



The aviation value chain: Economic returns and policy issues



Michael W. Tretheway^{a, b, *}, Kate Markhvida^b

^a InterVISTAS Consulting Inc., Vancouver, Canada

^b Sauder School of Business, University of British Columbia, Canada

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ABSTRACT

The airline industry is the central part of the commercial aviation value and supply chain. Nevertheless, it has the lowest profit margin and return on investment compared to other sectors in the chain. This leads to the question whether the airline industry is sustainable in the long run, the so called ‘empty core’ problem. This paper discusses the returns in the aviation supply chain and provides several policy recommendations that might be considered to improve the long-run sustainability of the airline sector and the aviation supply chain as a whole. These include i) recognising the role of airline charges for ancillary products and services, which enables airlines to generate revenues to cover fixed costs in the presence of intense competition that drives the price of the core airline product to marginal cost, ii) reconsidering risk allocation between airlines and airports to eliminate pro-cyclical airport pricing required by some regulators or airline-airport agreements, iii) considering allowing airlines to internalise certain externalities, and iv) increasing vertical competition in distribution channels.

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1. Introduction

The global airline industry is slowly returning to profitability, but there is a long and difficult road ahead. According to IATA, the industry raised a profit of \$8 billion in 2011 (IATA, 2012a) and it is forecast to make a profit of \$11 billion in 2013 (Reuters, 2013). However, these improved profit margins continue to be alarmingly thin – in the best of times the airline industry earns only a modest 1–2% net profit margin on revenue. Volatile fuel prices, economic downturns, impacts of terrorism and natural disasters (hurricanes, volcanic ash, tsunamis, etc.), pandemics and government austerity measures are among the key factors that will continue to affect airline profitability.

If profit margin improvement leads only to a 1–2% return on revenues, a key question is whether the airline industry is capable of ever achieving financial sustainability. A classic paper by Button asks whether the airline industry has an empty core (Button, 2002), economist jargon for conditions under which airline competition can never reach a financially sustainable equilibrium. Button notes that the modern airline industry is as free from economic regulation as it has ever been. While safety, security and environmental regulation of the industry has strengthened, government control of

pricing, route entry, ownership and other aspects of airline economic activity has largely been removed in many major aviation markets. Newly acquired economic freedoms have inevitably led to increased competition between airlines – perhaps too much competition, which caused some researchers to question the economic viability of airlines in the long term. A simplistic way of stating this is that competition between airlines may be so intense that they will always compete price down to the marginal cost of providing service, leaving fixed costs uncovered.

The airline industry needs to find some means of earning revenues sufficiently above short to medium term marginal cost to cover its fixed costs. One view of this is driven by a capacity argument – there is too much capacity in air transport markets and returns will be below the cost of capital until capacity is driven out. In this view, the challenge is that the industry has had decades of weak returns, yet capacity continues to be added in almost every geographic market in the world. This view seems to imply that capital markets are imperfect and invest in airlines which do not cover their costs of capital. However, there are also differences in business models among the airlines, with some carriers achieving an adequate return that covers their costs of capital, and these add capacity, even as carriers with inadequate return maintain their capacity to protect market share, rather than shed it. This does not explain, however, why sub performing legacy carriers are able to obtain financing.

Another view is that the overall aviation value chain is financially sustainable, but that certain segments of the industry’s value chain have market power and have been able to transfer profits

* Corresponding author. InterVISTAS Consulting Inc., Vancouver, Canada. Tel.: +1 604 717 1801.

E-mail address: Mike.Tretheway@InterVISTAS.com (M.W. Tretheway).

from airlines to themselves (Brattle Group and Norton Rose, 2003; US Department of Justice, 2003). As will be seen, airlines – while arguably the most important member of the value chain – achieve the lowest return. *The Economist* succinctly summarized the key problem faced by the airline industry: it makes profit for everyone along the aviation value chain except for itself (Economist, 2012). In the last decade, airlines have consistently posted lower rates of return for shareholders compared to aircraft manufacturers, airports, air navigation services providers (ANSPs), and especially global distribution systems (GDSs), travel agents, freight forwarders and other players along the aviation value chain. In this view, the solution may partly lie with rebalancing the value chain, injecting competition in segments which are earning economic (above cost of capital) profits or removing regulatory impediments to air carriers reaping some benefit from other parts of the value chain.

This paper aims to further contribute to the dialogue on sustainability of the aviation value chain by exploring in greater depth sustainability of the airline sector – the core and arguably the most vulnerable element in the aviation industry today – in the context of financial performance and long-term sustainability of other sectors along the aviation value chain.

This paper is organized as follows: Section 2 provides a brief overview of past research on the topic; Section 3 describes the aviation value chain and its participants; Section 4 addresses financial performance and sustainability of the value chain under the current *status quo*; Section 5 provides several policy recommendations that may improve the financial viability and sustainability of the aviation supply chain; Section 6 provides concluding remarks.

2. Literature review

Several past studies analysed the viability of different sectors of the aviation supply chain. Some studies analysed performance of individual sectors (airlines, airports, aircraft and component manufacturers, avionics suppliers (Charles and Ghobrial, 1995)), but only a few have attempted to provide a comprehensive overview of sustainability across multiple sectors in the aviation value chain. A notable paper in this regard is that of Pearce (2012) which focuses on performance and sustainability of the airline sector (passenger and cargo) of the aviation value chain in the post-deregulation period (Pearce, 2012), generally noting poor financial performance, persistent inadequate returns on invested capital and questionable sustainability at least in the short term. Forsyth looked at the issue of aviation sustainability and environmental achievement (Forsyth, 2011). Other notable papers are by Arpey, Franke and Morrell (Arpey, 1995; Franke, 2007; Morrell, 2011).

The Association of European Airlines and Seabury issued a position paper in 2012 which showed that based on return on capital employed (ROCE), the airline industry in Europe was unable to meet the 7% threshold for long term sustainability. The research found that although some airlines were able to meet the 7% threshold for single years, there were not many airlines that met this target on an average basis over a longer term. In addition, the research found that ROCE in the airline industry is generally lower compared to other sectors in the value chain. Average ROCEs ranged from 8 to 20% for aircraft lessors, 9–20% for GDSs and 5–11% for airports, compared to –14% to 11% for legacy carriers (Association of European Airlines and Seabury, 2012). Among proposed solutions that airlines can adopt in order to remain sustainable, researchers have identified the need for airlines to innovate via new business models, customer segmentation and use of new technologies. Past research suggests that airlines are better off taking a risk on innovation than remaining stagnant. Carriers need to choose a market segment and become competitive in that segment alone, as the old

method of moving between segments is no longer sustainable. Further, airlines need to study their customers to understand which customers are willing to pay for which services. Lastly, technological innovation including the use of newer aircraft, updating check-in and security technologies for easing holdups at the terminal level and the emergence of lower cost GDS platforms are key sources of cost reductions for airlines going forward (Franke, 2007).

Several studies addressed financial viability of the airport sector, particularly in the light of increased airport privatization (Bieger and Wittmer, 2011; Graham, 2009). Graham (2009) studied the role of commercial non-aeronautical revenues for airports and found that such revenues account for roughly 50% of all revenues, gaining importance as a source of revenue and better profits for airports. The development of commercial non-aeronautical revenues is in part the result of increasing pressure on airports, either by their new private sector owners or by government owners unwilling to provide further capital, to improve their financial performance while lowering aeronautical fees and charges. It is also partly due to the trend of airport privatization typically accompanied by development and expansion of commercial revenue-generating activities (Graham, 2009). Bieger and Wittmer (2011) analysed sustainability of three sectors of the aviation value chain: airlines, airports and aircraft manufacturers. In their discussion of airports, several key factors for sustainable growth were identified including adapting infrastructure for advances such as new aircraft; creating a business model which covers traffic created through both retail services and entertainment services; and adapting financing to be able to operate through the cyclical financial environment, even during economic downturns; and the need for airport operators to be aware of the airport environment (through corporate affairs) (Bieger and Wittmer, 2011).

