)** | **C/ASK Effect (€ cents)** | **Cumulative (€ cents)** |
|---|---|---|---|---|
| **Frontier Comparator Set C/ASK** | – | – | – | 7.007 |
| *A. Ex-Fuel Unit Cost Effects* | | | | |
| Airport Charges | 0.108 | 1.584 | 0.171 | 7.178 |
| Aircraft Ownership | 0.013 | 1.584 | 0.021 | 7.199 |
| Pax Variable | 0.012 | 1.584 | 0.019 | 7.218 |
| Ground Handling | 0.007 | 1.584 | 0.011 | 7.229 |
| MRO | 0.001 | 1.584 | 0.001 | 7.230 |
| Navigation | −0.010 | 1.584 | −0.016 | 7.214 |
| Crew | −0.152 | 1.584 | −0.240 | 6.973 |
| Overhead | −0.216 | 1.584 | −0.342 | 6.632 |
| *Ex-Fuel Subtotal* | *-0.237* | *1.584* | *-0.376* | 6.632 |
| *B. Fuel* | | | | |
| Fuel | −0.019 | 1.584 | −0.031 | 6.601 |
| **Total C/ESK Effect** | **-0.256** | **1.584** | **-0.406** | 6.601 |
| *C. Cabin Configuration* | | | | |
| Density ($D_{LHR}$=1.67 vs $D_{comp}$=1.50) | – | – | 0.791 | 7.392 |
| **LHR C/ASK** | – | – | – | 7.392 |
| *% Difference* | – | – | – | +5.5% |

Source: Skailark CY2024. Identity: C/ASK = C/ESK × D where D = ESK/ASK (density ratio, ≥1). D(LHR) = 1.671, D(Frontier Comparator Set) = 1.497, avg(D) = 1.584. Each cost line's C/ESK gap × avg(D) = its C/ASK-equivalent effect. Section A: 7 ex-fuel cost lines sorted by materiality, plus overhead. Section B: fuel (ESK-proportional; haul-mix driven). Section C: cabin configuration penalty from LHR's premium density. A + B + C ≡ C/ASK gap exactly. All values in EUR cents.

Table 9: C/ASK Bridge — LHR vs Frontier Comparator Set (Short-haul, CY2024)

| Step | C/ESK Effect (€ cents) | × avg(D) | C/ASK Effect (€ cents) | Cumulative (€ cents) |
|---|---|---|---|---|
| **Frontier Comparator Set C/ASK** | – | – | – | 8.407 |
| *A. Ex-Fuel Unit Cost Effects* | | | | |
| Airport Charges | 1.190 | 1.103 | 1.312 | 9.719 |
| Ground Handling | 0.200 | 1.103 | 0.220 | 9.939 |
| MRO | 0.092 | 1.103 | 0.101 | 10.040 |
| Aircraft Ownership | 0.091 | 1.103 | 0.101 | 10.141 |
| Pax Variable | 0.087 | 1.103 | 0.096 | 10.237 |
| Navigation | 0.037 | 1.103 | 0.041 | 10.278 |
| Crew | −0.002 | 1.103 | −0.003 | 10.276 |
| Overhead | 0.257 | 1.103 | 0.284 | 10.559 |
| *Ex-Fuel Subtotal* | *+1.952* | *1.103* | *+2.152* | 10.559 |
| *B. Fuel* | | | | |
| Fuel | −0.073 | 1.103 | −0.081 | 10.478 |
| **Total C/ESK Effect** | **+1.878** | **1.103** | **+2.071** | 10.478 |
| *C. Cabin Configuration* | | | | |
| Density ($D_{LHR}$=1.12 vs $D_{comp}$=1.09) | – | – | 0.297 | 10.775 |
| **LHR C/ASK** | – | – | – | 10.775 |
| *% Difference* | – | – | – | +28.2% |

Source: Skailark CY2024. Identity: C/ASK = C/ESK × D where D = ESK/ASK (density ratio, ≥1). D(LHR) = 1.120, D(Frontier Comparator Set) = 1.086, avg(D) = 1.103. Each cost line's C/ESK gap × avg(D) = its C/ASK-equivalent effect. Section A: 7 ex-fuel cost lines sorted by materiality, plus overhead. Section B: fuel (ESK-proportional; haul-mix driven). Section C: cabin configuration penalty from LHR's premium density. A + B + C ≡ C/ASK gap exactly. All values in EUR cents.

## Are BA and Virgin Inefficient Once Structural Factors Are Controlled For? No

7.7 Having established that the $C/ASK$ premium at Heathrow is largely explained by airport charges and cabin configuration rather than operational inefficiency, the next question is whether Heathrow-based carriers are cost-efficient on a like-for-like basis. We do this by comparing the $C/ESK$ ex-Fuel of British Airways and Virgin Atlantic against the $C/ESK$ ex-Fuel of their head-to-head competitors on the same routes with the same aircraft types when there are a sufficient number of operations. This is the most direct test of whether Heathrow-based carriers are deploying inefficient operations relative to their direct competitors, controlling for the structural cost factors identified above.

7.8 On a $C/ESK$ ex-fuel basis, controlling for both fuel price variation and cabin density, British Airways and Virgin Atlantic are generally more cost-efficient than competing carriers operating the same routes with the same aircraft types. Tables 10 and 11 present the head-to-head results. On a supply-weighted average of equivalent seat kilometres across head-to-head competitors, British Airways is 11.8% more cost-competitive and Virgin Atlantic is 7.8% more cost-competitive.

