Critical Evaluation of the Market Structure in the European – North Atlantic Aviation routes between 2008 – 2023

List of Contents

Methodology

Airline seat data serve as the key metric for this report, providing essential insights into market dynamics. The data utilized for route analysis were sourced from OAG Aviation Analyser, a comprehensive aviation intelligence platform. Prior to data exportation, specific parameters were adjusted to facilitate evaluation at airline, alliance, codeshare, and joint venture levels.

Key metrics, including the Concentration Ratio (CR) and Herfindahl-Hirschman Index (HHI), were employed either in combination or individually to quantify and assess market concentration and contestability. Airlines were compared to other airlines operating on the same route, and similar comparisons were made at the alliance, codeshare, and joint venture levels. The analytical approach was tailored to accommodate routes with limited airline participation, utilizing one or both metrics as appropriate to provide a cogent analysis.

During calculation, it is important to acknowledge the strengths and weaknesses of these metrics. To enhance the clarity and relevance of the comparative analysis, select years within the specified timeframe have been omitted for certain levels. This methodological approach allows for a more focused examination of the data, facilitating a more nuanced understanding of the market dynamics and trends across the various levels of analysis.

Also, to enhance the study's depth and industry context, supplementary data and insights were procured from prominent aviation intelligence sources, notably CAPA - Centre for Aviation and the International Air Transport Association (IATA). These organizations provided crucial aviation-specific trend analyses, augmenting the research's comprehensiveness and reliability.

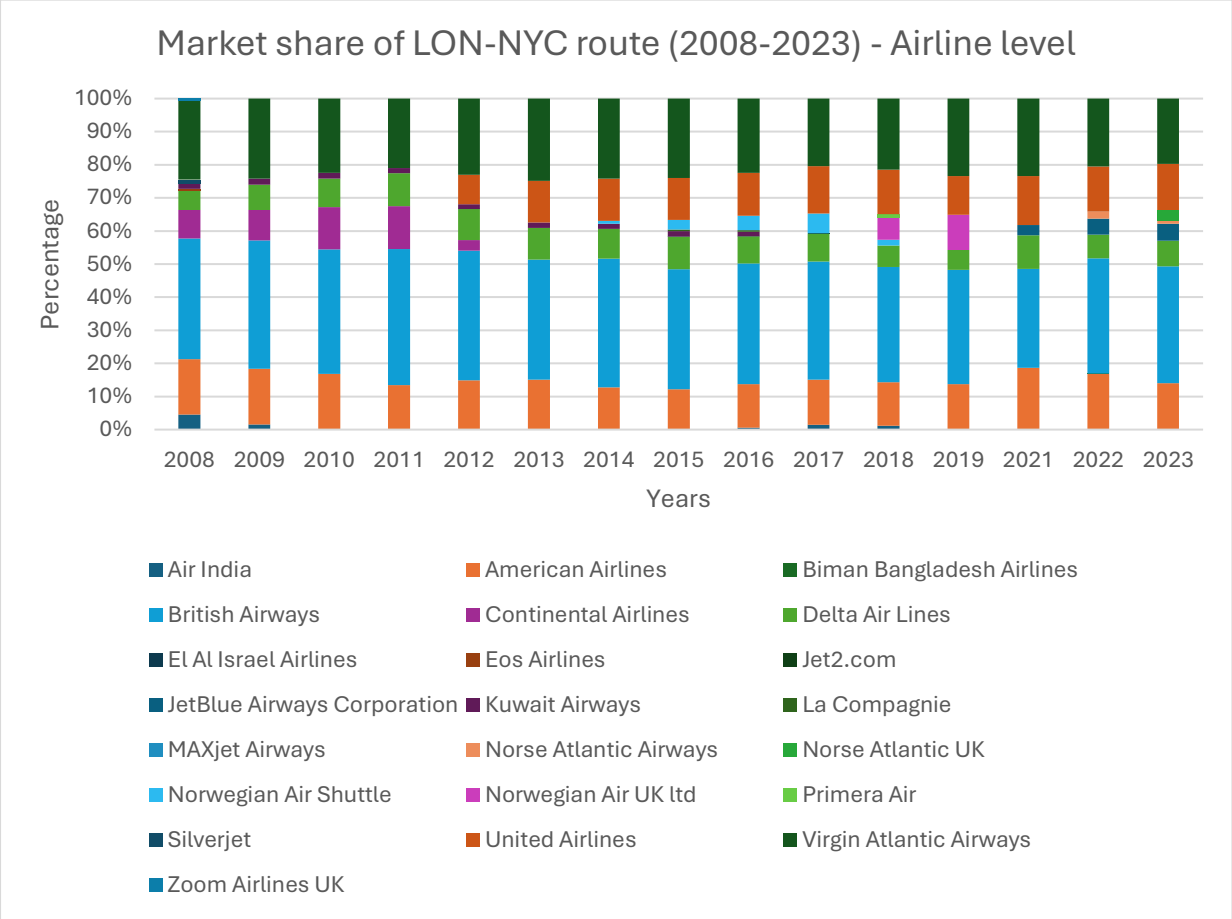
This multifaceted methodology for data collection and analysis was designed to ensure a thorough and nuanced understanding of the aviation landscape under examination.

Market Structure Analysis

Comparison of LON – NYC and AMS – NYC

Airline-Level

General Overview of the route



(Chart.1. Indicating the market share held by different airlines of LON – NYC route (2008 – 2023))
(Source: OAG Aviation)

In chart. 1, there are important points to take note of:

Leading market position holders:

- British Airways
- American Airlines
- Virgin Atlantic

Newer Entrants:

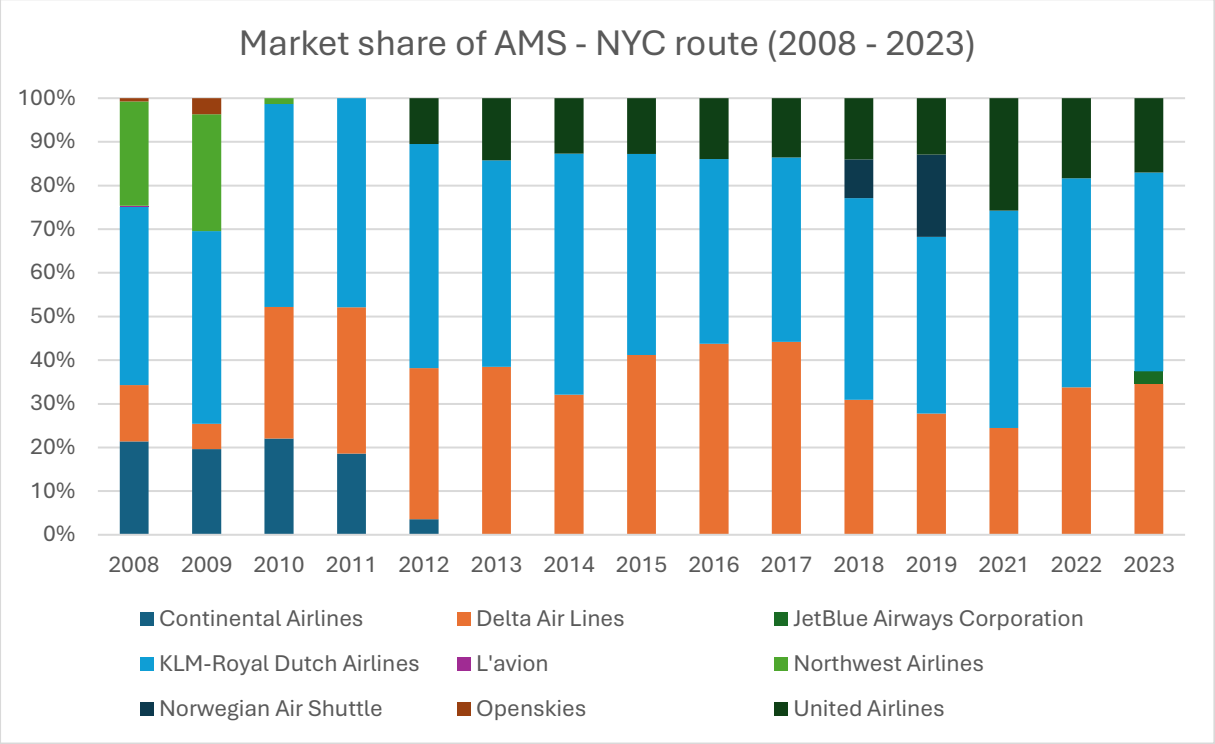
- Norwegian Airlines
- La Compagnie
- Norse Atlantic
- Jet Blue

Merger occurred:

- United Airlines with Continental Airlines

Airlines that ceased this route:

- Air India
- Zoom Airlines UK
- EOS Airlines
- MAXjet Airways
- Silverjet and Kuwait Airways



(Chart.2. Indicating the market share held by different airlines of AMS – NYC route (2008 – 2023))
(Source: OAG Aviation)

In chart. 2, there are important points to take note of:

Leading market position holders:

- KLM-Royal Dutch Airlines
- Delta Airlines
- United Airlines

Newer Entrants:

- Jet Blue
- Norwegian Air Shuttle

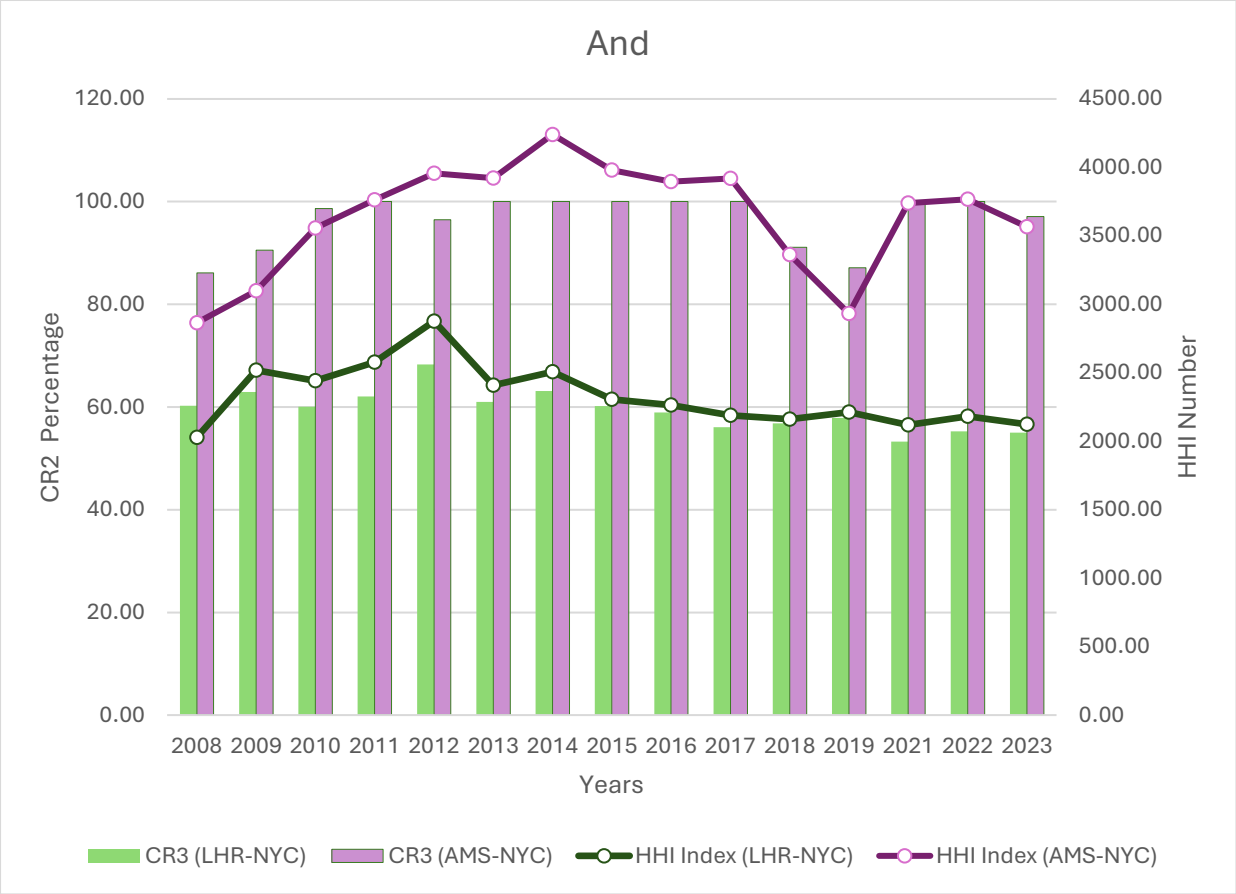
Mergers occurred:

- Northwest Airlines with Delta Airlines
- Continental Airlines with United Airlines

Airlines that ceased this route:

- Openskies
- L'avion
- Norwegian Air Shuttle

Comparison and Contestability:



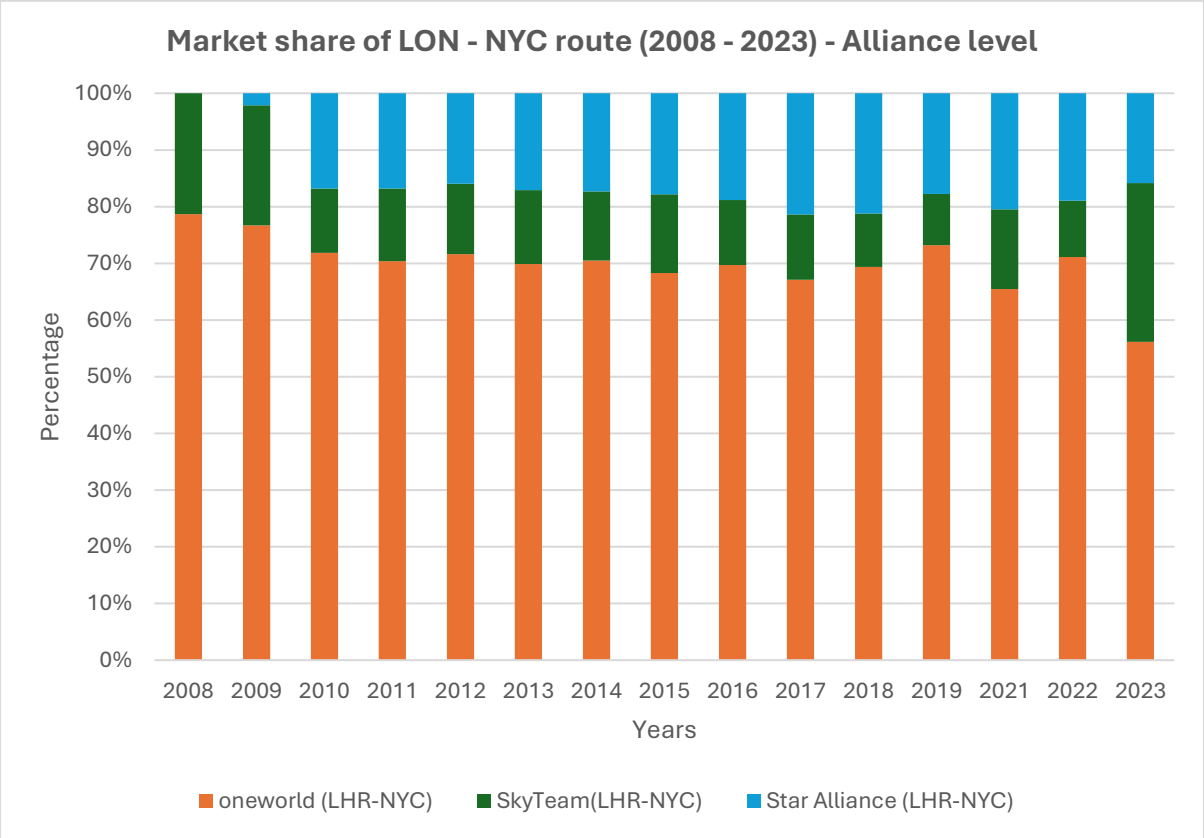
(Chart.3. Indicating the CI and HHI of different airlines of LON–NYC and AMS–NYC route (2008 – 2023))
(Source: OAG Aviation)

Points inferred from chart. 3:

Analysis of the London-New York City (LON-NYC) and Amsterdam-New York City (AMS-NYC) routes reveal significant market concentration. The LON-NYC route exhibits a CR2 of 59.41% and an HHI of 2327.84, indicating oligopolistic and moderately concentrated. The AMS-NYC route demonstrated higher concentration and Monopoly (CR 79.66%, HHI 3637.76).
Post-2008 and COVID-19, market concentration intensified due to smaller carrier exits and mergers. Despite new entrants, established pioneers maintained dominance, reinforcing high market concentration and limited contestability on both routes

Alliance level

General Overview of the route



(Chart.4. Indicating the market share held by different alliances of LON – NYC route (2008 – 2023))

(Source: OAG Aviation)

In chart. 4, there are few important points to take note of:

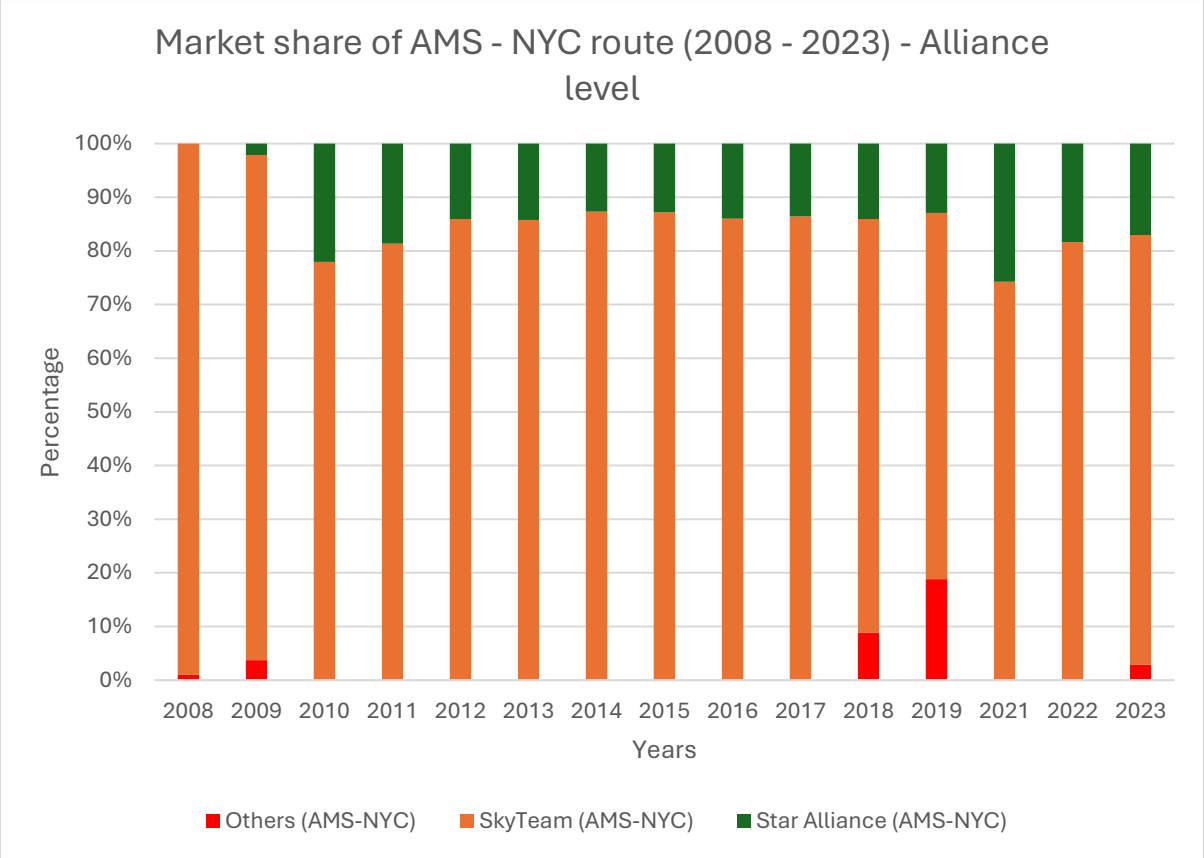
Table. 1. Alliances and its members:

Oneworld	Skyteam	Star Alliance
American Airlines	Continental Airlines	Air India
British Airways	Delta Airlines	Continental Airlines
	Virgin Atlantic	United Airlines

Leading market position holder(s):
Oneworld

Newer Entrants:
Virgin Atlantic joined Skyteam in 2023

Mergers occurred:
Continental Airlines with United Airlines



(Chart.5. Indicating the market share held by different alliances of AMS – NYC route (2008 – 2023))
(Source: OAG Aviation)

Table. 2. Alliances and its members:

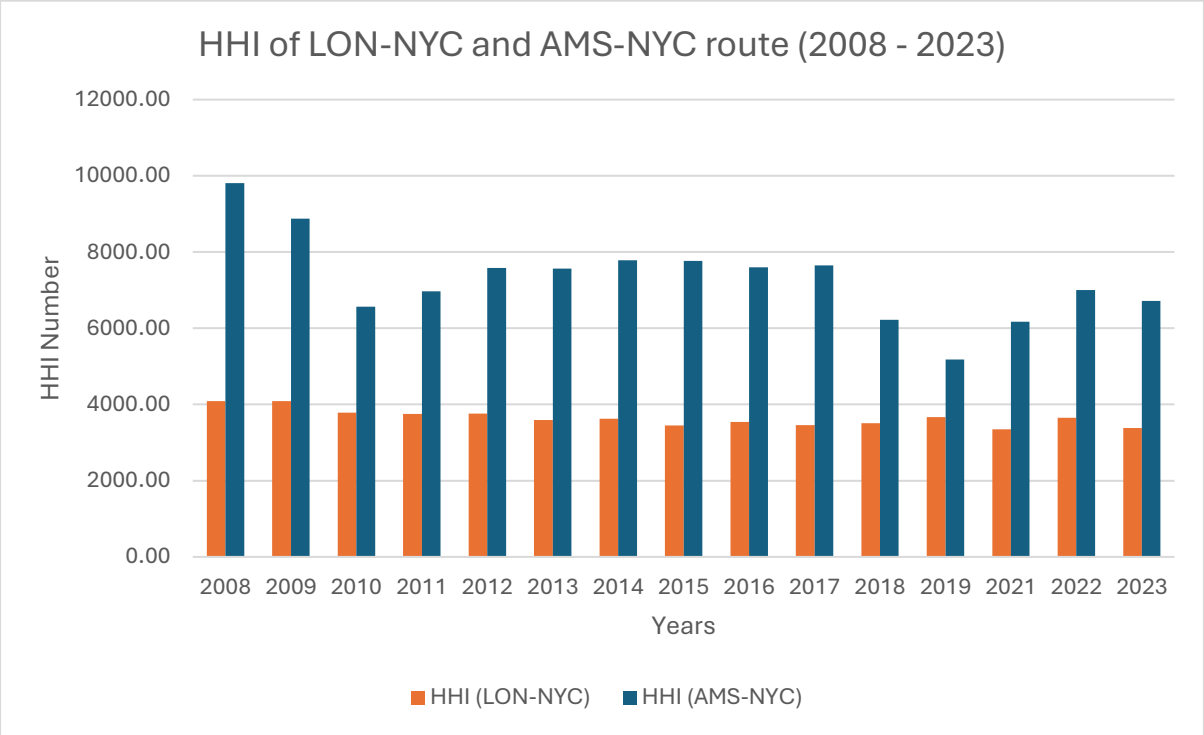
Skyteam(SkyTeam, n.d.)	**Star Alliance**(ALLIANCE, 2009)
Continental Airlines	Continental Airlines
Delta Airlines	United Airlines
KLM-Royal Dutch Airlines	
Northwest Airlines	

In chart. 5, there are few important points to take note of:
Leading market position holder(s):
Skyteam

Newer Entrants:
Virgin Atlantic joined Skyteam in 2023

Mergers occurred:
Northwest Airlines with Delta Airlines
Continental Airlines with United Airlines

Comparison and Contestability

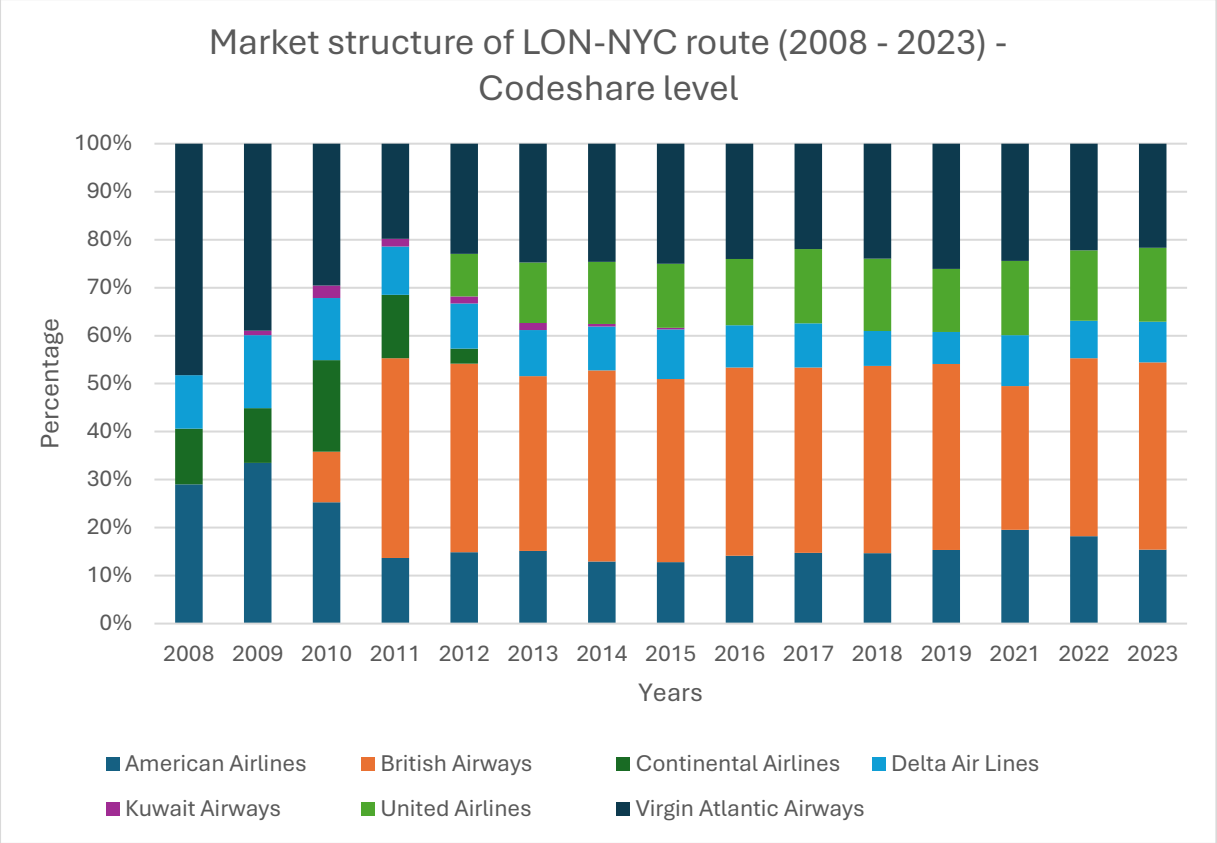


(Chart.6. Indicating the HHI number by different alliances of LON-NYC and AMS – NYC route (2008 – 2023))
(Source: OAG Aviation)

At the alliance level, due to the limited alliances in AMS-NYC route, the Herfindahl-Hirschman Index (HHI) is used for comparison and contestability analysis due to the limited number of alliances. From chart. 6, for LON-NYC and AMS-NYC route, the average HHI is at 3646.12 and 7297.38 respectively. The former route is highly concentrated by oneworld alliance and the skyteam alliance has been a dominant alliance in the latter route. In LON-NYC route, the integration of carriers like Virgin Atlantic into existing alliances further reinforced this lack of contestability, making it increasingly difficult for new players to disrupt the established market structure. Consequently, the AMS-NYC route is characterized by low contestability and near-monopolistic conditions.

Codeshare Level

General Overview of the route



(Chart.7. Indicating the market share held by different airlines with codeshares of LON – NYC route (2008 – 2023))
(Source: OAG Aviation)

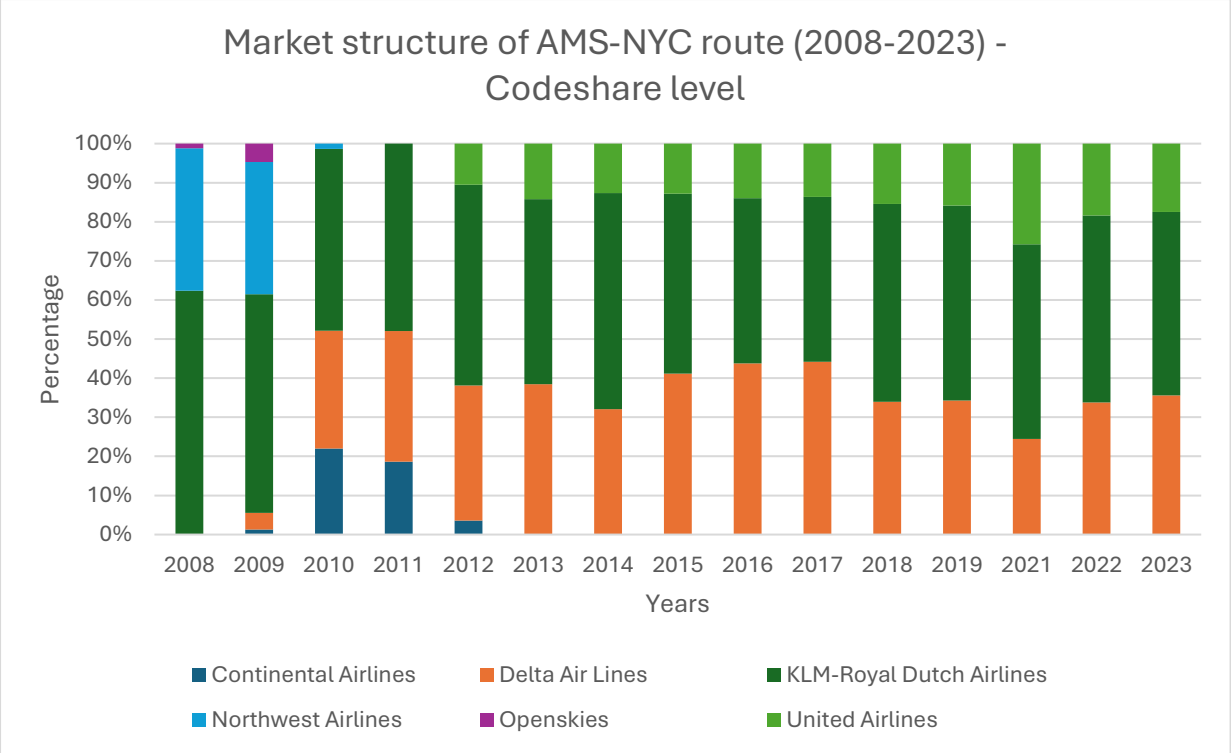
In chart. 7, there are few important points to take note of:

Leading market position holder(s):

1. British Airways
2. Virgin Atlantic

Mergers occurred:

1. Continental Airlines with United Airlines



(Chart.8. Indicating the market share held by different airlines with codeshares of AMS – NYC route (2008 – 2023))
(Source: OAG Aviation)

In chart. 8, there are few important points to take note of:

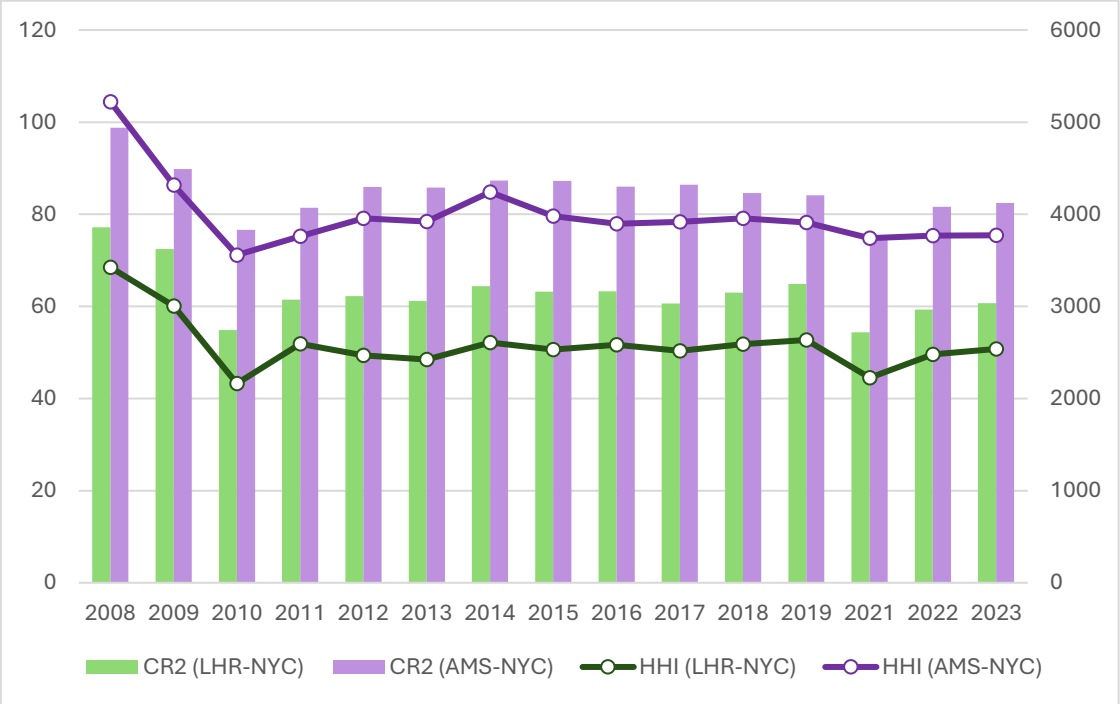
Leading market position holder(s):