There is a significantly smaller body of literature that provides a comprehensive assessment of the aviation supply chain as a whole. An important contribution in this area was a 2006 study by IATA in partnership with McKinsey & Company, which analysed profitability of the aviation value chain (IATA, 2006). The study looked at the causes of poor airline investor returns in the context of fundamental structural factors affecting the airline industry in particular and the aviation value chain more generally. Key insights from this study include:

- the aviation supply chain has attracted substantial amounts of capital, with the bulk of the capital invested in airlines (\$380 billion of \$680 billion in total investment in 2004);
- between 1996 and 2004 airlines generated positive operating profits, but the positive profits were insufficient to provide the 'normal' rate of return to justify investment risks or, in other words, the return on invested capital fell short of the cost of capital in the airline industry;
- LCCs have generally performed better than network carrier in terms of investment returns, but in aggregate they failed to generate sufficient returns to cover the cost of capital;
- the aviation value chain as a whole generated a return on invested capital above the cost of capital (approximately 0.2% of invested capital), primarily as a result of high returns for aircraft manufacturers, financial lessors, freight forwarders and, in particular, computer reservation systems (CRSs);
- the returns across the aviation value chain vary by sector with the highest returns observed in the CRS, freight forwarding, fuel supply and manufacturing sectors. Absent gains in productivity, efficiency or higher risk profile, excessive returns suggest the presence of monopoly power in some sectors; and
- despite being a high risk investment environment, the airline industry does not provide investors with adequate returns on capital and offers the lowest average return amongst all sectors.

3. The aviation value chain

The commercial air transport value chain consists of a number of interlinked segments. It can be broadly divided into upstream and downstream segments with airlines being the central node in the aviation value chain, as indicated in Fig. 1.

The upstream sector of the aviation value chain consists of:

- Aircraft and aircraft component manufacturers
- Leasing firms and other sources of capital
- Aviation infrastructure providers
 - o airports
 - o air navigation service providers (ANSPs)
 - o aviation communication providers (air-to-air, between ground stations, etc.)
- Other suppliers
 - o caterers
 - o fuel suppliers
 - o insurance providers
 - o ground services providers
 - o etc.

The downstream sector of the aviation value chain consists of:

- Distribution of the airline product – passengers
 - o Global distribution systems (GDS), formerly computerised reservation systems (CRS)
 - o Travel agents (online and brick & mortar)
 - o Travel integrators (tour operators packaging air ticket with hotel and/or other travel service)
- Distribution of the airline product – cargo
 - o Freight forwarders
 - o Cargo integrators (companies packaging air lift with trucking pick-up and delivery, and/or customs services, etc.)

The aviation supply chain is characterised by a high degree of vertical disintegration. As a general rule, airlines have limited or no

ownership interest in other sectors of the value chain. Over the years airlines have gradually divested their ownership interest in several sectors of the aviation value chain, either as a result of changes in national laws, regulatory interventions or decisions to improve business competitiveness and financial performance. Examples include airlines' past ownership and subsequent divestiture of assets in aircraft manufacturers, computer reservation systems (CRSs), maintenance, repair and operations (MROs) providers and hotel chains, among others. At the same time, airlines have invested in certain supply chain partners such as providers of fuel, ground handling services, in-airport customer services, catering or other services. Another sector where investment by airlines can be observed is cargo terminal facilities, cargo handling operations or trucking operations related to pick up and delivery of air cargo. In some markets, airlines have also invested in airport terminals, although this is a more recent trend.

However, despite the high degree of vertical disintegration currently observed, it is important to note that the aviation value chain is not a collection of firms that operate in isolation of each other. There has been significant facilitation in terms of creating standards and operating procedures across the value chain members, and this has lowered industry costs and increased customer service levels. ICAO and certain national air safety regulators have established standards and recommended regulations that, for example, facilitate and standardize airport design so that air carriers can operate aircraft to a broad range of similarly regulated/ designed/equipped/operated facilities. IATA has established standards for sale and exchange of travel documents, facilitated clearing of financial transactions between value chain partners, set up a process for carriers to apply for slots at airports which must be linked in service times, etc.

Profitability levels and returns on investment vary along the aviation value chain, with some sectors performing substantially better than others. Since the pendulum of regulation swung in the direction of greater market liberalization of the airline industry in the 1970–90s, the main goal of policy makers has been to encourage horizontal competition between airlines. Increased airline competition

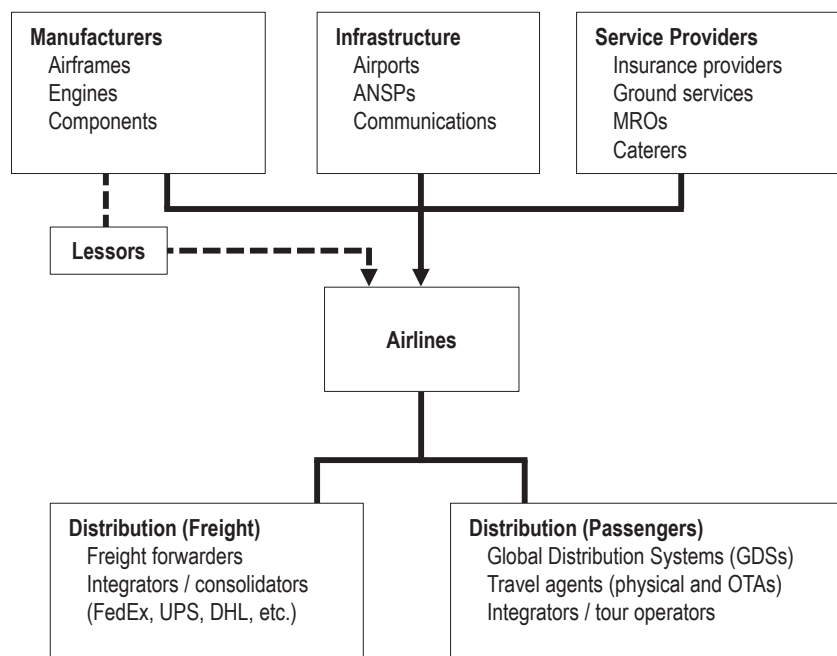


Fig. 1. The commercial aviation value chain.

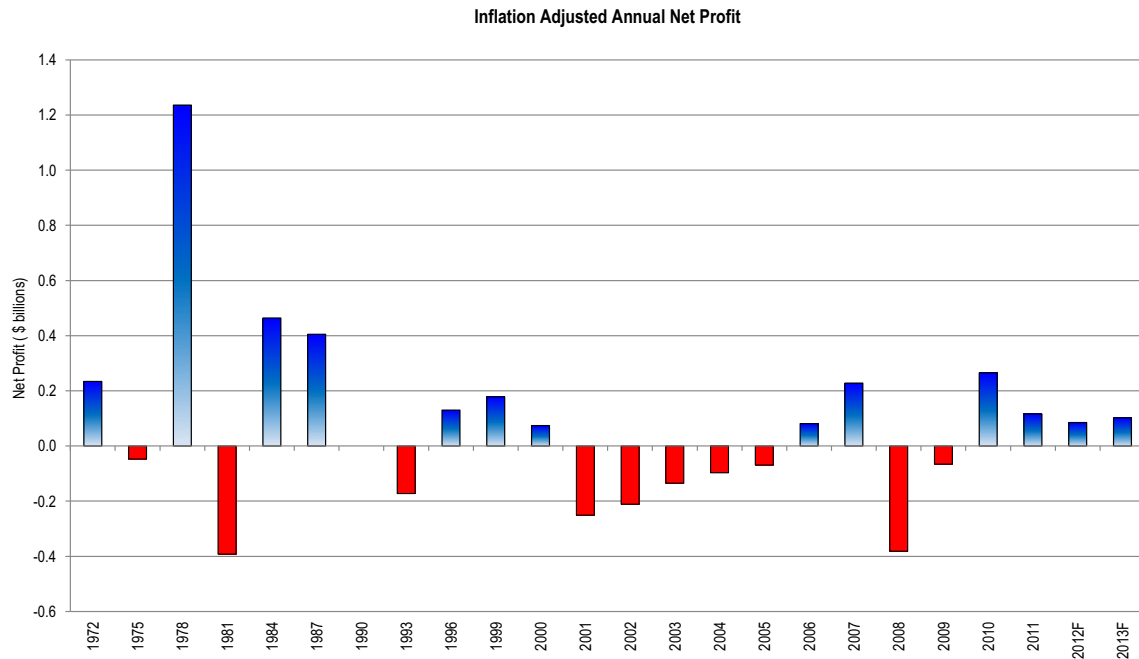


Fig. 2. Profitability of the Global Airline Industry (Inflation Adjusted) 1972–2013.^{2,3}