Table 10: Tier 1: BA Aircraft-Type Matched H2H vs Competitors at LHR (C/ESK ex-Fuel)

| Code | Competitor | Overlap Routes | A/C Types | Flights | BA C/ESK ex-Fuel | Comp. C/ESK ex-Fuel | Delta (%) |
|---|---|---|---|---|---|---|---|
| AA | American Airlines | 5 | 4 | 17,315 | 2.91 | 4.09 | −28.8 |
| EK | Emirates | 1 | 2 | 5,276 | 2.86 | 2.73 | 4.6 |
| SQ | Singapore Airlines | 1 | 2 | 3,732 | 2.30 | 2.29 | 0.6 |
| VS | Virgin Atlantic | 10 | 2 | 9,115 | 2.74 | 2.96 | −7.4 |
| UA | United Airlines | 3 | 2 | 5,429 | 2.69 | 4.19 | −35.6 |
| CX | Cathay Pacific | 1 | 1 | 2,219 | 2.76 | 2.44 | 13.2 |
| SV | Saudia | 2 | 3 | 3,277 | 3.17 | 3.34 | −5.2 |
| AI | Air India | 3 | 3 | 3,966 | 3.08 | 2.52 | 22.6 |
| QF | Qantas | 1 | 2 | 1,907 | 2.34 | 3.19 | −26.6 |
| JL | Japan Airlines | 1 | 4 | 2,745 | 3.07 | 2.77 | 11.0 |
| QR | Qatar Airways | 1 | 1 | 2,557 | 2.91 | 3.28 | −11.5 |
| AC | Air Canada | 4 | 2 | 3,323 | 3.07 | 3.53 | −13.0 |
| NH | ANA | 1 | 1 | 794 | 3.42 | 2.27 | 50.5 |
| AM | Aeromexico | 1 | 1 | 1,190 | 2.61 | 2.89 | −9.7 |
| LH | Lufthansa | 2 | 3 | 13,833 | 7.42 | 11.28 | −34.2 |
| | **Supply-wtd avg** | 37 | 33 | 76,678 | 2.84 | 3.22 | −11.8 |

Matched on (airport pair × IATA aircraft code). C/ESK in EUR cents ex-fuel. Delta = (BA − Competitor) / Competitor. Negative = BA cheaper. Last row is supply-weighted average across all competitors.

Table 11: Tier 1: VS Aircraft-Type Matched H2H vs Competitors at LHR (C/ESK ex-Fuel)

| Code | Competitor | Overlap Routes | A/C Types | Flights | VS C/ESK ex-Fuel | Comp. C/ESK ex-Fuel | Delta (%) |
|---|---|---|---|---|---|---|---|
| BA | British Airways | 10 | 2 | 9,115 | 2.96 | 2.74 | 8.0 |
| UA | United Airlines | 2 | 1 | 3,230 | 2.86 | 3.84 | −25.6 |
| DL | Delta Air Lines | 2 | 1 | 2,317 | 2.52 | 4.12 | −38.7 |
| AC | Air Canada | 2 | 1 | 1,391 | 3.09 | 4.36 | −29.2 |
| AI | Air India | 1 | 1 | 675 | 3.08 | 1.89 | 62.5 |
| | **Supply-wtd avg** | 17 | 6 | 16,728 | 2.91 | 3.15 | −7.8 |

Matched on (airport pair × IATA aircraft code). C/ESK in EUR cents ex-fuel. Delta = (VS − Competitor) / Competitor. Negative = VS cheaper. Last row is supply-weighted average across all competitors.

7.9 This finding carries a direct implication for the margin analysis: if customer commercial preferences were equal, a more cost-efficient carrier should earn higher margins than its competitors when facing similar revenue conditions. The absence of superior margins at Virgin Atlantic as demonstrated in Section 5 constitutes further evidence against the existence of a starting scarcity rent available for capture by those carriers. The fact that British Airways earned a healthy 2024 margin is consistent with normal competitive profitability, given the structural cost factors at play, but does not support the existence of a material starting scarcity rent captured by Heathrow-based carriers.

### Are Foreign Carriers Deploying Inefficient Capacity to Heathrow? No

7.10 A residual concern is that the foreign carriers used as benchmarks in the head-to-head test are themselves deploying inefficient operations at Heathrow, which would make the comparison unduly favourable to British Airways and Virgin Atlantic. This is tested by comparing each foreign carrier's $C/ESK$ ex-Fuel

at Heathrow against their system-wide average excluding Heathrow, again separating short-haul from long-haul. The methodology is set out in Table 12.

Table 12: Methodology: Global Peer Validation

| **Parameter** | **Description** |
|---|---|
| Scope | Foreign carriers at LHR, compared to their own global system averages |
| Metric | Cost per Equivalent Seat Kilometre (C/ESK), excluding fuel, in EUR cents |
| LHR premium | (LHR C/ESK − System C/ESK) / System C/ESK × 100 |
| Stage-length control | Comparisons split by haul category (long-haul ≥2,000 mi, short-haul <2,000 mi) to avoid network-mix bias |
| Heathrow vs. Carrier System | Same comparison of Heathrow vs. the rest of their operations |
| Data source | Skailark Cost Model (17 January 2026 release) |

Comparing blended system C/ESK to LHR C/ESK is misleading: carriers with large domestic/short-haul networks (e.g. US majors) show inflated system averages, making LHR appear artificially cheap. Splitting by haul category eliminates this bias.

7.11 The results show that foreign long-haul carriers' $C/ESK$ unit costs at Heathrow are approximately 7.8% higher than their system-wide averages (Table 13), and foreign short-haul carriers' costs are approximately 21.8% higher (Table 14). This is consistent with Heathrow being a structurally more expensive operating environment as seen in Tables 8 and 9, rather than with carriers deploying inefficient capacity. The benchmarks used in the head-to-head test are therefore valid: these are efficient operators responding to Heathrow's specific cost conditions.