1. KLM-Royal Dutch Airlines
2. Delta Airlines

Mergers occurred:

1. Northwest Airlines with Delta Airlines
2. Continental Airlines with United Airlines

Comparison and Contestability



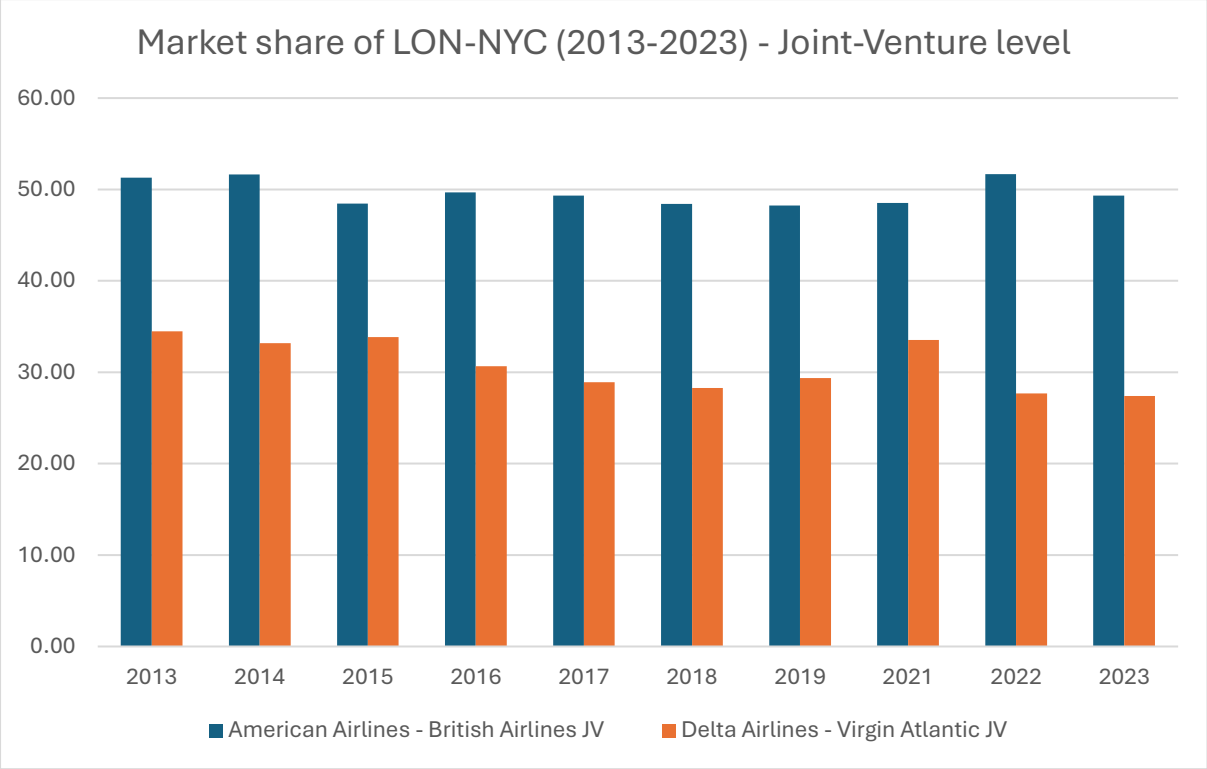
(Chart.9. Indicating the CR and HHI held by different airlines with codeshares of LON-NYC and AMS – NYC route (2008 – 2023))
(Source: OAG Aviation)

Strategic alliance formation in the aviation industry primarily serves to overcome regulatory constraints and geographical limitations, enabling carriers to expand their global network reach (Zou & Chen, 2017). The LON-NYC route's concentration average stands at 62.87% of the total market share, indicating Oligopoly. For HHI, the average is at 2585.93 indicating moderate concentration. Recent partnerships, such as the codeshare between JetBlue and British Airways, aim to expand network connectivity(CAPA, 2024b).

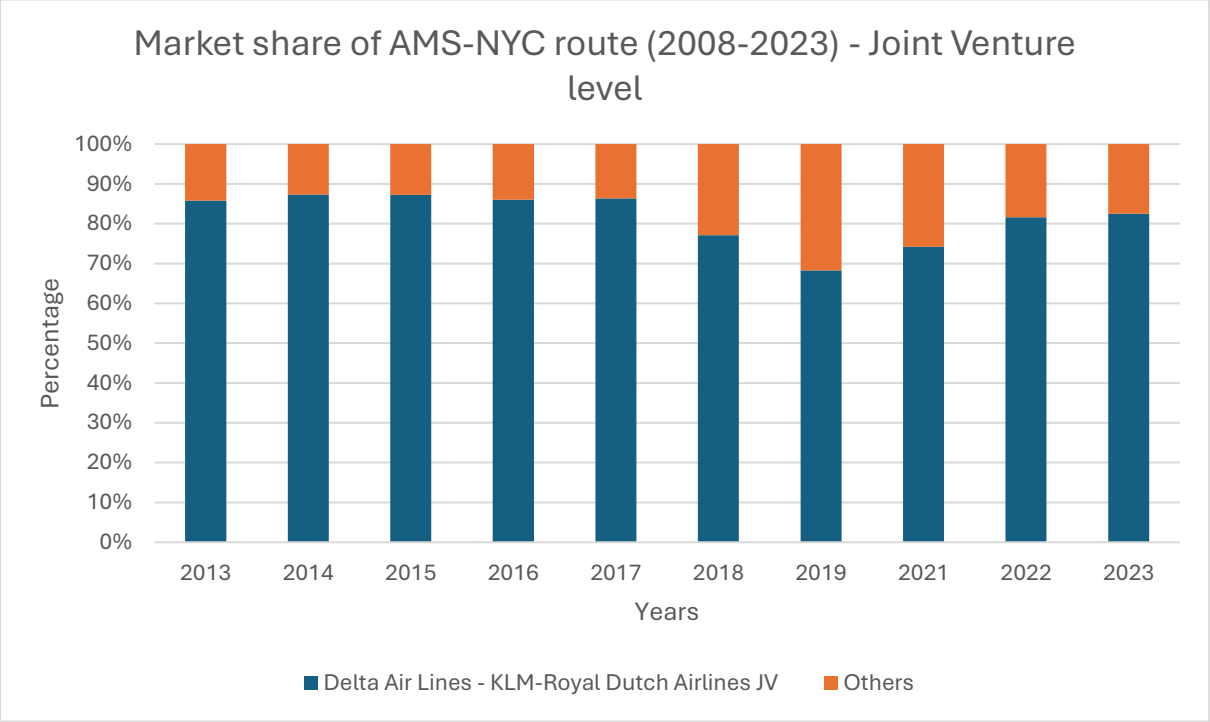
Insights into the AMS-NYC route reveal KLM-Royal Dutch Airlines has consistently held a dominant position, reflecting its strong presence in the market. Delta Air Lines has also shown considerable growth, increasing its share from 4.25% in 2009 to around 35.59% in 2023, indicating its positioning on this route. Overall, the competitive landscape shows stability among established carriers amidst fluctuating market shares.

Joint-Venture level

General Overview of the route



(Chart.10. Indicating the market share held by different JVs of LON – NYC route (2013 – 2023))
(Source: OAG Aviation)

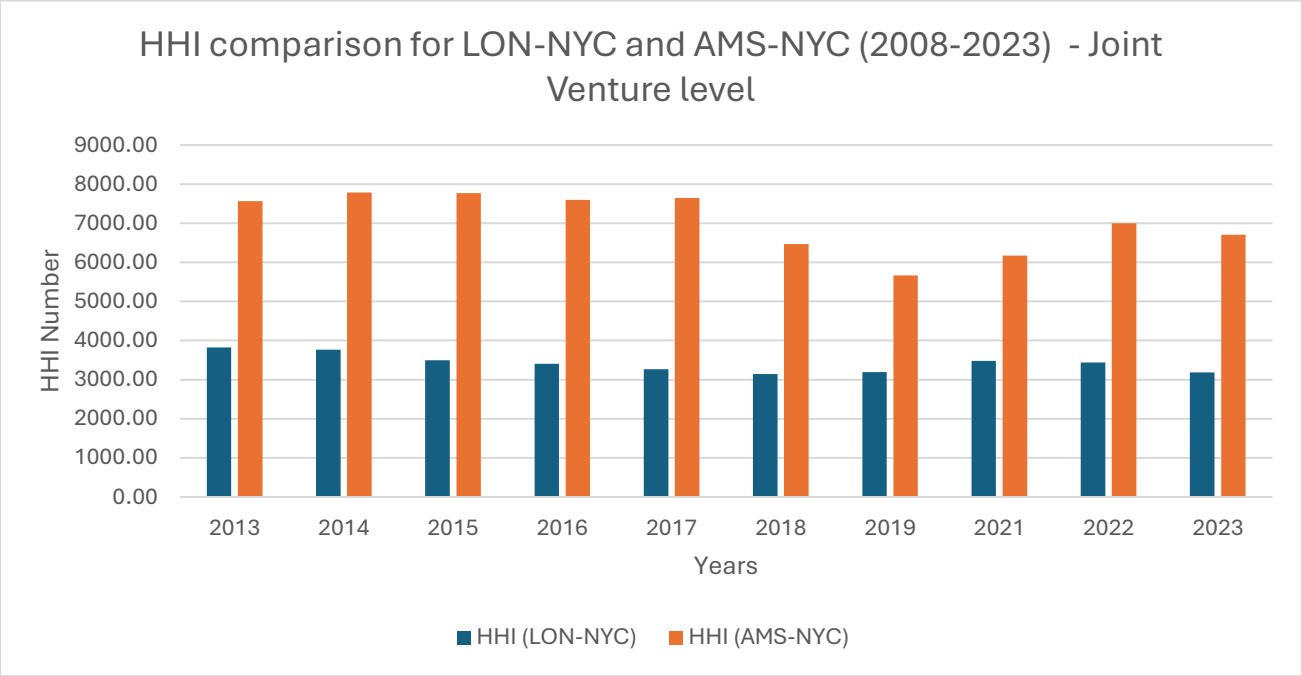


(Chart.11. Indicating the market share held by different JVs of AMS – NYC route (2013 – 2023))
(Source: OAG Aviation)