Source: 1972–1996: ICAO, Civil Aviation Statistics of the World; 1999, IATA, World Air Transport Statistics; 2000–2013: IATA, Industry Financial Forecast, December 2007 and 2012.

has borne fruit in the form of lower overall fares and enhanced choice of air travel options in many markets (Barrett, 2000; Bennet and Craun, 1993; De Wit, 1995; Goetz and Vowles, 2009; Morrison and Winston, 1986; Tretheway and Kincaid, 2005). However, there has been a substantial cost in the form of lower profitability for the airline industry itself. Of course, many segments and carriers in the industry have achieved reasonable profitability, in particular with some of the low cost carriers and the integrator cargo carriers. Financial viability was a challenge even during the regulated era, but then the solution was often regulator induced or sanctioned mergers or route reassignment.¹ These provided continuity for travellers and allowed some shareholders to maintain some equity even when their carriers' business models and operations were effectively failures. Post-deregulation economic protection has been effectively removed and the competitive landscape in the airline industry has changed profoundly. Increased competition

coupled with disruptions in passenger traffic flows due to natural disasters, terrorist attacks, outbreaks of infectious diseases and economic recessions have put downward pressure on global airline yields. Add supply factor price volatility such as recurring spikes in fuel prices and the net result is low profitability that many airlines around the globe continue to grapple with. Fig. 2 depicts annual net profit for the global airline industry in the past decade, adjusted to remove inflation.

As evident from Fig. 2, the collective financial performance of the airline industry – the central node in the aviation value chain – continues to be problematic. In the last decade (2000–2010), the cumulative net loss of the airline industry was \$30 billion based on current dollars and \$0.6 billion after adjusting for inflation. The short-term outlook for this decade looks marginally better, with the global airline industry posting tiny but positive net profit in the first two years of this decade (2011 and 2012). But the key issue of sustainable profitability in the long term remains.

The next section reviews in greater detail performance across other sectors of the aviation value chain.

4. Performance of the aviation value chain

4.1. Investment

An economically sustainable industry has to cover the cost of operations and provide a reasonable return on investment so that capital can be renewed. Financial viability and sustainability must be achieved not only by the value chain as a whole, but also by each sector of the value chain individually. Inadequate performance by one sector of the aviation value chain has the potential to undermine the sustainability of the entire system. As will be seen, the weakest link in the aviation value chain is the airlines themselves.

Fig. 3 shows the average level of investment in the air transport value chain. The largest investment is made by airlines, primarily in new or replacement aircraft, airframes, engines and other aircraft components, but also in ground equipment and corporate

¹ Under regulation in the United States, an airline that was likely to fail could be either reassigned to a profitable route(s) or merged into another airline with approval of the Civil Aeronautics Board (CAB). For example, in 1972 Delta merged with Northeast, a Boston-based airline that started in the 1930s. Prior to the merger, Northeast had been having financial difficulties and had to seek a merger to continue operations. The merger was approved by the CAB. In the United Kingdom, the merger between British Airways and British Caledonian that took place in 1987 was also the result of an ongoing financial struggle by British Caledonian. The two airlines were the largest in the UK at the time. The merger was reviewed by the UK Civil Aviation Authority, the then UK Monopolies and Mergers Commission, the European Commission and the government itself and ultimately approved with conditions. In France, the 1997 merger of Air France and Air Inter resulted from financial woes by Air Inter and an attempt by the French government to protect national carriers. Air Inter held a monopoly on the domestic market in France, but after a single air transport market was introduced in the European Union on 1 July 1997, granting cabotage rights to EU community carriers, Air Inter struggled to compete with other European carriers.

² No data were available for 1990.

³ Inflation adjusted annual net profit/loss levels for the global airline industry were computed using International Monetary Fund's global inflation rates: inflation rates for 1972–2006 were sourced from the IMF World Economic Outlook Database (April 2006); inflation rates for 2007–2013 were sourced from the IMF World Economic Outlook Database (April 2013).

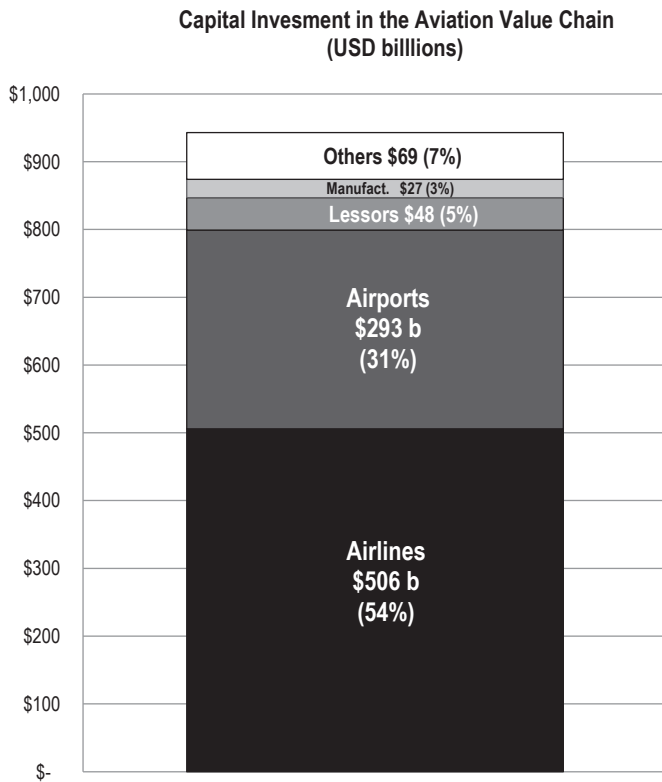


Fig. 3. Capital investment in the aviation value chain.
Source: IATA, Vision 2050, February 2011.

resources. Airline investment around the world was \$506 billion. The next largest component is investment by the airport sector of \$293 billion (IATA, 2011). It is often overlooked that airport investments are substantial and amount to 31% of the total investment in the aviation value chain. Airports have very low asset turnovers relative to airlines. The ratio of annual revenue to invested capital is 1.0 for airlines (IATA, 2012b)⁴ but only 0.2 for airports (ACI, 2012).⁵ Aircraft manufacturers had \$27 billion in invested capital while leasing companies had \$48 billion in assets (IATA, 2011). The rest of capital investment in the aviation value chain is split between ANSPs, freight forwarders, ground service providers, MROs, global distribution systems, travel agents and catering companies, which together account for \$69 billion or 7% of total investment.

4.2. Rate of return on investment

In 2013, IATA commissioned a major study by McKinsey & Company to estimate the returns on invested capital in the aviation sector. Three main observations can be made based on McKinsey's findings. First, the rate of return on invested capital varies widely between different sectors of the aviation value chain. Second, airlines provide the lowest rate of return on invested capital for shareholders compared to other sectors of the aviation supply

chain. Third, the rate of return for airlines falls short of the cost of capital invested in this industry.

On a global basis, airlines have consistently posted a lower return on capital invested by shareholders than other players in the aviation value chain. The airline sector is the worst performing. Compared to top value chain performers that include global distribution systems (26%), travel agents (20%) and freight forwarders (15%), airlines had a meagre 3% rate of return in 2002–2009. Each of the top performing sectors is achieving a return well in excess of the respective cost of capital, suggesting a substantial degree of market power. This is not the case for the airline industry, where one observes a high degree of horizontal competition and where the rate of return falls short of capital costs.