Table 13: Tier 2: Long-Haul System vs LHR Unit Cost — Top 20 Carriers (EUR cents)

| Code | Carrier | System C/ESK ex-Fuel (LH) | LHR C/ESK ex-Fuel (LH) | LHR Premium (%) | LHR LH Supply (bn ESK) | System Stage (km) | LHR Stage (km) |
|---|---|---|---|---|---|---|---|
| AA | American Airlines | 4.02 | 4.12 | 2.5 | 52.2 | 5,736 | 6,803 |
| UA | United Airlines | 3.94 | 4.24 | 7.8 | 36.1 | 6,341 | 6,931 |
| EK | Emirates | 2.67 | 2.73 | 2.3 | 22.1 | 6,491 | 5,498 |
| SQ | Singapore Airlines | 2.32 | 2.29 | −1.2 | 22.1 | 6,912 | 10,881 |
| DL | Delta Air Lines | 4.07 | 4.36 | 7.0 | 18.4 | 5,925 | 6,498 |
| CX | Cathay Pacific | 2.09 | 2.35 | 12.5 | 16.5 | 8,248 | 9,630 |
| QR | Qatar Airways | 2.65 | 2.96 | 12.0 | 16.2 | 6,444 | 5,241 |
| AC | Air Canada | 3.50 | 3.50 | 0.0 | 15.8 | 5,992 | 6,043 |
| QF | Qantas | 3.14 | 3.07 | −2.5 | 11.2 | 7,992 | 11,990 |
| EY | Etihad Airways | 2.48 | 2.66 | 7.2 | 10.7 | 6,325 | 5,516 |
| AI | Air India | 2.21 | 2.51 | 13.7 | 10.6 | 8,480 | 6,997 |
| SV | Saudia | 2.79 | 3.34 | 19.7 | 8.6 | 5,382 | 4,858 |
| TG | Thai Airways | 1.89 | 1.91 | 0.7 | 7.7 | 6,353 | 9,577 |
| JL | Japan Airlines | 2.53 | 2.77 | 9.5 | 6.9 | 7,452 | 9,590 |
| CA | Air China | 2.11 | 2.13 | 0.8 | 6.8 | 7,105 | 8,182 |
| MH | Malaysia Airlines | 2.24 | 1.88 | −16.0 | 6.8 | 5,789 | 10,605 |
| CZ | China Southern | 2.23 | 2.13 | −4.6 | 5.9 | 6,073 | 8,823 |
| MU | China Eastern | 2.04 | 2.01 | −1.3 | 4.7 | 6,961 | 9,240 |
| NH | ANA | 2.32 | 2.27 | −2.0 | 3.9 | 7,522 | 9,590 |
| BR | EVA Air | 2.14 | 2.30 | 7.3 | 3.8 | 8,985 | 9,577 |
| | *Subtotal (Top 20)* | 2.96 | 3.21 | 8.2 | 286.9 | 6,519 | 7,117 |
| | *Rest (23 carriers)* | 2.87 | 2.99 | 4.4 | 44.7 | 5,995 | 6,670 |
| | **Total** | 2.95 | 3.18 | 7.8 | 331.6 | 6,427 | 7,054 |

Source: Skailark CY2024. Long-Haul ≥2,000 mi. LHR Premium = (LHR C/ESK − System C/ESK) / System C/ESK × 100. Negative = carrier is cheaper at LHR than system-wide. Subtotal/rest/total unit costs are supply-weighted averages.

Table 14: Tier 2: Short-Haul System vs LHR Unit Cost — Top 20 Carriers (EUR cents)

| Code | Carrier | System C/ESK ex-Fuel (SH) | LHR C/ESK ex-Fuel (SH) | LHR Premium (%) | LHR SH Supply (bn ESK) | System Stage (km) | LHR Stage (km) |
|---|---|---|---|---|---|---|---|
| TK | Turkish Airlines | 4.81 | 4.88 | 1.4 | 4.3 | 1,418 | 2,488 |
| AY | Finnair | 4.24 | 5.66 | 33.5 | 2.1 | 1,440 | 1,756 |
| SL | SAS Link | 5.08 | 6.58 | 29.4 | 2.0 | 1,129 | 1,219 |
| IB | Iberia | 5.69 | 6.00 | 5.4 | 1.9 | 1,136 | 1,244 |
| LH | Lufthansa | 8.27 | 11.29 | 36.5 | 1.7 | 929 | 746 |
| TP | TAP Portugal | 4.97 | 5.01 | 0.7 | 1.5 | 1,517 | 1,565 |
| EI | Aer Lingus | 5.51 | 10.04 | 82.1 | 1.4 | 1,155 | 500 |
| A3 | Aegean Airlines | 4.82 | 3.91 | −19.0 | 1.4 | 1,111 | 2,427 |
| LX | SWISS | 9.07 | 11.92 | 31.4 | 1.1 | 907 | 775 |
| OS | Austrian | 7.29 | 6.53 | −10.5 | 0.8 | 911 | 1,275 |
| EW | Eurowings | 6.06 | 11.88 | 96.2 | 0.7 | 1,160 | 649 |
| FI | Icelandair | 5.24 | 6.82 | 30.1 | 0.7 | 2,137 | 1,894 |
| LO | LOT Polish | 6.81 | 4.75 | −30.3 | 0.6 | 983 | 1,469 |
| KM | Air Malta | 4.50 | 5.24 | 16.4 | 0.4 | 1,448 | 2,103 |
| CL | Lufthansa CityLine | 12.20 | 7.92 | −35.1 | 0.4 | 603 | 941 |
| SK | SAS | 7.24 | 7.63 | 5.4 | 0.4 | 930 | 1,146 |
| AF | Air France | 9.01 | 18.07 | 100.6 | 0.3 | 937 | 440 |
| R6 | BA (franchise) | 4.55 | 6.54 | 43.8 | 0.3 | 1,856 | 1,736 |
| VY | Vueling | 4.31 | 8.74 | 102.6 | 0.3 | 996 | 864 |
| KL | KLM | 8.67 | 30.52 | 252.0 | 0.2 | 972 | 370 |
| | *Subtotal (Top 20)* | 6.07 | 7.25 | 19.5 | 22.6 | 1,122 | 1,159 |
| | *Rest (14 carriers)* | 6.10 | 10.49 | 71.8 | 1.1 | 966 | 742 |
| | **Total** | 6.08 | 7.40 | 21.8 | 23.7 | 1,090 | 1,130 |

Source: Skailark CY2024. Short-Haul <2,000 mi. LHR Premium = (LHR C/ESK − System C/ESK) / System C/ESK × 100. Positive = carrier is more expensive at LHR on short-haul routes. Subtotal/rest/total unit costs are supply-weighted averages.