In chart. 10 and 11, there are few important points to take note of:

Leading market position holder(s):
American Airlines-British Airlines JV (LON – NYC) (Collins, 2010)
Delta Air Lines - KLM-Royal Dutch Airlines JV (AMS – NYC)

Comparison and contestability



(Chart.12. Indicating the HHI number of different JVs on LON – NYC and AMS-NYC routes (2008 – 2023))
(Source: OAG Aviation)

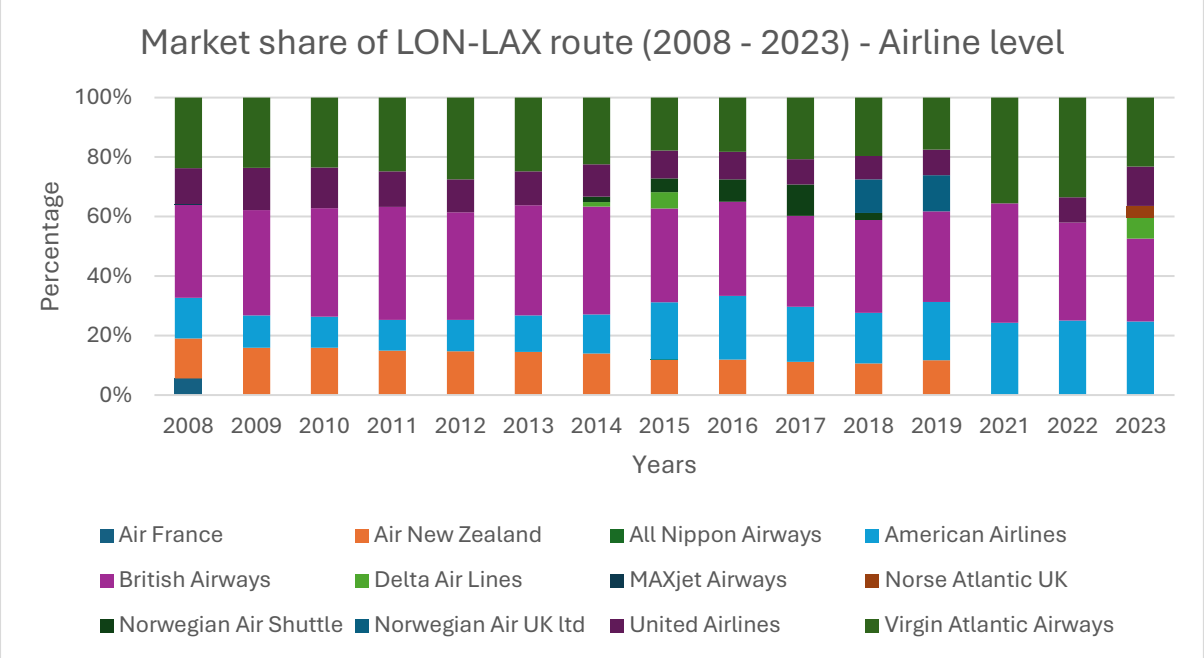
For the LON-NYC route, the HHI has shown a gradual decline from 3821.18 in 2013 to 3184.36 in 2023. The relatively high HHI values over this period indicates high concentration by reflecting ongoing dominance by key players such as British Airways and American Airlines. Joint ventures can be a mechanism for effective risk sharing in an uncertain environment (Bilotkach & Hüschelrath, 2019). In contrast, the AMS-NYC route exhibits a much higher level of concentration, with HHI values consistently above 6000 throughout the same period. The HHI peaked at 7786.37 in 2014 but has since shown some fluctuations, reaching 6704.58 in 2023.

Comparison of LON – LAX and AMS – LAX

The AMS-LAX route exhibits characteristics of a monopolistic market structure, with KLM-Royal Dutch Airlines maintaining near-exclusive control over seat capacity. Given the absence of significant competition, certain comparative metrics prove inadequate for meaningful analysis. Consequently, the Herfindahl-Hirschman Index (HHI) emerges as the most appropriate measure for evaluating market concentration and comparing this route with other transatlantic corridors. This approach allows for a more nuanced assessment of market dynamics, despite the limited number of carriers operating on the AMS-LAX route

Airline Level

General Overview of the route



(Chart.13. Indicating the market share held by different airlines of LON – LAX route (2008 – 2023))
(Source: OAG Aviation)

In chart. 13, there are few important points to take note of:

Leading market position holders:

- British Airways
- American Airlines
- Virgin Atlantic

Newer Entrants:

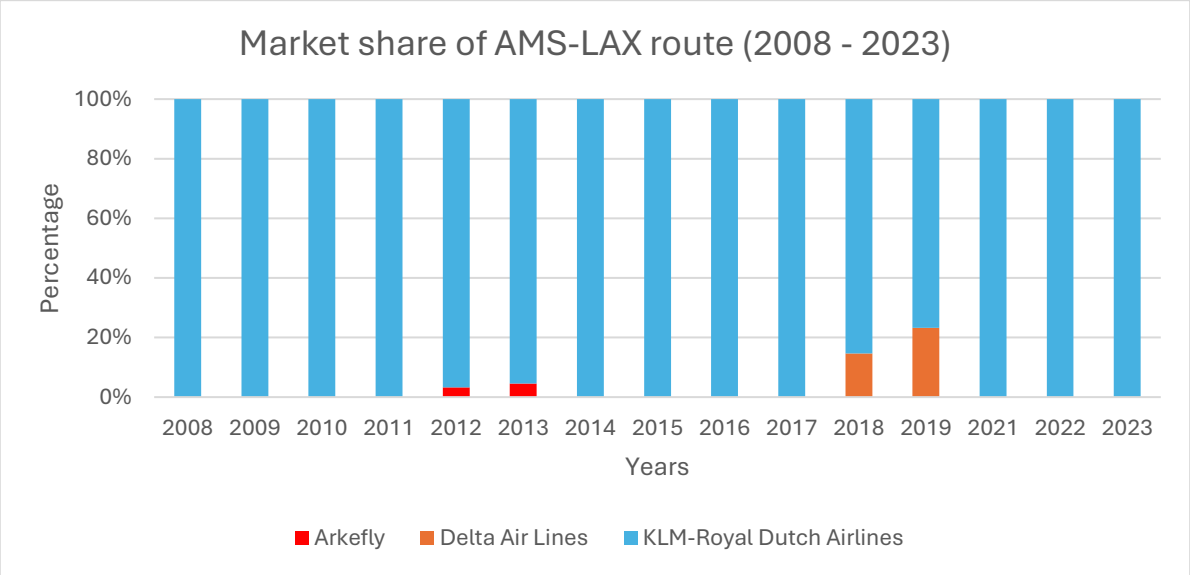
- Norwegian Airlines
- Norse Atlantic

Merger occurred:

- United Airlines with Continental Airlines

Airlines that ceased this route:

- Air France
- MAXjet Airways
- Silverjet
- Kuwait Airways



(Chart.14. Indicating the market share held by different airlines of AMS – LAX route (2008 – 2023))
(Source: OAG Aviation)

In chart. 14, there are few important points to take note of:

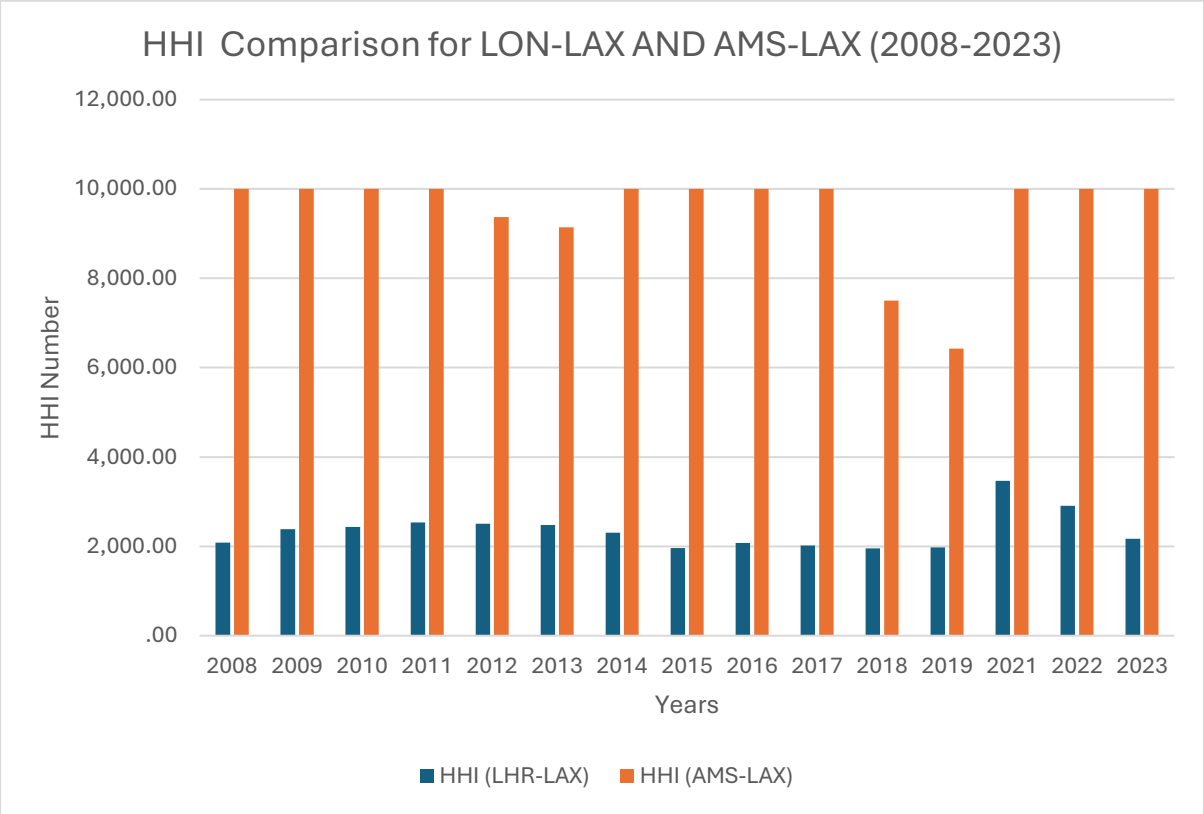
Leading market position holder(s):

- KLM-Royal Dutch Airlines

Newer Entrants:

- Arkefly
- Delta Airlines

Concentration and Contestability

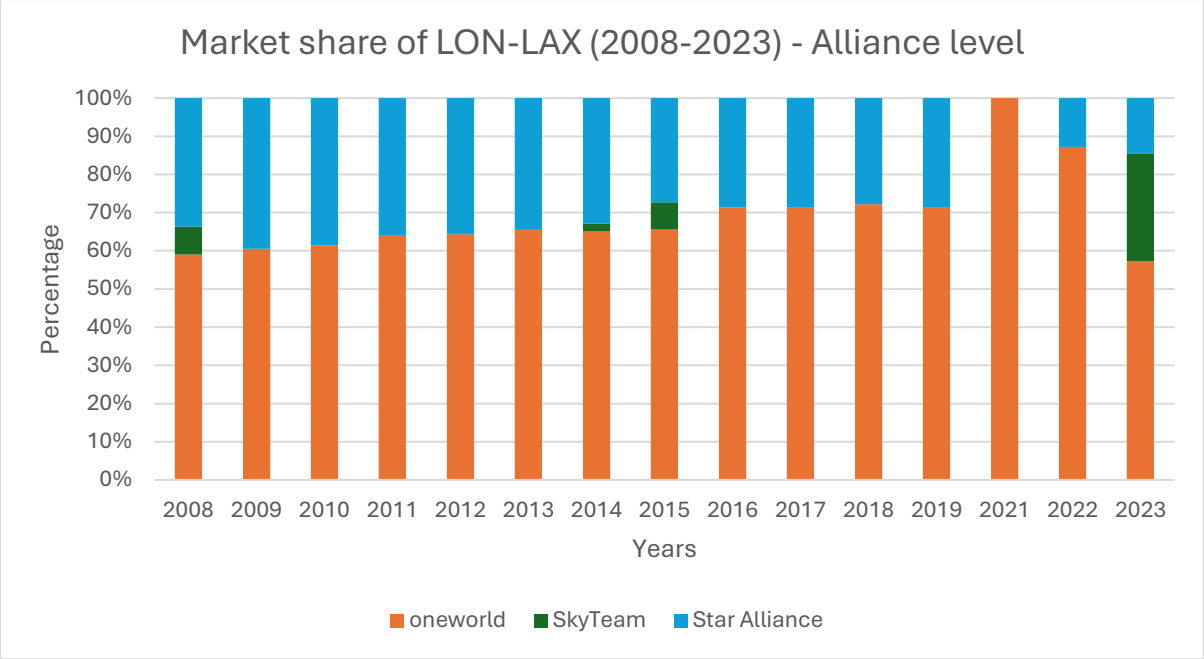


(Chart.15. Indicating the HHI comparison for different airlines of LON – LAX and AMS – LAX route (2008 – 2023))
(Source: OAG Aviation)

Here in airline level, because there are fewer airlines in AMS-LAX route, the concentration ratio doesn't make sense to use because it cannot put a clear picture on how the market represents. Instead HHI is taken for comparison and contestability. From chart. 15, for LON-LAX and AMS-LAX route, the average HHI is at 2,350.34 and 9495.88 respectively. The latter route is highly concentrated by KLM-Royal Dutch Airlines, and it is characterized as low contestable market.

Alliances level

General Overview of the route



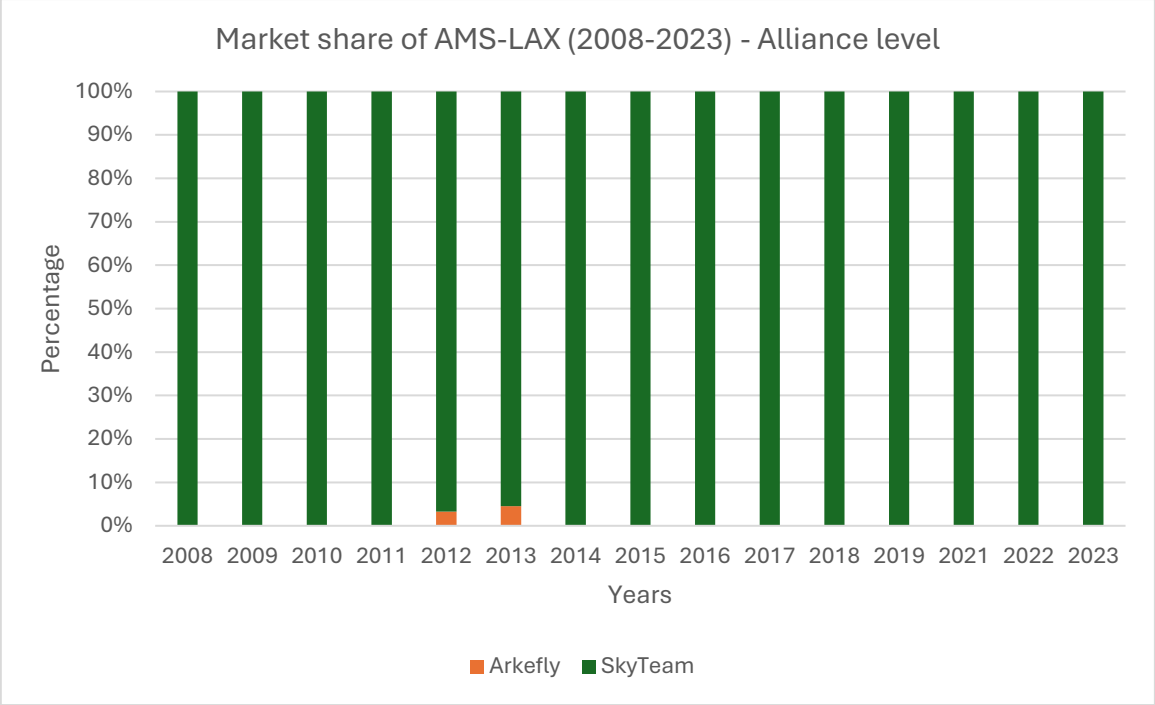
(Chart.16. Indicating the Market share of LON – LAX on Alliance level (2008 – 2023))
(Source: OAG Aviation)

Table. 3. Alliances and its members:

Oneworld(oneworld, n.d.)	**Skyteam**	**Star Alliance**
American Airlines	Air France	Air New Zealand
British Airways	Delta Airlines	All Nippon Airways
	Virgin Atlantic	United Airlines

In chart 16, there are few important points to take note of:
Leading market position holder(s):
Oneworld

Newer Entrants:
Virgin Atlantic joined Skyteam in 2023(SKYTEAM, 2023)

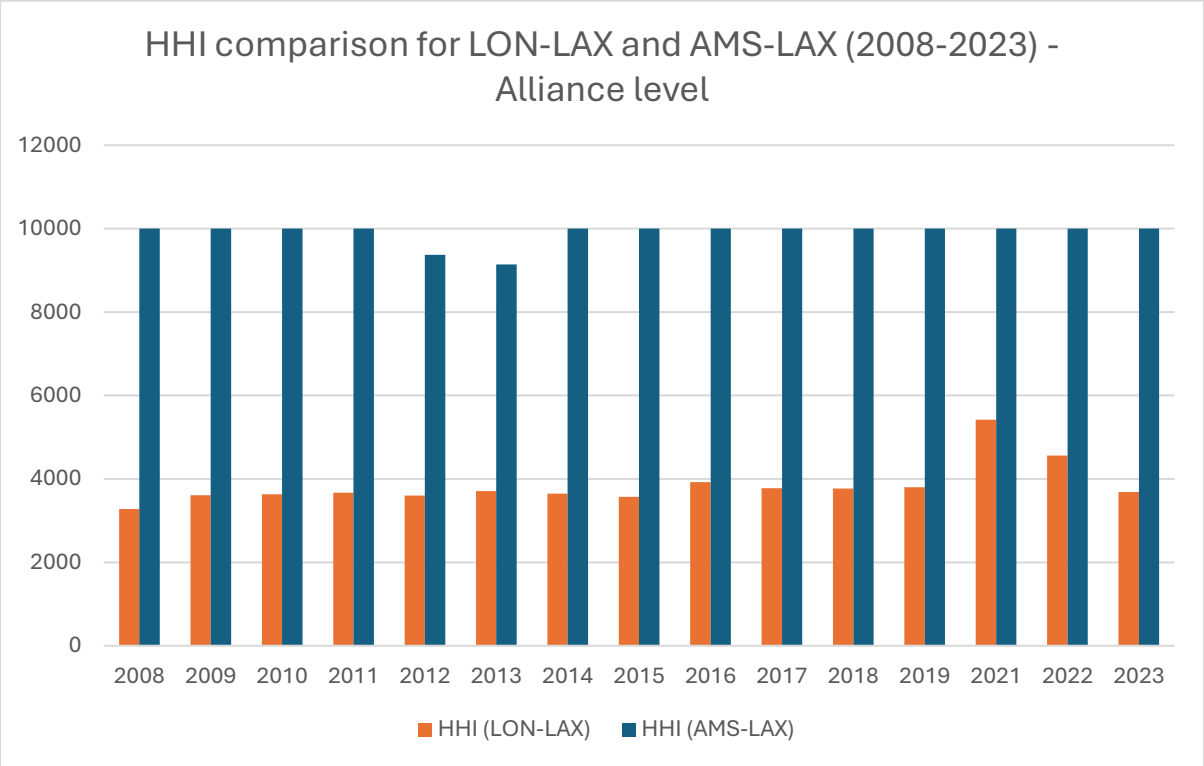


(Chart.17. Indicating the Market share of AMS – LAX on Alliance level (2008 – 2023))
(Source: OAG Aviation)

Table. 4. Skyteam Alliance and its members:

Skyteam
Delta Airlines
KLM-Royal Dutch Airlines

Comparison and contestability

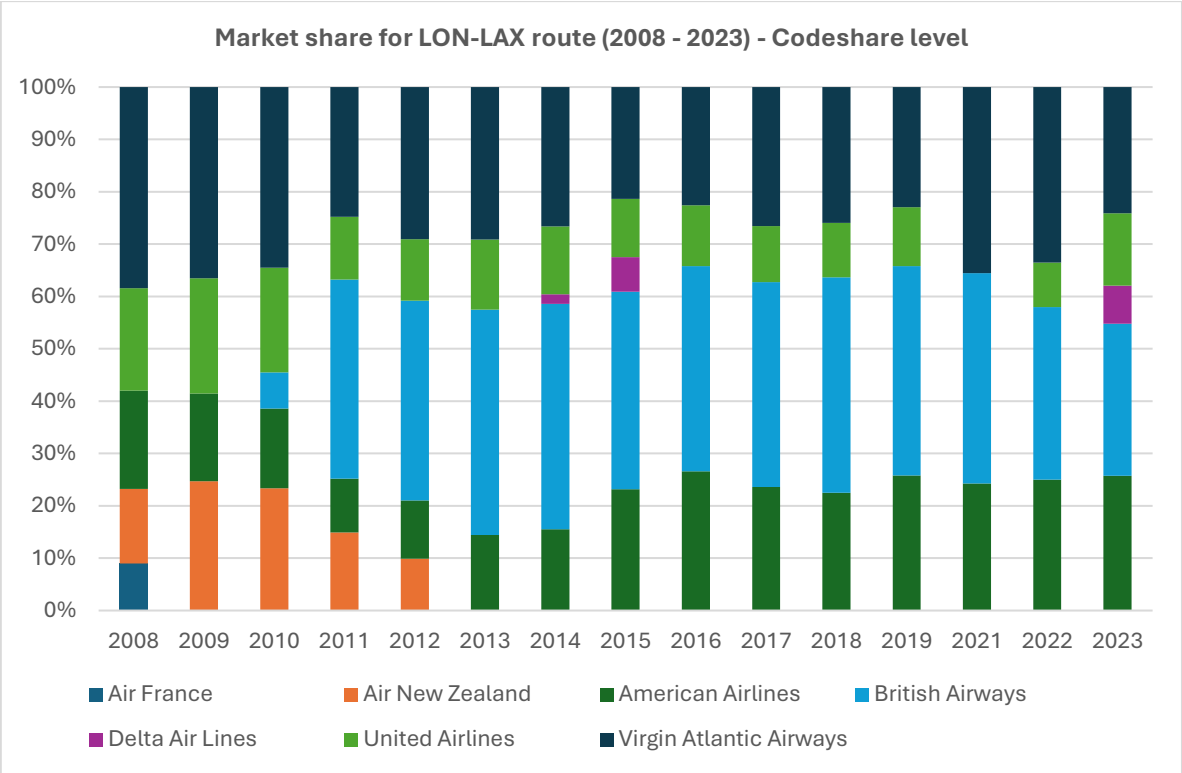


(Chart.18. Indicating the HHI Number of LON – LAX and AMS-LAX on Alliance level (2008 – 2023))
(Source: OAG Aviation)