Further, the low rate of return on invested capital in the airline industry is below their cost of capital requirements. The average return on invested capital in the airline industry was 3% in 2002–2009, compared with the cost of capital of 7–10% (IATA, 2011). In 2004–2011, the airline industry earned a somewhat better return (4%), which nevertheless fell short of the required cost of capital threshold of 7–10% (Association of European Airlines and Seabury, 2012).

Return on invested capital for the airline sector varies by region, with some regions performing better than others. According to a joint study by the Association of European Airlines and Seabury, the typical return on capital employed (ROCE) in the European airline industry fluctuated around the zero mark in 2004–2007, whereas aircraft manufacturers, lessors, MROs, airports and GDSs not only posted positive returns but had higher average returns compared to airlines (Association of European Airlines and Seabury, 2012). Most European carriers did not meet the threshold of a sustainable return on capital of 7% in the past decade (Association of European Airlines and Seabury, 2012). Select airlines in the Middle East, Asia and Latin America have posted somewhat higher returns (in the 6–12% range) in the past decade (IATA, 2011), but even in those regions airlines have often fallen behind other players along the value chain.

Returns in the airline sector also differ by business model, to some extent. Many of the current top performing airlines follow some variant of the low cost carrier (LCC) business model, although not all LCCs are profitable, much less sustainably profitable. Similarly, some of the legacy carriers have been able to achieve profitability, such as COPA (consistently), LAN (recently), Alaska and All Nippon Airways.

Inadequate returns on invested capital have far-reaching implications. Specifically, the air carrier sector industry is the centre or anchor of the value chain, but is the least profitable node in the chain. Collectively, for many years the industry has failed to achieve sufficient returns to cover the cost of capital. Despite a continuing trend of unit cost reductions in the airline industry, investors derive no value or benefit from the improved cost performance as the value is entirely passed on to the customers downstream. This poor return at the value centre of the aviation supply chain puts other members of the value chain at some risk.

Airports have fared somewhat better than airlines in terms of financial returns, but are still the second lowest earner in the aviation value chain, according to the McKinsey study. The average return on invested capital is roughly 1% below the industry's 7% average cost of capital, although a few airports have been able to achieve overall returns above their cost of capital. 25% of airport operating companies have achieved returns above 10%, far below the returns of other value chain sectors such as CRSS, travel agents and freight forwarders. The higher returns on investment for some airports are largely attributable to non-aeronautical services (e.g., parking and net income from concessions and operations of retail/food/beverage/advertising). Most airports have their aeronautical

⁴ According to IATA, total revenue for the global airline industry was \$597 billion in 2011. Total investment by airlines around the world was \$587 billion in the same year, resulting in a revenue/investment ratio of 1.0.

⁵ According to ACI, total revenue for airports worldwide was \$101.8 billion in 2010. Total investment by airports was \$436 billion in the same year, yielding a revenue/investment ratio of 0.2.

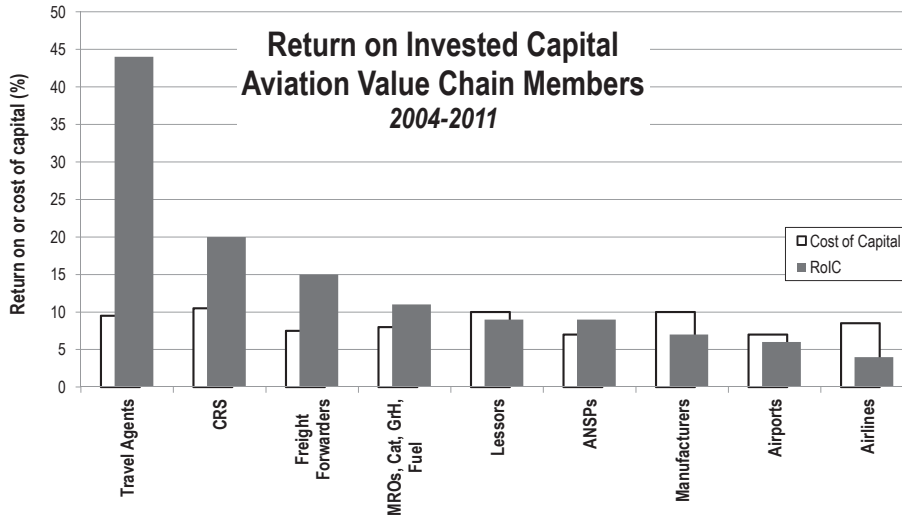


Fig. 4. Return on invested capital in the commercial air transport value chain 2004–2011. Source: IATA, Profitability and the Air Transport Value Chain, June 2013.

fees limited to cost recovery or less, either by market conditions or as a result of regulatory intervention.

Fig. 4 provides a breakdown of average returns on invested capital for different sectors in the aviation value chain during 2004–2011.

4.3. Credit rating

Another metric that can be used to examine sustainability performance along the value chain is debt and equity credit rating for companies in different aviation sectors. With very few exceptions, airline shares are not rated as investment grade, often being rated as “junk” or “speculative” grade. Low credit rating increases the cost of capital for air carriers.

By contrast, airports are generally rated as investment grade and thus have lower costs of capital. Similarly, air traffic control

providers (such as Airservices Australia, NavCanada, Deutsche Flugsicherung and UK National Air Traffic Services) are considered to be investment grade.

Fig. 5 provides a selection of bond ratings for air carriers, airports and air navigation service providers. Very few of the selected carriers meet the criteria of investment grade (BBB- or higher, represented by the dashed horizontal line in Fig. 5) while the majority of airports and ANSPs fall into the investment grade category.

Low credit rating for airlines is problematic for the airlines in particular and the value chain in general for a number of reasons. First, it narrows the pool of potential investors and thus limits access to capital for airlines and impedes expansion of activity in the overall value chain. In many jurisdictions, institutional investors such as pension funds, insurance companies, banks and others are prevented by their internal regulations from investing in assets with ratings below investment grade. Pension funds are the largest

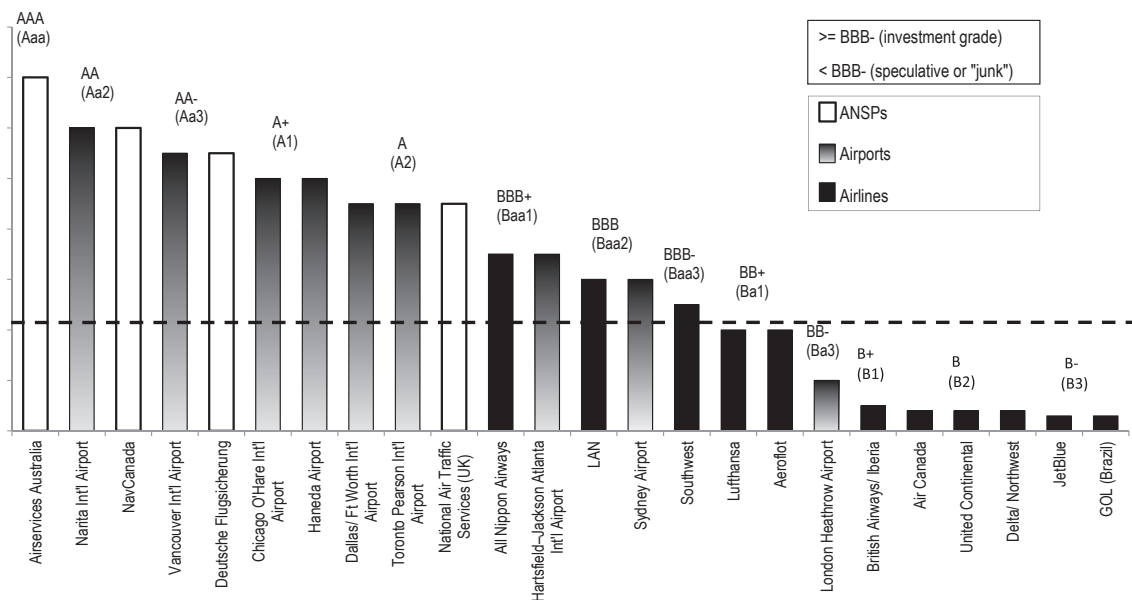


Fig. 5. Credit Ratings for Select Airlines, Airports and ANSPs. Source: Bond ratings from Moody's, DBRS, Fitch, R&I, and S&P.

institutional sector class of investors, accounting for over 20% of global asset management (Economist, 2008), and are among the groups of investors who are not allowed to invest in “junk” bonds. The long life of aircraft assets might otherwise be a good match for investment objectives of pension funds (and also insurance companies).