## Conclusion: Higher Fares at Heathrow Reflect Cost Recovery, Not Rent Extraction

7.12 Three findings emerge consistently from the cost benchmarking analysis. First, unit costs at Heathrow are higher than at comparator airports, driven by airport charges and lower cabin density; neither factor constitutes evidence of a scarcity rent. Second, Heathrow-based carriers are cost-efficient relative to their head-to-head competitors once these structural factors are controlled for. Third, the foreign carriers operating at Heathrow are not deploying inefficient capacity; they too face a structurally more expensive operating environment, as evidenced by the comparison of their Heathrow costs against their wider system averages.

7.13 The cost evidence does not support the dissipation hypothesis. The more consistent interpretation is that the fare premia observed at Heathrow reflect the cost of operating in a high-charge, lower-density environment, rather than the extraction of a congestion premium from captive passengers.

# 8 Are Seat Factors Higher at Heathrow? No

8.1 **Claim tested:** Under binding slot scarcity, airlines should seek to maximise passengers per scarce movement. If scarcity rents of the scale claimed by Frontier Economics existed, the incentive to fill every available seat would be acute, and seat factors at Heathrow should be consistently and materially higher than at comparator airports. Heathrow accounts for approximately 2% of global available seat kilometres, yet the claimed excess profitability represents more than 10% of total global airline profits.[43] The incentive to drive higher seat factors and capture that rent is therefore very strong.

8.2 **Finding:** Seat factors at Heathrow are not systematically higher than at comparator airports. Gatwick outperforms Heathrow on seat factors, as do the majority of airports in the Frontier Economics 2019 comparator set. This is inconsistent with the scarcity rent hypothesis.

## Are Seat Factors at Heathrow Higher Than at Gatwick? No

8.3 The most direct comparison is between Heathrow and Gatwick, two airports serving the same city with overlapping route networks. System-level seat factors for both airports are shown in Table 15. Seat factors at Heathrow are not higher than at Gatwick; on the contrary, Gatwick's seat factors exceed those at Heathrow. This is inconsistent with the prediction that slot scarcity at Heathrow should produce systematically fuller aircraft.

Table 15: LHR vs. LGW — Seat Factor Comparison (CY2024)

| Comparison | LHR SF (%) | LGW SF (%) | Diff (pp) | Finding |
|---|---|---|---|---|
| System-level | 80.9 | 84.8 | −3.8 | LHR SF lower |
| Matched city pairs (n=67) | 81.1 | 85.2 | −4.2 | LHR SF lower on matched routes |
| Same airline (n=30 carriers) | 81.6 | 80.9 | 0.7 | Same airline: LHR SF higher |

Source: Skailark CY2024. Three complementary comparisons: system-level (all routes), matched city pairs (same route at both airports), and same airline (carriers operating at both). If scarcity were driving rents, LHR seat factors should be *higher* — the data shows the opposite.

8.4 This result holds when the comparison is refined to matched city pairs, that is, the same route served from both airports, and when split by haul length. Table 16 shows that Gatwick seat factors exceed those at Heathrow on both short-haul and long-haul routes. Controlling for route characteristics does not rescue the prediction.

Table 16: Matched City Pairs by Haul Category — LHR vs LGW Seat Factors (CY2024)

| Haul Category | Matched Pairs | LHR SF (%) | LGW SF (%) | Diff (pp) | LHR Seats (m) | LGW Seats (m) |
|---|---|---|---|---|---|---|
| Short-haul | 48 | 78.2 | 86.4 | −8.3 | 24.8 | 17.5 |
| Long-haul | 19 | 82.3 | 84.3 | −2.0 | 57.7 | 23.8 |

Source: Skailark CY2024. Seat factor = pax / seats across matched city pairs (routes served by both airports). Short-haul < 2,000 mi; long-haul ≥ 2,000 mi. LHR SF is lower in both haul categories, with the gap wider on short-haul.

[43] IATA estimated 2024 global airline after-tax profits at $32.4bn on a 3.4% margin [IATA Sustainability and Economics, 2025, p. 12]. At 1.2781 USD per GBP, this equates to £25.2bn. A £3.5bn scarcity rent at Heathrow, taxed at 25%, would represent 10.4% of global airline profits.

### How Does Heathrow Rank Against the Frontier Comparator Airports? No: Seventh Out of Ten

8.5 Broadening the comparison to the full Frontier Economics 2019 comparator set, Heathrow ranks seventh out of ten airports on system-level seat factors (Table 17). Six of the nine comparator airports record higher seat factors than Heathrow. This pattern is not consistent with an airport where the scarcity of slots is generating substantial rents.

Table 17: System-Level Seat Factors by Airport (CY2024)

| Airport | Seat Factor (%) | Routes | Carriers | Avg Stage (km) | Total Pax (m) |
|---|---|---|---|---|---|
| Dublin | 89.6 | 165 | 46 | 2352 | 24.6 |
| Paris Charles de Gaulle | 87.1 | 244 | 103 | 3707 | 61.6 |
| Madrid Barajas | 86.3 | 179 | 80 | 3117 | 53.4 |
| London Gatwick | 84.8 | 210 | 58 | 2272 | 39.9 |
| Amsterdam Schiphol | 84.6 | 261 | 95 | 2832 | 60.0 |
| Rome Fiumicino | 84.5 | 188 | 92 | 2456 | 38.8 |
| **London Heathrow** | **80.9** | **201** | **79** | **4110** | **81.0** |
| Munich | 80.2 | 202 | 73 | 2411 | 34.3 |
| Zurich | 77.3 | 180 | 63 | 2752 | 23.2 |
| Frankfurt Main | 76.7 | 287 | 82 | 3318 | 53.5 |

Source: Skailark CY2024. Seat factor = total passengers / total seats (not distance-weighted). All carriers at each airport. LHR shown in bold. Sorted by descending system seat factor.

