

# The impact on traffic, market shares and concentration of airline alliances on selected European—US routes

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## Abstract

This paper examines the impact of airline alliances on traffic of the constituent airlines using an analysis of US Bureau of Transportation Statistics T-100 International Market Data on a monthly basis for five routes to the US from European hubs. The European hubs are Frankfurt and Paris. The period covered is January 1990–December 2003; a sufficiently lengthy period to enable the derivation of good time-series models before the ‘intervention’ of alliance formation and development. The alliances focussed on are Air France and Delta, part of the SkyTeam Alliance and Lufthansa and United Airlines, part of the Star Alliance. It is possible to distinguish code sharing agreements and then the subsequent immunity from US antitrust legislation. It is also possible to suggest some conclusions on the differences in alliance development in the more liberal open skies environments adopted by many European countries with the more traditional, stricter regulated bilaterals that exist in others such as the UK. Competition is examined using the Hirschman–Herfindahl Index so as to throw light on the impact of alliances on market concentration by route.

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## 1. Introduction

A number of publications have examined the impact of alliances, in particular, Oum et al. (2000), the Brattle Group (2002) and Morrish and Hamilton (2002). There are expected differences in impact depending on the type of alliance. More recently, Iatrou and Alamdari (2005) have surveyed and reported on the expectations and perceived impacts of alliances. There is an expectation of a positive impact on traffic on a route as well as on the shares of the alliance members and that these impacts will be greater if the participating airlines operate hub and spoke systems based at both the origin and the destination. In addition, these impacts are thought to reach fruition “between 1 and 2 years of the inception of the partnerships” (Iatrou and Alamdari, 2005) and will be greater from the inception of antitrust immunity.

Analysis of traffic data from the US Bureau of Transportation Statistics (2005)<sup>2</sup> does not yield unambiguous conclusions in accordance with theory or expectations. Data can be analysed year on year or month on month and the picture that emerges is complex, for amongst other things, capacity on the principal routes examined here is changed by both the incumbent airlines and airlines leaving and entering the market and this causes traffic volumes to fluctuate.

Nevertheless, both the date of code sharing agreements and of immunity from US antitrust legislation can be firmly stated,<sup>3</sup> so it should be possible using Autoregressive Integrated Moving Average Models (ARIMA) with Intervention Analysis to identify both the size and the significance of these influences on traffic by route. These impacts should be able to be identified if they are

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<sup>2</sup>This data is available online from 1990. Flows from the European hubs are used as an indicator of demand and generated traffic.

<sup>3</sup>Open skies agreements exist with the Netherlands, Belgium, Finland, Denmark, Sweden, Luxembourg, Austria, Czech Republic, Germany, Italy, Portugal, Slovak Republic, Malta, Poland, France, Norway, Switzerland and Iceland (US General Accounting Office, 2004).

significant, despite the implausibility of the *ceteris paribus* assumption; there are many other influences on traffic volumes and market shares by route besides alliance formation and development, for example, the focus of some US carriers on non-hub EU routes with smaller aircraft types.

The impact of alliance formation on market concentration and competition can also be identified by the examination of market share data.

These impacts are of current concern as the European Commission and the US have reached a provisional agreement on the extension of open skies policy that requires approval by transport ministers in late March 2007 with implementation in October. It is estimated that passenger numbers would be boosted by 26 million as European airlines would be allowed to make transatlantic flights from any EU country, not just their own nation, and more airlines would be able to use London Heathrow (LHR). British Airways (BA) is against the proposals and the UK government might be as changes in ownership rights will not result in, for example, the foundation in the US of Virgin America, contrary to Richard Branson's desires.<sup>4</sup> The chief beneficiaries might be those airlines that have a large number of slots at LHR such as Aer Lingus and British Midland International.<sup>5</sup>