One trend observed over the years is an increasing portion of the global fleet financed by long term capital leases rather than by carriers. The reasons for this are complex and are due in part to tax law incentives in some jurisdictions favouring leasing rather than purchase of long-lived assets. However, the inability of air carriers to obtain low rate investment grade financing from pension funds and insurance companies is a major factor.

Second, the high cost of capital of airlines also raises issues as to who should bear risk in the industry. Optimisation across the value chain may favour different value chain partners financing some capital assets and different institutional arrangements on risk bearing and sharing. This is a topic to which we shall return shortly.

Despite the fact that airlines around the globe consistently post low returns on invested capital and earn small profit margins in the best of times, the industry has generally managed to attract capital investment. One cannot help but wonder why investors would put money in an industry that does generate a reasonable rate of return. A possible explanation lies in the fact that the airline industry is highly leveraged and generates a higher return on investors' equity (or net worth). Financial investment decisions depend not only on the level of profit in a given industry, but also on how efficiency industry management utilizes available assets to generate sales (i.e., the industry's return on net worth).

Return on shareholders' equity or return on net worth is equal to net profit divided by shareholders' equity. Alternatively, it can be thought of as a product of return on assets and the financial leverage ratio of a firm (or industry). Other things being equal, an industry with a higher return on assets or a higher financial leverage would have a higher return on equity. We used a strategic profit model (Stock and Lambert, 1987) to compute returns on net worth for a sample of air carriers based on their financial statements for 2012.

Fig. 6 summarizes returns on shareholders' equity for a sample of seven carriers that offer commercial scheduled service.

While net profit margin has often been the focus of commentary on airline industry performance, the relevant measure in terms of investment is return on equity. Because the airline industry typically has financial leverage factors of 2–3, return on net worth will generally be 2 to 3 times net profit margins. For four carriers in our sample in Fig. 6 (WestJet, Southwest, Qantas and All Nippon Airways), the return on equity (whether positive or negative) exceeded in magnitude the profit margin in 2012 by a factor between 2 and 3. For two carriers (United/Continental and Lufthansa) the difference was even more substantial. Only for one carrier in the

Carrier	Net Profit Margin	Return on Net Worth
WestJet	7.1%	16.5%
United/Continental	-1.9%	-16.6%
Southwest	2.5%	6.0%
LAN	4.9%	5.0%
Qantas	-1.6%	-4.1%
All Nippon Airways	2.0%	5.1%
Lufthansa	3.6%	14.9%

Fig. 6. Net Profit (Loss) and Return on Shareholders' Equity 2012. Source: InterVISTAS analysis based on 2012 annual reports for All Nippon Airways, LAN, Qantas and WestJet; 2012 operating statement for Southwest; 2012 financial statement for Lufthansa and K-10 Form for United/Continental.

sample (LAN), the 2012 profit margin was roughly equal to the return on net worth. This brief analysis provides an important insight as to why the industry continues to attract investment, in spite of low net profit margins. While returns on equity are still low relative to some other sectors (e.g., information and communications technologies, energy), moderate equity returns in general and high equity returns for some carries (e.g., WestJet and Lufthansa) explain how the airline sector has attracted investment.

4.4. Market power in the aviation value chain

As already mentioned, since deregulation of the airline industry, much government policy has focused on increasing competition between airlines in order to obtain the highest benefits possible for aviation users. Competition within a sector of a value chain is referred to as horizontal competition. Policy has been driven by national (and pan-national) competition authorities reviewing airline mergers and alliances. It has also been driven by transportation ministries/departments in the form of legislation to deregulate the airlines, liberalisation of foreign ownership limits on airlines (at least in some jurisdictions such as the European Union, Australia and New Zealand), and entering into liberal bilateral and multilateral air services agreements.

However, the rates of return relative to cost of capital, posted above, raise the issue as to whether a) substantial market power exists in other sectors of the value chain, and b) whether government policy might achieve higher returns by focussing on other sectors. A case in point is the extremely high returns being earned by GDS providers. Ironically, this sector was created by the airlines (at least by some of the airlines) and later divested – a case of vertical disintegration. In part because of GDS ownership by some, but not all airlines, the sector came under intense regulation in the United States, the European Union, Canada and other jurisdictions. Both transport ministers/departments and competition authorities were involved in oversight of GDSs and their predecessor namesakes, Computerised Reservation Systems or CRSs. After the GDSs were divested by their airline owners, government policy removed regulation of the GDSs. However, even at that time, concern was raised that this might have been premature. The U.S. deregulated its GDS operators in 2004, but both the Department of Transportation (DoT) and the Department of Justice (DoJ) noted that there may be remaining market power for the GDSs. The DoJ, for example, stated (US Department of Justice, 2003):

“The airlines' CRS divestitures leave unaffected the incentive and ability of CRSs to fully exercise their market power in a nonstrategic way. The CRSs may still have incentives to charge supracompetitive booking fees and, absent a price rule, the only constraint on their ability to do so would be any countervailing airline bargaining power.

(...)

Although airline bargaining power has not in the past been sufficient to produce competitive booking fees, bargaining power of airlines could increase if their ability to shift sales to the Internet and other alternative channels continues to increase significantly. DOT should assess, after some reasonable transition period, whether the alternative distribution channels have continued to dissipate CRS market power. If they have not, DOT should then reconsider the zero price or any pricing rule”

In effect, the US government deregulated the GDS sector, in spite of concerns over market power, trusting that new distribution channels or technology providers would emerge and create the

needed competition to prevent market power abuse. However, a source of the market power of GDSs is their ability to discipline an air carrier which seeks to pursue alternative channels or technology providers, simply by biasing GDS displays (to travel agents and to online passengers booking their tickets via the GDS channel) away from the innovating carrier.

This is not a hypothetical argument. Both [US Airways](#) and American Airlines initiated lawsuits against GDS providers (Sabre and Travelport), alleging that the latter biased displays away from the carriers' flights when they sought to incentivise use of lower cost but non-GDS distribution channels and charged excessing booking fees. In particular, in a recent lawsuit brought before a Texas state court by American Airlines against Travelport and Orbitz Worldwide, American alleged that:

"Travelport recognizes that AA Direct Connect poses a significant competitive threat to its power to charge supracompetitive booking fees and its ability to impede technological investment and change.

(...)

Specifically, Travelport has engaged in various forms of unlawful exclusionary conduct intended to significantly limit the incentive and ability of its travel agent subscribers to shift booking among different providers of airline booking services in response to ordinary market forces."⁶

In March 2013, the lawsuit between American Airlines and Travelport was settled after Travelport agreed to pay American Airlines an undisclosed amount. Travelport also agreed to lower the booking fees paid by American Airlines ([Maxon, 2013](#)). In the fall of 2012, American Airlines settled with Sabre, which it had sued earlier on similar allegations, after Sabre agreed to compensate American Airlines for an undisclosed amount ([Rice, 2013](#)). In both cases, the GDSs filed counter lawsuits against the airlines. The destiny of the [US Airways](#) lawsuit against Sabre, alleging excessive booking fees, limited or reduced innovation which prevents [US Airways](#) from distributing new products and services via Sabre, and limited choices for travel agents to access [US Airways](#) products and services via Sabre, is unknown to the authors. However, in light of the recent merger between American Airlines and [US Airways](#) it may be that this legal battle will be settled as well, if it has not been settled already.