8.6 The result is robust to splitting by haul length. Table 18 shows that Heathrow seat factors are not systematically higher than those at comparator airports for either short-haul or long-haul routes considered separately.

Table 18: Seat Factors by Airport and Haul Category (CY2024)

| Airport | Short-haul SF (%) | Long-haul SF (%) | Blended SF (%) |
|---|---|---|---|
| Dublin | 91.6 | 82.8 | 89.6 |
| Paris Charles de Gaulle | 85.2 | 89.7 | 87.1 |
| Madrid Barajas | 84.7 | 90.3 | 86.3 |
| London Gatwick | 85.3 | 82.4 | 84.8 |
| Amsterdam Schiphol | 83.1 | 88.5 | 84.6 |
| Rome Fiumicino | 84.0 | 86.1 | 84.5 |
| **London Heathrow** | **77.2** | **84.4** | **80.9** |
| Munich | 80.2 | 80.4 | 80.2 |
| Zurich | 75.0 | 83.7 | 77.3 |
| Frankfurt Main | 74.2 | 81.2 | 76.7 |

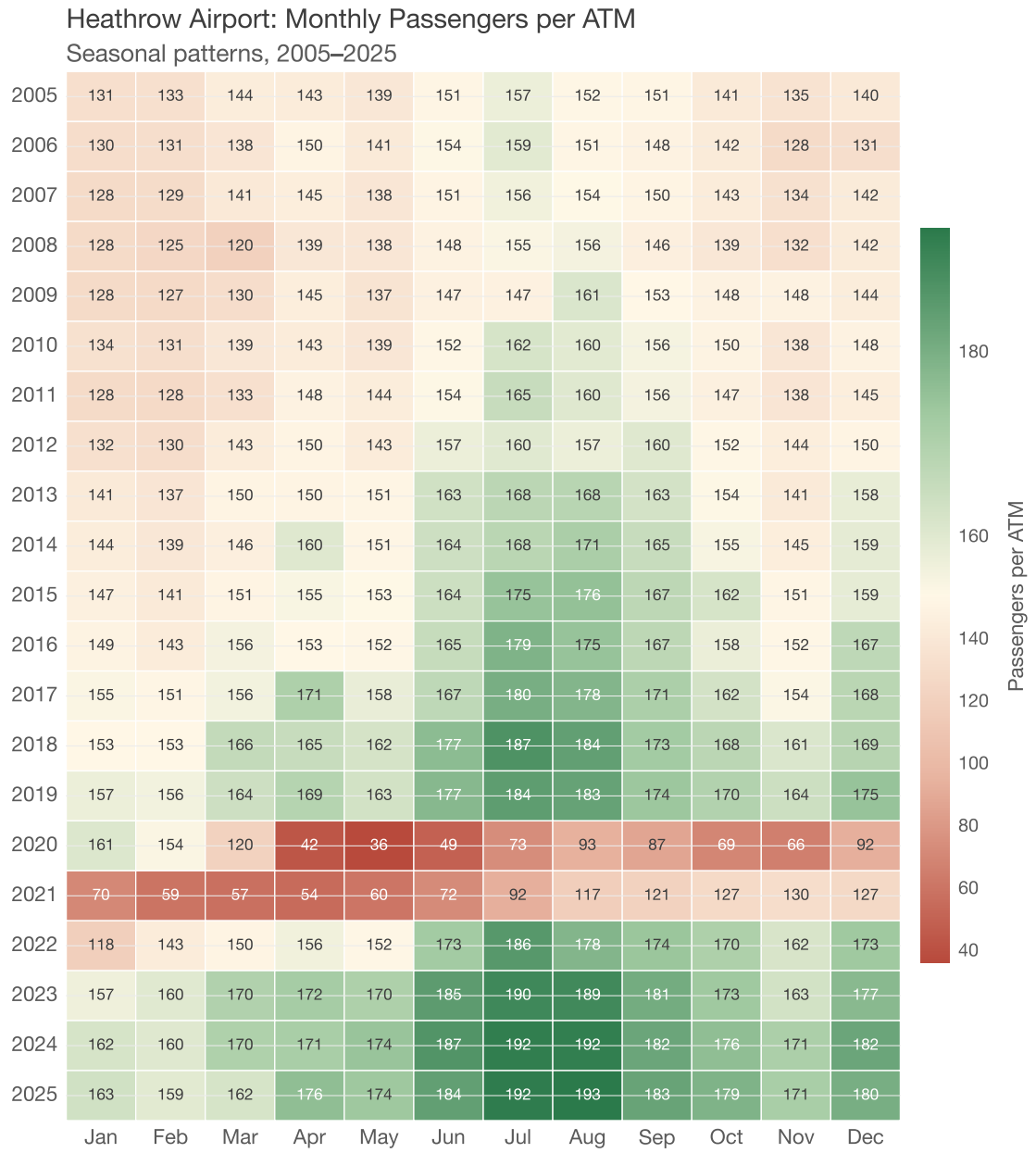
Source: Skailark CY2024. Short-haul < 2,000 mi; long-haul ≥ 2,000 mi. Seat factor = total passengers / total seats (not distance-weighted). LHR consistently has lower SF than comparators in both haul categories.