## 2. Types of alliance and routes selected

Previous studies of the impact of alliances have often focussed on the north Atlantic although there has been a study on transpacific routes (Oum et al., 1996). This has been the focus, in part, because of the importance of the market both in scale and size and the role within it of the so-called global alliances. To study the north Atlantic also provides an opportunity to follow up the work of Oum et al. (2000) where a variety of alliances that were current at the time their empirical work was conducted were examined. Two of these, consisting of KLM and Northwest (NW) and United Airlines (UA) and Lufthansa (LH) are now part of SkyTeam and Star Alliance, respectively. Oum et al. (2000) also looked at Delta (DL) Sabena and Swissair and DL is now also in SkyTeam along with Air France (AF). In addition, Oum et al. (2000) looked at the code sharing agreement between US Air and BA and although BA along with, for example, American Airlines (AA) is now part of the Oneworld alliance, there is no current alliance operation involving BA from LHR on the north Atlantic.<sup>6</sup>

<sup>4</sup>See the commentary by the BBC News (2007) website, EU and US outline open skies deal at <http://news.bbc.co.uk/1/hi/business/6413315.stm>.

<sup>5</sup>The Times (2007). It is self-interested wind under BA's wings at [http://business.timesonline.co.uk/tol/business/industry\\_sectors/transport/article1480278.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/transport/article1480278.ece).

<sup>6</sup>The US General Accounting Office (2001) considered that the gains from the alliance between AA and BA and from negotiating an open skies agreement "may not offset the harms from reduced competition".

If the transatlantic market is to be concentrated on it is clear that that the European hubs of note are LHR, Paris, Charles de Gaulle (CDG) Amsterdam (AMS) and Frankfurt (FRA) with minor complementary roles for London Gatwick (LGW) and Paris Orly (ORY). Alliance routes from these origins to US points of entry can be examined looking at non-stop traffic.<sup>7</sup> However, when choosing actual routes for a time-series examination, the interest is focussed on CDG and FRA as the alliances operating from these airports have a history of non-alliance operation in the early 1990s, followed by code sharing, followed by antitrust immunity. The impact of both these interventions can be examined.

The London area airports are excluded here as despite the code sharing agreement with US Air from 1993 that was soon dissolved, there is no intervention to examine during 1990–2003. This is almost true of routes out of AMS where code sharing was initiated before 1990 and only the impact of antitrust immunity could be examined in January 1993. However, a sufficient number of illustrative alliances can be selected from the routes from CDG and FRA.

There are a variety of types of alliance that differ in the way that airlines cooperate with each other and that can also form a basis for route selection for further study. Specialist literature on this includes Hanlon (1999), Holloway (1998) and Oum et al. (2000). However, for this paper it is important to distinguish parallel and complementary alliances. The first is where two airlines collaborate on a route where they were previously competitors. In these cases, competition is expected to decrease. The actual impact on traffic, market share and competition can be addressed, particularly as the findings of Iatrou and Alamdari (2005) suggest positive impacts on traffic by contrast to the theory on parallel alliances and the previous empirical results. Examples of such alliances are CDG to New York (JFK) with AF and DL and FRA to Chicago (ORD) with LH and UA. This Chicago route is also a good example of a route with mixed alliance and non-alliance carriers; another possible basis for route selection.

Complementary alliances are where two carriers link up their existing networks so as to feed traffic to each other. Such alliance carriers can coordinate their flight schedules, restrict output and increase fares as well as share ground facilities and frequent flyer programmes. The best examples of these are for networks beyond a US Gateway where the US carrier operates within the US but the European partner flies the north Atlantic. Empirical work by Oum et al. (2000) suggests the biggest boosts to alliance output are experienced here but it may well be that overall traffic declines and an example is FRA–JFK with United operating onward routes from New York, albeit not in impressive numbers. Further similar routes with onward code share connections are from CDG to Los Angeles (LAX), ORD, Boston (BOS) and Newark (EWR) as well

<sup>7</sup>The point of entry may not be the final destination in the US.

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