The high returns in the travel agent sector also raise issues which may need investigation, especially if the source is driven by the GDS market power issue. For the freight forwarding sector, there has been a substantial restructuring of the sector. Significant consolidation has occurred within the sector so that while there is a large number of freight forwarders, much of the market is concentrated among a small number of large global players in this market space. Increasingly, these forwarders are making the critical decisions in the air cargo value chain as to which airport gateway will be used as well as which carrier. In many jurisdictions (e.g., the United States, Canada and continental Western and Central Europe) forwarders can truck cargo to alternate gateways to exercise substantial power over carriers.

Clearly, firms in a number of sectors of the aviation value chain exercise substantial market power, which allows them to earn premiums above normal rates of return. One suggestion to address

this issue would be to adopt a policy measure to constrain the exercise of market power among GDSs and potentially among travel agents and freight forwarders, through regulatory intervention if necessary. The next section will review a number of policy issues and provide several policy recommendations.

5. Strategies for improving sustainability of the aviation value chain

The main argument put forth in Section 4 is that in the commercial air transport value chain, the weakest link is the air carriers. They suffer from the lowest returns, at levels which are below their costs of capital. This section turns to some potential policy alternatives that might be considered for enhancing air carrier sustainability.

5.1. Filling the empty core: charging for Airline ancillary products and services

At the outset, this paper suggested that the nature of horizontal competition in deregulated airline markets may be such that price of the core airline service will always be driven to marginal cost, leaving the carrier's fixed costs uncovered. While there are economic efficiency benefits of this, unless governments are willing to subsidise air carriers, the latter will need to find some source of value to passengers which is capable of paying a premium above marginal cost.

In recent years, airlines have identified elements of the services they provide which are of value to some passengers, although not to all. An example of this is the value in certain airline seats, such as at the bulkhead and in emergency exit rows which, by regulation, must have greater seat pitch (distance between seats) than other seats. The value of these preferred seats has always been present, and the airlines used various means to ration these higher value seats to some passengers. Increasingly, airlines are monetising the high value some passengers place on such seats via additional fees. This allows the airline to continue to compete on the basic product at marginal cost, while monetising value from those passenger willing to pay for the value already present in the preferred seats.

There are a number of other examples of monetising the value in such non-core services, with the industry generally referring to the charges as ancillary service fees. Examples are priority boarding of the flight, lounge access, luggage checking, assigned seating, on-board meals and entertainment, etc. [Fig. 7](#) shows that revenue from the sale of ancillary services has been growing steadily, increasing from approximately \$2.5 billion in 2007 based on data reported by 23 airlines to \$27.1 billion in 2012 based on information provided by 53 airlines ([Amadeus, 2013](#); [IdeaWorks, 2012](#)).

While total ancillary revenues have grown steadily over the period under review, this is not a direct indicator of rising ancillary fees because the increase could be due to the increased number of reporting carriers as well as the size and identify of reporting carriers. It is useful to analyse a relative measure of ancillary revenues such as, for example, the amount of ancillary revenue per passenger. While no data were available on the identity of reporting carriers for 2007–2010, we compiled passenger data for the reporting carriers for 2011 and 2012 in order to evaluate ancillary revenues on a per passenger basis. In 2012, per passenger ancillary revenue was \$14.81 based on \$27.1 billion in total ancillary revenue and 1.8 billion passengers transported by the 53 reporting carriers. In 2011, per passenger ancillary revenue was \$14.54 based on \$22.6 billion in total ancillary revenue and 1.6 billion passengers transported by the 50 reporting carriers.

In relative terms, ancillary services are *presently* a more significant source of income for LCCs and ULCCs (ultra low cost carriers

⁶ *American Airlines Inc. v. Travelport Limited et al.* (2011), paragraphs 6 and 8, available at <http://docs.justia.com/cases/federal/district-courts/texas/txndce/4:2011cv00244/205007/1> (accessed 15 May 2013). Also see *US Airways, Inc. v. Sabre Holdings Corporation et al.* (2011), available at <http://dockets.justia.com/docket/new-york/nysdce/1:2011cv02725/378177> (accessed 15 May 2013).

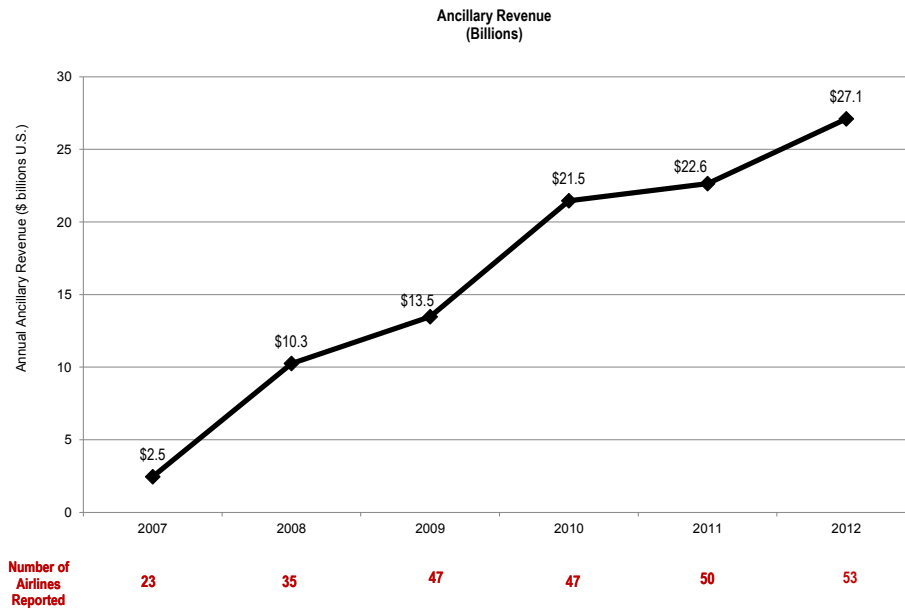


Fig. 7. Global ancillary revenues 2007–2012.

Source: The Amadeus Yearbook of Ancillary Revenue by IdeaWorks Company, 2012 and IdeaWorks Company Press Release June 2013.

such as Ryanair and Allegiant) than for legacy airlines. US-based Spirit Airlines and Allegiant Air collected respectively 33% and 27% of their revenue from ancillary product and service sales in 2011. By contrast, for large network carriers such as United/Continental or Qantas the share of ancillary revenue did not exceed 15% of total revenue in the same year (Fig. 8), although even these percentages are substantive sources of new revenues for the carriers (IdeaWorks, 2012).

By unbundling air service, airlines allow consumers to choose and pay only for the services they want or need. As a result, airlines can offer the core product at low prices, potentially at marginal cost, while allowing them to earn a return on the ancillary services that have value for some but not all travellers. This approach is bound to improve financial returns for carriers and potentially improve financial sustainability. We also point out that this is conceptually no different than airports developing and earning profits from non-aeronautical services. The core airport product (aeronautical service) is provided at cost, and profits are earned from value added services which are discretionary expenditures by travellers.

The prices for these ancillary services are not uniform. First, carriers are managing prices of many services in a number of ways. The fee for preferred seats may vary by route, day of week and time of day, depending on demand conditions. This is conceptually no different than the “yield management/seat management” price discrimination approach used by airlines for decades and sanctioned by governments around the world. Second, the carriers are adopting merchandising approaches to offering services to individual travellers. This involves re-bundling packages of services to those travellers valuing such services to meet their needs while increasing carrier revenues. This may also involve using access to ancillary services as a means to reward customer loyalty. A member of a frequent flyer program or a user of an affiliated credit card may be ‘entitled’ to a certain baggage allowance or priority boarding.⁷

There are policy issues here. First, the advent of ancillary charges has not always been popular. Those passengers who received access in the past to preferred seats, etc., are now being charged, essentially effecting a transfer of some consumer surplus to producers, while maintaining the prices of the core air transport product at marginal cost. Second, some would like to see the prices of ancillary services standardised in order to simplify the display of prices for travel services. It is our view that governments should not interfere with airline charges for ancillary services. These may be means by which air carriers can achieve financial sustainability and earn revenues sufficient to cover their fixed costs while offering the core air transport product at marginal cost – an economically efficient outcome. In the regulated era, standardisation of fees and products resulted in a) prices much above marginal cost, cutting off air transport access for a substantial portion of today’s flying public, and b) regulations that sought to standardise the size of sandwiches and whether an airline could offer a thank you gift of Delft China to first class customers.