### Does Seasonality Explain the Pattern? No

8.7 Heathrow's seat factor performance should also be considered in the context of its demand seasonality. Figure 2 shows monthly passengers per air traffic movement (ATM) at Heathrow from 2005 to 2025.[44] The summer months (June, July, and August) exhibit materially higher passengers per ATM than the winter months, reflecting the significance of leisure demand in Heathrow's traffic mix. A highly seasonal demand profile compels airlines to operate with lower seat factors during off-peak months. This is consistent with both the observed pattern of seat factors at Heathrow and with the absence of a scarcity rent: the large leisure segment implies that a large portion of demand is price-sensitive, and the structural seasonality of demand is not consistent with the consistently elevated seat factors that a scarcity rent would be expected to produce.

[44] Calculated from monthly movement and traffic statistics provided by Heathrow Airport. [Heathrow Airport Limited, 2026, p. Heathrow Traffic Statistics].

Figure 2: Passengers per ATM at Heathrow by month, 2005–2025.




Source: Heathrow Airport Ltd, Monthly Traffic Statistics (January 2026 release)

## Seat Factor Conclusion: No Evidence of Scarcity-Driven Demand Pressure

8.8 Seat factors at Heathrow are not systematically higher than those at Gatwick or at most of the Frontier Economics 2019 comparator airports, whether considered in aggregate or split by haul length. The scarcity rent hypothesis predicts the opposite because the incentive to fill those empty seats would be strong.

8.9

In other words, a scarcity rent requires evidence of structural, not temporal, demand relative to capacity which would drive a price elevation, but no such persistent demand is evidenced in seat factors or passengers per movement.

# 9 Are Airlines Charging Higher Prices at Heathrow Than Gatwick for the Same Product? No

9.1 **Claim tested:** If a scarcity rent exists at Heathrow, it should be visible in fares. On routes to the same destination served by the same carrier from both Heathrow and Gatwick, like-for-like fares should show a persistent premium at Heathrow beyond what is explained by the difference in airport charges. Indicative thresholds for a meaningful premium are greater than 30% for short-haul and greater than 10% for long-haul economy fares.[45]

9.2 **Finding:** After controlling for differences in airport charges passed through to passengers, overseas carriers show no systematic fare premium at Heathrow. Where a premium is observed, it is on British Airways routes, and this is explained by the mechanics of hub-based revenue management rather than by scarcity. The fare evidence does not support the existence of a congestion premium.

9.3 **Important qualification:** A fare premium, even if observed, would not on its own demonstrate the existence of a scarcity rent. It would need to be accompanied by supernormal profitability after accounting for Heathrow's higher cost base and differences in product mix. The margin evidence presented in Section 5 shows that no such profitability is present.

## How Are Prices Compared on a Like-for-Like Basis?

9.4 The cleanest test of whether a scarcity rent is being extracted through prices is to compare the same carrier, serving the same route with the same cabin, from both airports. This controls for cabin and destination, and isolates the effect of the airport itself and the ability within revenue management to charge a scarcity rent. The fare comparison therefore focuses on routes served from both Heathrow and Gatwick by the same carrier.

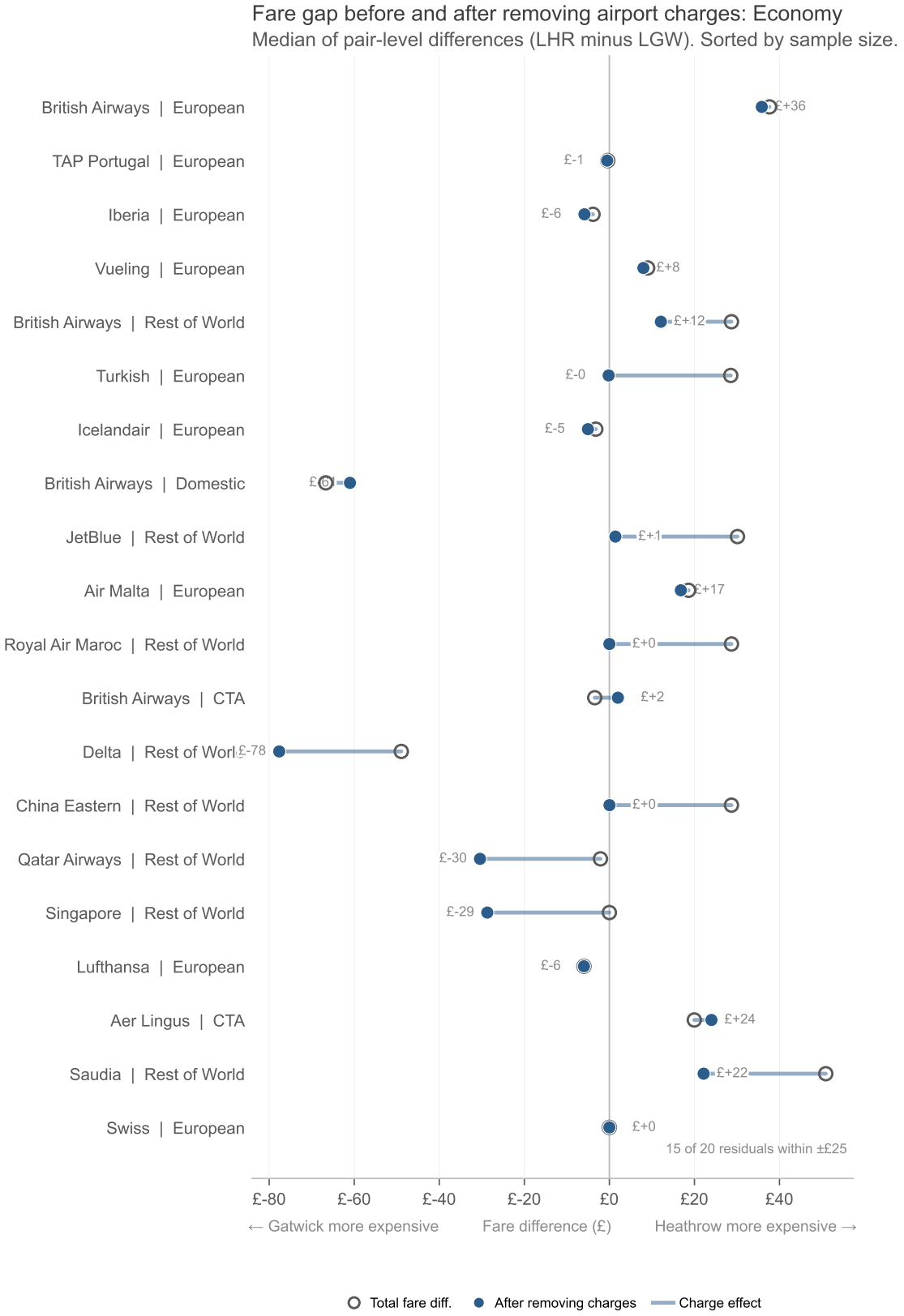
9.5 The dataset used is drawn from OAG/INFARE, which collects fare observations from airline systems, global distribution systems, and travel agencies. The data covers 2024 and comprises more than 4.5 million matched fare observations across short-haul and long-haul routes, with a range of carriers represented. Observations are matched by route, departure date, return date where applicable, cabin class, and direct service only; connecting itineraries are excluded, consistent with the Frontier Economics framing, which attributes the premium to direct passengers.[46]