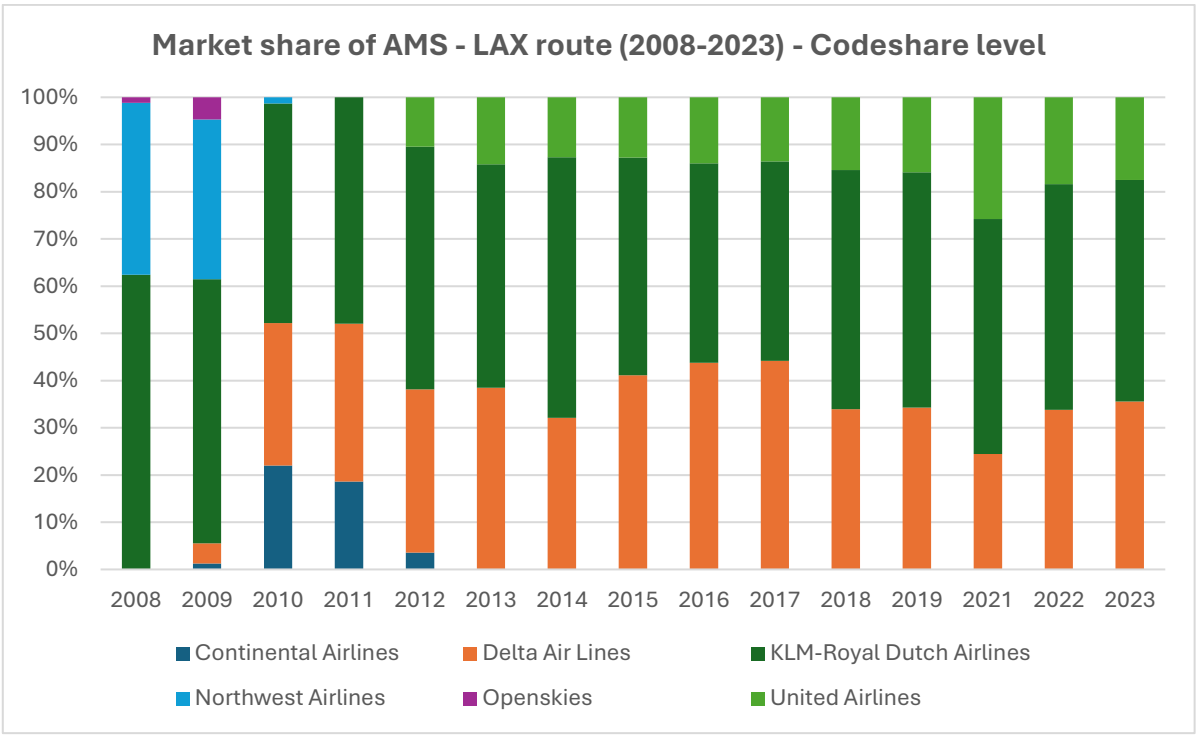
The AMS-LAX route's monopolistic structure renders the concentration ratio ineffective for market analysis. Consequently, the Herfindahl-Hirschman Index (HHI) is employed to evaluate market concentration and contestability. The LON-LAX and AMS-LAX routes exhibit average HHI values of 3842.34 and 9900.75, respectively. The oneworld alliance dominates the former route, while the skyteam alliance controls the latter. The LON-LAX route's integration of carriers like Virgin Atlantic into existing alliances further diminishes contestability, impeding new entrants from challenging the established market structure. The AMS-LAX route demonstrates low contestability and high monopolistic characteristic

Codeshare level

General Overview of the route

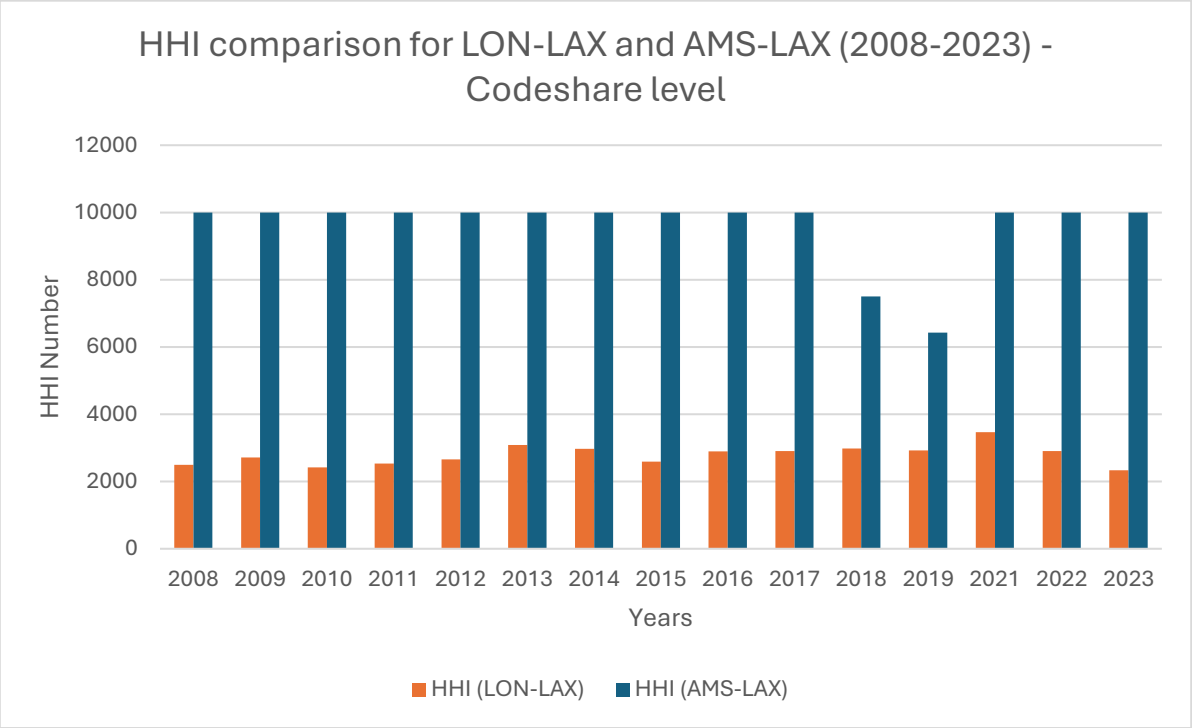


(Chart.19. Indicating the Market share of LON – LAX on Codeshare level (2008 – 2023))
(Source: OAG Aviation)



(Chart.20. Indicating the Market share of AMS – LAX on Codeshare level (2008 – 2023))
(Source: OAG Aviation)

Comparison and contestability



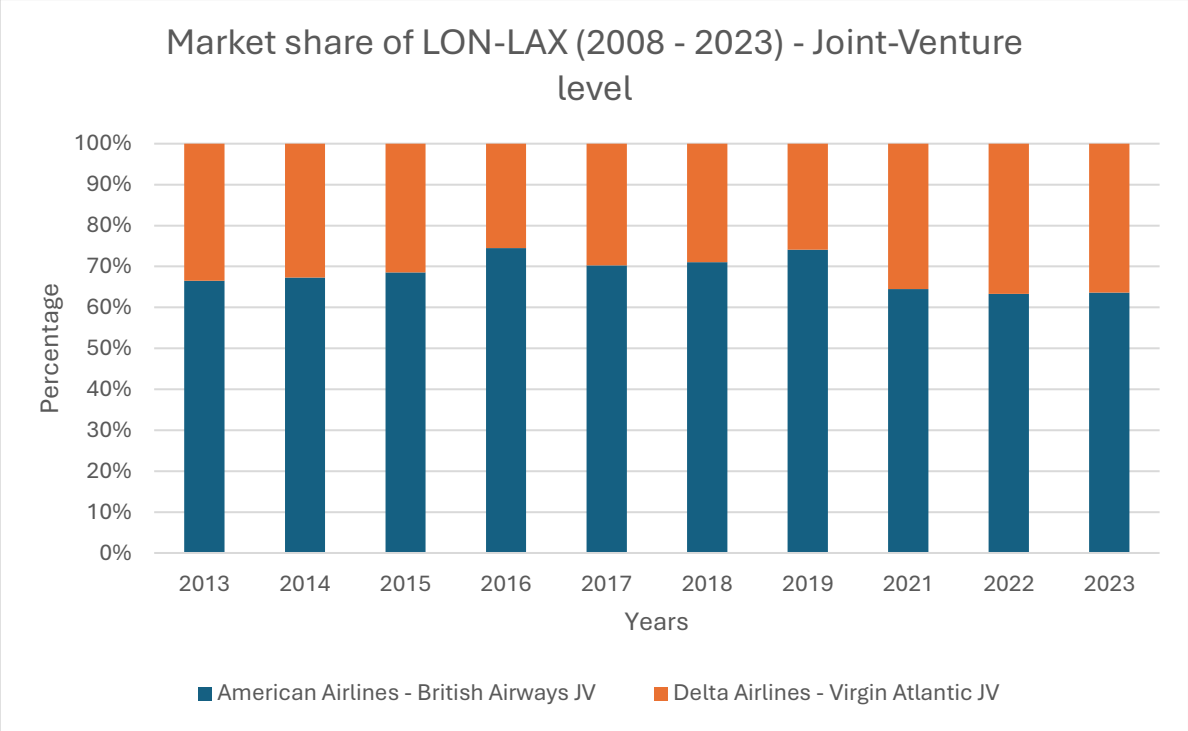
(Chart.21. Indicating the Market share of AMS – LAX on Codeshare level (2008 – 2023))
(Source: OAG Aviation)

Points inferred from chart. 21:

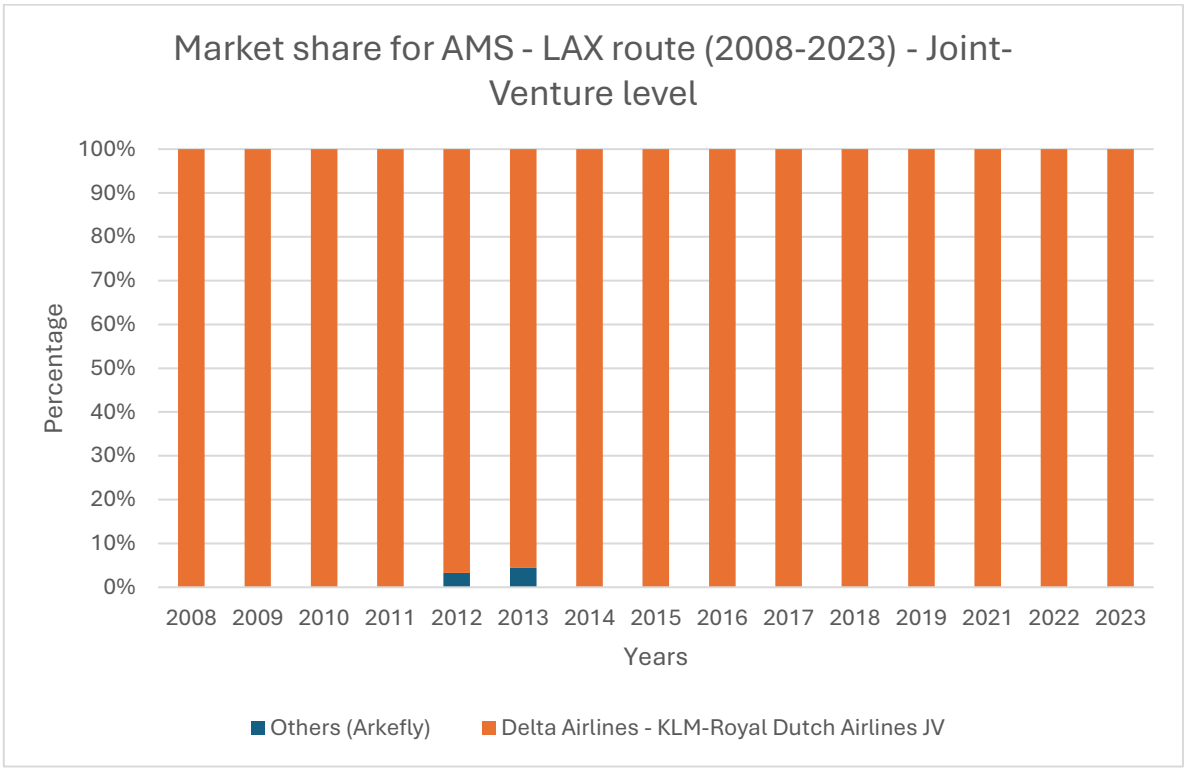
The Herfindahl-Hirschman Index (HHI) data for the London-Los Angeles (LON-LAX) and Amsterdam-Los Angeles (AMS-LAX) routes from 2008 to 2023 reveals significant differences in market concentration. The LON-LAX route shows moderate to high concentration, with HHI values ranging from 2333 to 3467, indicating an oligopolistic market structure. In contrast, the AMS-LAX route exhibits extreme concentration with HHI values of 10,000 for most years, signifying a monopoly. This stark difference highlights the varying levels of competition in these transatlantic markets, with the LON-LAX route allowing for some competition while the AMS-LAX route is dominated by a single carrier.

Joint-Venture level

General Overview of the route

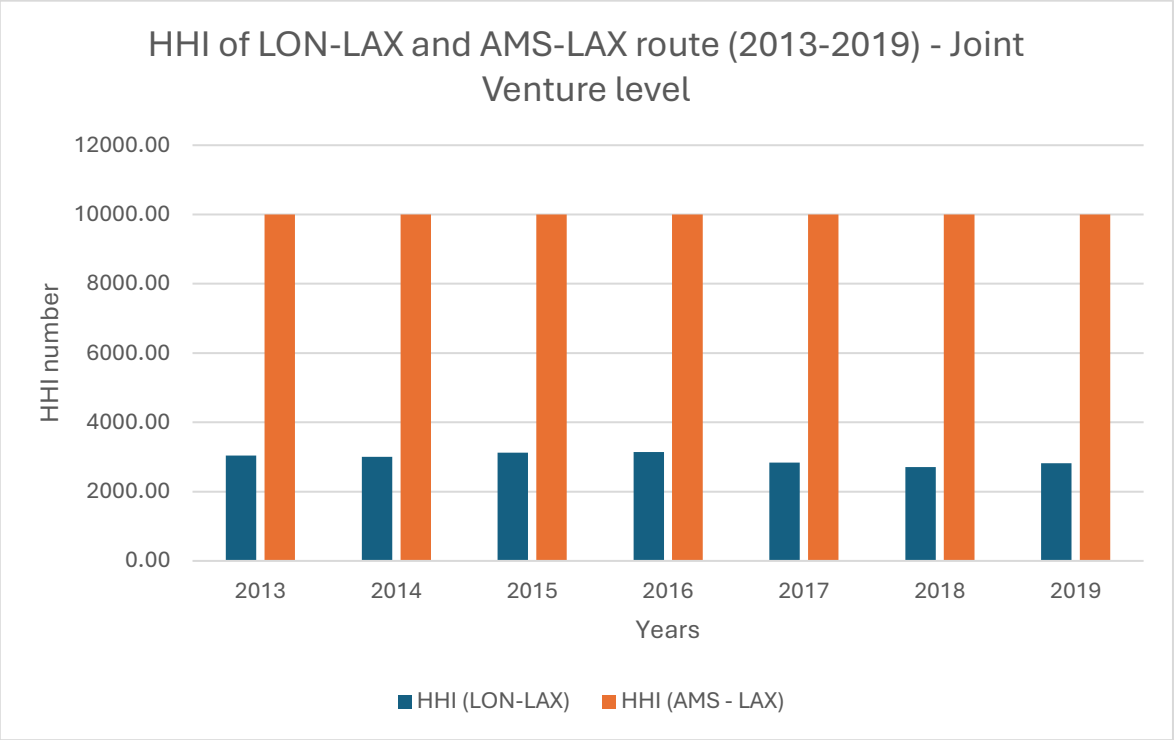


(Chart.22. Indicating the Market share of LON – LAX on JV level (2008 – 2023))
(Source: OAG Aviation)



(Chart.23. Indicating the Market share of AMS – LAX on Codeshare level (2008 – 2023))
(Source: OAG Aviation)

Comparison and Contestability



(Chart.24. Indicating the HHI Number of LON-LAX and AMS – LAX on JV level (2008 – 2023))
(Source: OAG Aviation)

For the LON-LAX route, the HHI fluctuated between 2704.02 and 3142.55 over the period. This range indicates a highly concentrated market, with a slight trend towards decreasing from 2016 to 2018. The AMS-LAX route shows an extreme level of market monopoly, with an HHI of 10,000 consistently throughout the period. This maximum HHI value signifies a pure monopoly, indicating that a single airline such as KLM-Royal Dutch Airlines, completely dominates this route.

Impact of External factors

The global financial crisis of 2008 led to a significant decrease in transatlantic air traffic, with European carriers reporting sharp declines in routes to North America. Fuel price volatility has consistently challenged airlines' profitability, forcing them to raise fares and potentially reduce demand for transatlantic travel. The COVID-19 pandemic caused unprecedented disruption to transatlantic flights, with global air traffic dropping to levels 15 times lower than during the 9/11 airspace closure. Long-haul travel, including transatlantic routes, was hit hardest by the pandemic, as international travel restrictions were lifted more slowly than domestic ones. Brexit significantly impacted aviation by introducing substantial regulatory changes and potential market access restrictions(IATA, 2018).

Conclusion

In conclusion, the analysis of the transatlantic aviation market from 2008 to 2023 reveals a complex landscape shaped by significant economic disruptions and strategic shifts among major carriers. The routes between London (LON) and New York City (NYC), London (LON) and Los Angeles (LAX), as well as Amsterdam (AMS) to NYC and LAX, have consistently demonstrated high levels of market concentration, dominated by key players such as British Airways, American Airlines, and KLM-Royal Dutch Airlines. Despite facing challenges such as the global financial crisis, Brexit, and the COVID-19 pandemic, the market has shown resilience through consolidation efforts, including mergers and the formation of strategic alliances and joint ventures.

The use of metrics like the Concentration Ratio (CR) and Herfindahl-Hirschman Index (HHI) has highlighted the limited contestability within these routes, indicating that established carriers continue to maintain substantial market power over newer entrants. Furthermore, while low-cost carriers such as Norwegian Air, JetBlue have attempted to penetrate the transatlantic market, their impact remains minimal due to high entry barriers and the dominance of legacy airlines. Overall, this report underscores the importance of understanding market dynamics in the transatlantic aviation sector, as it not only reflects broader industry trends but also provides insights into future competitive strategies and opportunities for growth in a continually evolving landscape.

Appendices

1. Concentration Ratio (CR): “The concentration ratio is a measure of the total market share held by a certain number of firms in the industry” (Vasigh & Pearce, 2024).

$$CR_m = \frac{\sum_{m=1}^{n} Q_m}{n} \times 100$$

n is the number of firms measured, Q is the output

- Perfect Competition: < 20%
- Monopolistic competition: between 20% and 50%
- Oligopoly: between 50% and 80%
- Monopoly: >80%

2. Herfindahl-Hirschman Index: “Method used to analyze the amount of concentration in an industry is the Herfindahl index” (Vasigh & Pearce, 2024).

$$HHI = \sum_{m=1}^{n} S_m^2$$

S is the m-firms’ market share, n is the number of firms

According to Vasigh and Pearce (2024), the U.S. Department of Justice (DOJ) and the Federal Trade Commission (FTC) have established categorical thresholds for market concentration using the Herfindahl-Hirschman Index (HHI).

- <1000: Competitive
- Between 1000 and 2000: moderately concentrated
- > 2000: Highly concentrated

3. The market concentration metric is derived by aggregating the market share by summing the maximum seat capacity percentages of the top three carriers for the given year, whichever yields the higher value.

	2008
Air India	4.50%
American Airlines	16.77%
Biman Bangladesh Airlines	0.00%
British Airways	36.46%
Continental Airlines	8.61%
Delta Air Lines	5.79%
El Al Israel Airlines	0.00%
Eos Airlines	0.63%
Jet2.com	0.00%
JetBlue Airways	0.00%
Kuwait Airways	1.50%
La Compagnie	0.00%
MAXjet Airways	0.11%
Norse Atlantic airways	0.00%
Norse Atlantic UK	0.00%
Norwegian Air Shuttle	0.00%
Norwegian Air UK ltd	0.00%
Silverjet	1.13%
United Airlines	0.00%
Virgin Atlantic Airways	23.81%
Zoom Airlines UK	0.68%

Table. 5 Market share of LON-NYC market in year 2008 on Airline level

In this table:

Here CR3 is used, the top three seat capacity percentages are: 36.46%, 23.81% and 16.77%.

To sum up,

CR3 = 36.46 + 23.81 + 16.77

CR3 = 77.05

For HHI number, all the individual seat capacity percentages are squared up and summed together.

HHI number = $(4.50)^2$+ $(16.77)^2$ + $(36.46)^2$ + $(8.61)^2$ + $(5.79)^2$ + $(0.63)^2$ + $(1.50)^2$ + $(0.11)^2$ + $(1.13)^2$ + $(23.81)^2$ + $(0.68)^2$

HHI Number = 2310

So, by using this method individual years can be calculated for the whole table and for other routes too.