We point out that the difference between financial viability and failure of airlines is often only a matter of few percentage points. The sustainability of a given airline often hinges on its ability to insignificantly raise its revenue stream in order to meet the cost or providing services. A \$25 charge on the check in of one baggage item on a one-way ticket fare of \$500 means a 5% increase in fare from a passenger’s perspective, but the extra revenue per ticket from the sale of the ancillary service (luggage check in) could make a difference between a viable and a failing airline. Select low cost airlines that have consistent records of profitability (Southwest and Ryanair) have used ancillary services as a tool to generate incremental revenue.

Fig. 9 shows airline revenue vs costs per revenue passenger kilometre (RPK). As can be seen, the gap is very small and a few extra percentage points of revenue from charges for ancillary services are what the airline industry needs to achieve financial viability.

5.2. Optimising risk across the aviation value chain: risk allocation between airlines and airports

Airlines bear much, if not all, of the business cycle risk in their pricing arrangements with airports. This is the case in spite of the

⁷ Note that affiliated credit cards typically pay a fee to the airline for affiliation, effectively compensating the airline for the ability of credit card provider to tap into the airline’s loyal customer base.

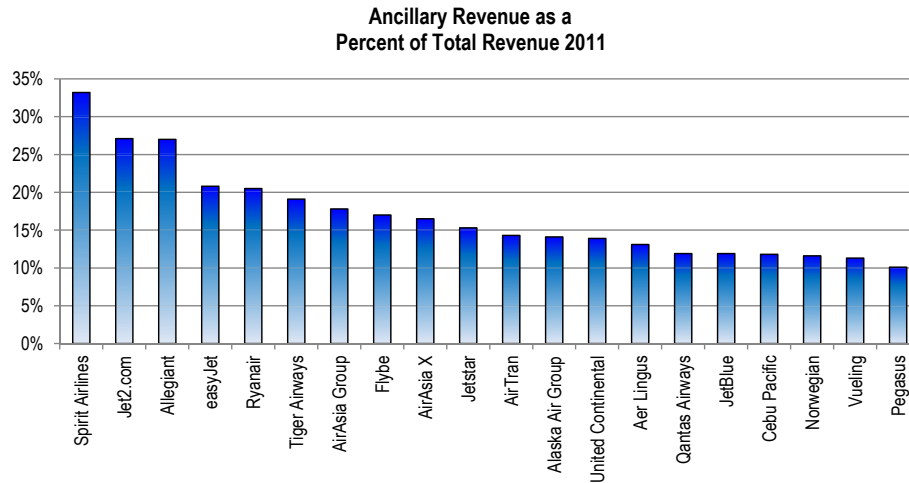


Fig. 8. Ancillary revenue as a percent of total Revenue 2011. Source: The Amadeus Yearbook of ancillary revenue by IdeaWorks Company, 2012.

lower inherent business risk for airports because they are less substitutable than airlines. Airlines face pro-cyclical demand. While estimates of income elasticities vary, most studies find that air travel demand is highly income elastic. A major study of air travel elasticities found income elasticities to be in a range of 1.5–2.7, depending on the market (developing countries have the highest income elasticities) and the length of haul (elasticities are higher the longer the haul) (InterVISTAS, 2007). This means that when economies contract, air travel demand falls at roughly double the rate. There is also a fare effect resulting in dual pressure on airline revenues: falling demand and falling average prices.

Airports also face falling demand, but most airports have regulatory policies and/or agreements with carriers that allow them to set fees each year to allow full recovery of the airport's aeronautical charges. Because much of an airport's costs are fixed, these results in airports often raising their fees in low traffic years, in order to generate revenue to cover their fixed costs with lower traffic levels. This results in air carriers being subjected to a third pressure on their profits: revenues fall doubly from reduced demand and lower fares, while unit costs rise due to higher airport fees per flight.

From a value chain point of view, this is neither economically efficient nor financially desirable. Airports have lower business risk than individual airlines. If an airline fails, its shareholders will typically lose all of their equity investment. In contrast, if an

airline fails, the airport will experience a loss of revenue for a period of time but the underlying demand for air access from the airport's catchment area remains and in most cases eventually other or new airlines will offer capacity to fill the service gap. This is not to say that there is no airport risk. Airports with high connecting traffic are especially vulnerable but it is rare for any but the smallest of airports to face losing their entire revenue stream. This lower risk for airports is reflected in the bond ratings provided in Section 3; most airports are of investment grade while most airlines are not.

Is there an alternative policy that could reduce business risk for airlines and better stabilise their financial sustainability? In our opinion, the answer is yes. There could be a transfer of business cycle risk from airports to airlines. This would be accomplished by allowing airports to run deficits in weak traffic years to enable them to maintain (or lower) rather than increase aeronautical fees. This would require airports to then earn above average returns in high demand years. Essentially, the concept would be to seek the assessment of airport returns over an entire business/traffic cycle rather than in individual years.

There are many benefits to such a change in policy. Airports have lower costs of capital than airlines due to their higher bond ratings, and this would reduce costs in the airport value chain, and likely result in somewhat lower fares for travellers. It would result in the

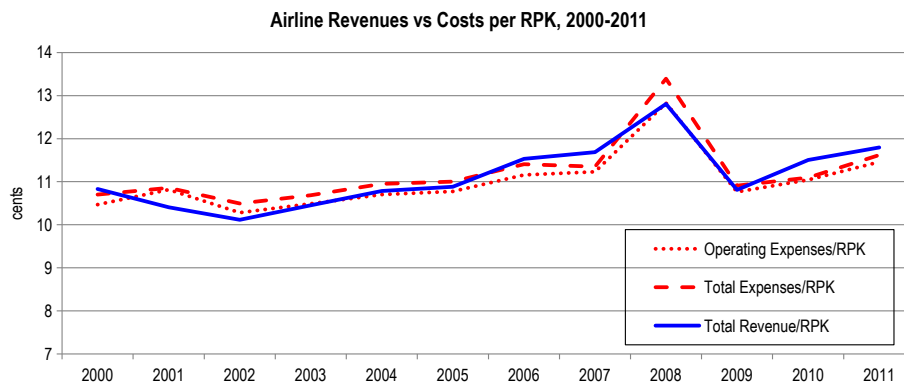


Fig. 9. Airline Revenues vs Costs per RPK 2000–2011. Source: InterVISTAS analysis using passenger-kilometre data from ICAO Passenger and Cargo Statistics, ICAO Annual Report 2011 and revenue and expense data from IATA Financial Forecasts for December 2007 and 2012.

removal of a pro-cyclical airline cost factor, providing somewhat improved airline financial stability over the business cycle. If airports used this new structure to somewhat reduce charges during temporary traffic declines, the policy could introduce a counter cyclical element to airline costs.

This would require changes to government policies, in some jurisdictions. Where airports fees are regulated, typically with 4 or 5 year review cycles, the regulator would need to be empowered to allow above normal returns for an airport during a high traffic segment of the business cycle, and would have to judge airport returns over the entire business cycle (which may not coincide with the regulatory cycle). One mechanism could be similar to the fuel price adjustment provisions found in electric utility and ferry regulation, where fuel cost increases are temporarily banked during an energy price uptick, keeping rates down, with the bank offset by maintaining higher utility prices to consumers when fuel prices decline, until the banked costs are used up.