[45] The Frontier framing used for these indicative thresholds is cited at [Frontier Economics, 2025, p. 64].

[46] The dataset returns both an overall fare and a taxes-and-fees component. The analysis focuses on the overall fare and uses the taxes-and-fees component to control for differences in airport charges between the two airports.

## Do Overseas Carriers Charge More at Heathrow Than at Gatwick? No

Figure 3: Median Fare Differences on Matched Heathrow–Gatwick Routes, Economy Class (2024)



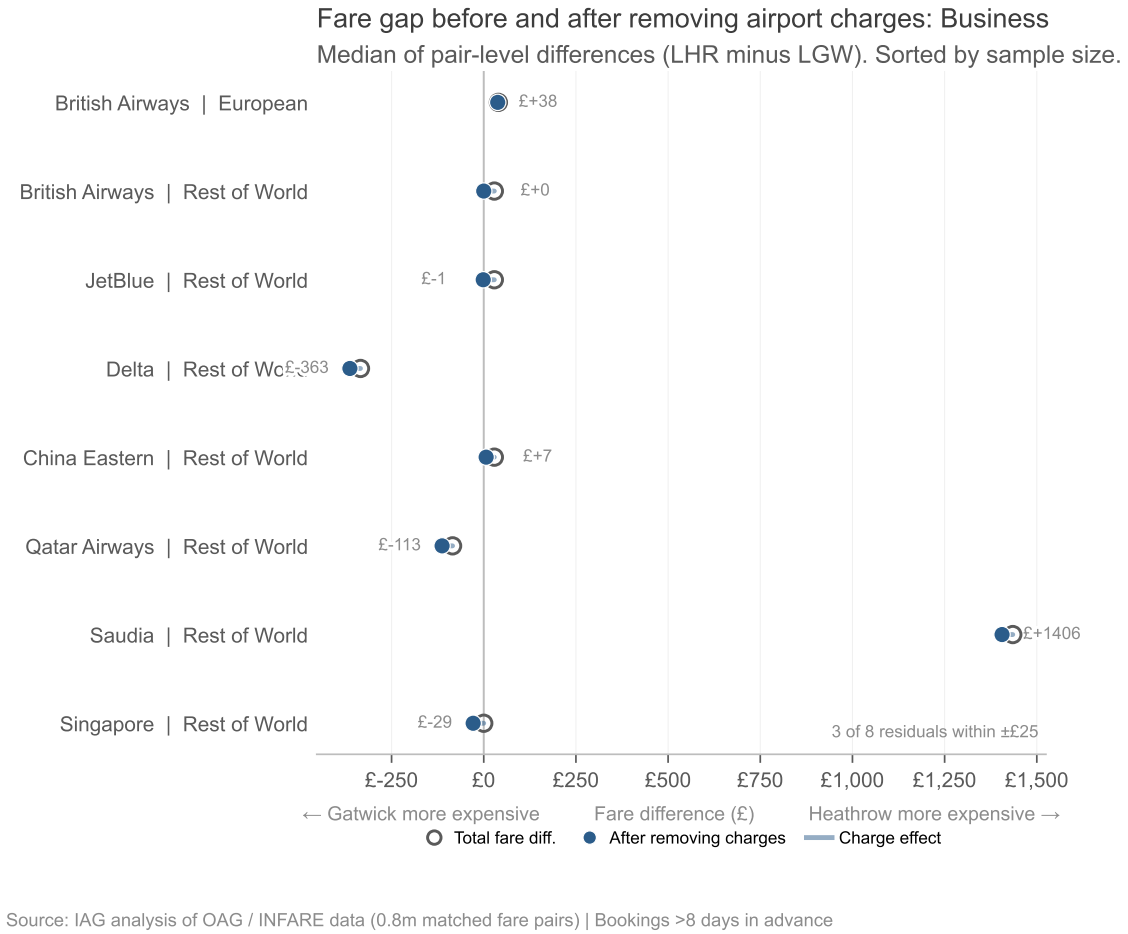

Source: IAG analysis of OAG / INFARE data (6.1m matched fare pairs) | Bookings >8 days in advance



*Source:* IAG analysis of OAG/INFARE data.

9.6 Figure 3 shows median economy fare differences on matched Heathrow–Gatwick routes and itineraries in 2024, after controlling for the airport charge component of each fare. For a number of airlines, fares are in fact higher at Gatwick than at Heathrow. There is no systematic fare premium at Heathrow that can be attributed to scarcity. Any residual premium observed on individual routes is more plausibly explained by differences in demand mix or schedule quality than by the extraction of a congestion premium.

Figure 4: Median Fare Differences on Matched Heathrow–Gatwick Routes, Business Class (2024)




*Source:* IAG analysis of OAG/INFARE data.

9.7 Figure 4 shows median business fare differences on matched Heathrow–Gatwick routes and itineraries in 2024, after controlling for the airport charge component of each fare. For a number of airlines, fares are in fact higher at Gatwick than at Heathrow. There is no systematic fare premium at Heathrow that can be attributed to scarcity. Any residual premium observed on individual routes is more plausibly explained by differences in demand mix or schedule quality than by the extraction of a congestion premium.

### Does British Airways Charge a Heathrow Premium? Yes, But Not Because of Scarcity

9.8 British Airways is the one carrier that does show a consistent fare premium on Heathrow routes relative to Gatwick. It is also the carrier with the greatest potential to benefit from any potential scarcity rent, being the largest operator at the airport. This warrants closer examination.

9.9 The explanation lies in the structural difference between British Airways' operations at the two airports. Heathrow is British Airways' hub: seats on short-haul routes are competed for not only by point-to-point passengers but also by connecting passengers transferring onto long-haul services. Revenue management systems optimise across entire connecting itineraries, so the bid price on a short-haul leg reflects not just local demand but the network value of the connecting flows passing through it. A strong long-haul flow raises the opportunity cost of short-haul seats; equally, a weak long-haul leg may still justify displacing a local passenger if the total itinerary revenue is sufficient. Either way, point-to-point passengers at the hub compete against this network value, which is reflected in higher fares. Gatwick, by contrast, operates as a point-to-point station where no connecting traffic competes for seats.

9.10 For example, Heathrow to Malaga (AGP) shows the highest observed fare premium over Gatwick for British Airways in the Europe category. London–Malaga ranked 15th among intra-European routes by seats in 2025, and London–New York is the largest long-haul market in the world: both have high levels of local demand. If we decompose connecting itineraries from JFK to AGP via LHR by subtracting the standalone JFK–LHR fare — a reasonable proxy given the depth of that market — we can infer an implied bid price for the LHR–AGP leg. This implied bid price tracks closely to the median standalone fare for LHR–AGP (see Table 19), which is consistent with connecting demand through the hub setting the floor for fares on the short-haul leg. The fare premium at Heathrow on this route appears to be driven by network value rather than scarcity.

Table 19: London-Malaga Bid Price Decomposition from JFK → LHR → AGP Round-Trip Itineraries (Sep - Dec 2024)

| **Component** | **Median (GBP)** |
|---|---|
| RT Connecting fare (JFK → LHR → AGP) | **£683** |
| – RT Long-haul leg (JFK → LHR) | £495 |
| = Median bid (implied AGP value) | £188 |
| + Tax & airport charge adjustment (APD Band B + LHR correction) | +£81 |
| = **Adjusted bid** | **£269** |
| LHR → LHR-AGP median RT fare | £251 |
| Adjusted bid vs direct benchmark | 1.07× |

Economy RT • min price per itinerary/day • n=21,841 priced observations • Sep–Dec 2024

9.11 Critically, this premium is only possible where there are two airports at the hub point and is not observed for other carriers operating from their own hubs to both Gatwick and Heathrow. This pattern is consistent with hub revenue management mechanics and inconsistent with a scarcity rent, which would be expected to affect all carriers operating at the airport rather than only the hub carrier.

### Fare Conclusion: Selling Prices Do Not Support the Existence of a Scarcity Premium

9.12 After controlling for airport charges, overseas carriers serving both Heathrow and Gatwick do not extract a systematic fare premium at Heathrow. The premium observed on British Airways routes is explained by hub-based revenue management, not by scarcity. If a congestion premium were extractable at Heathrow, the fare data would be the most direct place to observe it. It is not present. This finding reinforces the conclusions from the margin, cost, and seat factor analyses: the scarcity rent claimed by Frontier Economics does not appear in any of the empirical measures through which it would be expected to manifest.

Part III

# Implications

Conclusions for regulators and policy makers considering the Heathrow expansion CBA

# 10 Implications for Policy Makers and Regulators

10.1 This evidence does not argue against expansion at Heathrow; it argues against basing that decision on an unobserved scarcity-rent transfer from airlines to passengers. The largest and most robust remaining benefits from expansion are the wider economic and connectivity gains highlighted in the DfT and Frontier CBAs, and those depend critically on Heathrow remaining a competitive, affordable hub. Policy makers should therefore focus on two safeguards:

- **First, removing the scarcity-rent term from the appraisal framework unless and until it is reconciled to realised profits.**
- **Second, ensuring that any expansion plan is accompanied by a regulatory model that delivers internationally competitive charges over time.**

10.2 In practical terms, this means treating expansion as a question of efficient, value-for-money delivery under strong economic regulation, rather than as a mechanism for unlocking a £3.5bn rent that the evidence shows is not there. For the CAA, this is directly aligned with its statutory duties: any expansion-related regulatory settlement should be judged on whether it delivers affordable, value-for-money charges and protects consumers/users, not on whether it can monetise an assumed scarcity rent.

10.3 **In short, if the scarcity rents are not visible in profits, high non-airport costs, or high fares, then the most likely explanation is that they do not exist.** *Therefore a scarcity rent should not be treated as a starting term in the DfT modelling suite. Also, the scarcity rent estimate should not be relied upon by regulators or policy makers in assessing the Heathrow Expansion Cost Benefit Analysis or related decisions.*

10.4 Finally, Frontier and DfT have consistently forecast that scarcity rents would form because of a slot constrained Heathrow. *The fact that the scarcity rent is not visible now, 20+ years after Heathrow is fully slot constrained, strongly suggests that the core modelling methodology is flawed.* **DfT should fundamentally revisit its modelling methodology as it does not take into account the core binding constraint of airline capacity deployment: the need to profit.**

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