This change would also require airlines to change their approach to assessing airport charges through airport-airline use agreements. Ironically, it was the airlines who originally proposed guaranteeing airport cost coverage, but limiting the airport to only a normal return on capital.⁸

5.3. Internalising the externality created by airlines: reconsidering vertical integration/partnerships

Section 2 argued that airlines are the core of the aviation value chain. As the central element of the aviation industry airlines create value not all of which is captured by the airlines themselves. Other members of the aviation value chain including airports, global distribution systems and travel agents, among others, capture some of this value. In economics such phenomenon is commonly referred to as a positive externality.⁹ For example, airlines create value for an airport in the form of additional revenues when airline passengers shop at concession stores, boutiques or food outlets located on the territory of that airport. The non-commercial revenues generated by the airport through a stream of rents paid by its commercial tenants are a positive externality.¹⁰

Thus, one solution that might be proposed to improve the profitability of the airline industry is to allow carriers to internalize the positive externalities that they create. This can be achieved if carriers are allowed to invest in other sectors of the aviation value chain through a vertical integration process. The concept would be to allow airlines to derive some of the value that their airline services have enabled in other sectors.

Such arrangements existed in the past when airline manufacturers held ownership in airlines.

- While this example is dated, historically, one of the largest US carriers, United Airlines, was originally developed by a

partnership between an aircraft manufacturer (Boeing) and an engine manufacturer (Pratt & Whitney). A subsequent legislative intervention through the passage of the Air Mail Act in the US in 1934 forced holding companies to break up, with the result that aircraft manufacturers and airlines could not reside under the same holding umbrella.

- Later, CRSs, which later evolved into GDSs, were initially developed by airlines in the 1960s and proved to be an important competitive advantage for host and co-host airlines.
 - Airlines have also invested in (and many currently have investment in) supply chain partners for the provision of fuel (typically through airline owned and airport based fuelling consortia), for ground handling services, for in-airport customer services, for catering and for other services.
- Airlines have invested in cargo terminal facilities and cargo handling operations. A number of air cargo terminals at major airports are owned and operated by airlines. The new cargo terminal at Hong Kong airport (HACTL) is jointly owned by a consortium of corporations, which includes China National Aviation Corporation – a holding company with a majority stake in Air China and Air Macau. Another example is Singapore airport where Singapore Airlines Group had owned Singapore Airline Terminal Services (SATS) until it was divested in 2009.
- Historically, carriers invested in trucking operations for pick up and delivery of air cargo shipments.
- In some markets, airlines have invested in and operated their own airport terminals. In Australia, for example, Qantas operates its own domestic terminals in several airports, retaining their non-aeronautical net revenues for their own use.¹¹ United operates its own terminal in Chicago (O'Hare), and consortia of airlines operate some of the terminals at New York JFK airport.
- There are also cases of airlines investing in downstream markets, such as hotels (SAS, All Nippon Airways, United Airlines) or rental car businesses.

5.3.1. Economic benefits

Economists identify a number of benefits of vertical integration. One is the elimination of double marginalisation, where each value chain member adds its own mark-ups to the price. Another is the reduction of transactions costs, by making transactions internal to the airline. A third is to capture external benefits. Increased airline traffic may often increase revenues and profits for other value chain members. Because these benefits are not captured by the airline, it can lead to underinvestment and lower levels of airline service, which could be enabled by vertical integration which internalises these returns.

5.3.2. Competition concerns

While vertical integration may improve financial performance of integrating air carriers, it also raises serious competition concerns regarding, among other things, access to essential facilities or supplies by rival airlines. An airline that owns an airport, for example, could try to deny competitors access to scarce slots or terminal facilities. Alternatively, it could decide to underinvest in facilities to limit activity by competitors and/or to earn profits from competitors through the creation of monopoly/scarcity rents.

⁸ This is reflected in the original airport residual pricing agreements negotiated between airlines and airports in the U.S., where a formula was developed for annual airport fees based on traffic projected for the year, thus introducing the undesirable pro-cyclical pricing policy, which effectively transferred airport financing risk to the airlines. While U.S. style residual pricing agreements are generally not replicated elsewhere, the basic concept is reflected in airport-airline use agreements, enabling airports to adjust their charges every year to ensure full coverage, but no more, of airport aeronautical costs.

⁹ An externality is an effect on a third-party that can be positive or negative.

¹⁰ If an airport's aeronautical fees are regulated based on a "single till" principle, the airlines using that airport may recapture some or all of the externality of non-aeronautical revenues earned by the airport. Under the "single till" regulation method, the airport would apply non-aeronautical revenues towards the cost of providing aeronautical services and facilities to determine aeronautical charges, which results in lower aeronautical charges.

¹¹ However, it should be expected that at least part of non-aeronautical profits are recaptured by the airport operator through the annual ground lease payment.

These are not hypothetical concerns. Past ownership of CRSs by airlines caused strife between the host airlines on the one hand and rival airlines that wished to (needed to) access the CRSs owned and operated by rivals. Unconstrained by competition, airlines that owned CRSs engaged in display bias by giving priority to their own flights on CRS display and extracted higher prices from competing carriers who wished to access their distribution systems. There were also concerns with host airlines obtaining commercially sensitive information about rivals, e.g., on the timing of fare changes. Consequently, formal regulation was adopted in the United States in 1984 to prevent abusive market power practices by CRS owners. These restrictions were lifted in the U.S. in 2004, but only after CRSs had been substantially divested by the host airlines. Europe followed a similar path by adopting an industry code of conduct to curtail anticompetitive practices by CRSs.

Airline integration into the airport, manufacturing, freight forwarding or other segments of the aviation value chain may raise similar concerns. Partly as a result of competition concerns, modern aviation value chain is characterized by a high degree of vertical disintegration.

5.3.3. Reconsideration – the key issue is competitive access

Policy that discourages or forbids vertical integration in the commercial air transport value chain might be reconsidered. To the extent that airline service generates external benefits for other value chain partners, internalising these would both increase economic efficiency (internalising the benefit leads to higher investment and activity by the airlines) and could increase financial returns and sustainability for the airlines. The challenge would be to ensure that vertical integration does not deny competitors access to scarce facilities and resources.

The rail sector is an example where some jurisdictions have allowed continued vertical integration while enhancing competition. E.g., in Australia railway companies are allowed to both operate trains and invest in and operate the tracks that they use. But access to the track must be provided to competing train operators. An arbitration process is available when the track owner/operator and the competing train operator are unable to agree on a price for track access. This approach allows the track owner/operator to realise benefits from vertical integration, while preserving (or enhancing) train competition for shippers.

One key vertical issue is whether or not to allow airlines to invest in and operate airports. As a general rule, airport privatisation policies forbid airlines from investing in airports but there are significant exceptions – Lufthansa and Fraport for example. This policy remains, as shares in the privatised airport operating companies are bought and sold in the market. Would it be economically desirable to allow carriers to invest in airports? We address this in two parts, separating out airport terminal services from airfield services.

With respect to terminal services, the benefits of vertical integration could be considerable. Airport non-aeronautical revenues are concentrated in two major areas: airport retail and parking (Graham, 2009), and both of these are terminal and not airfield services. These revenues have as their fundamental driver, the level of passenger traffic through a terminal, and this is largely the result of airline decisions on capacity and air ticket price. Vertical integration of airline and one or more airport terminals would internalise an important external benefit from airline management decisions, increasing economic efficiency and increasing airline profits. While not prevalent, there is precedent for airlines investing in terminals at airports. The critical issue is one of access to terminal services by competing airlines. This can be dealt with in a number of ways. In Australia, the operators of the major airports have one domestic terminal that is airport and not airline operated,

providing access to existing and future new airlines.¹² Just as in other vertically integrated markets, access can be provided either by directly regulating such access or by legislation (e.g., access to rail lines). It is our opinion that with the right access regime, there may be a case for allowing vertical integration of airport terminals by airlines. This is worthy of further study of the external benefits and access policy design.¹³

With regard to airfield services, it is our view that the case for vertical integration is much weaker. It is unlikely that there are any above normal profits being earned by airports for their airfield services, as fees are either regulated (e.g., price cap regulation in the UK and Germany, among others), or are constrained in airport-airline use agreements which limit charges to only covering costs (with a normal rate of return on invested capital). Thus there would be no profits to be internalised to the airline's benefit. Further, an airfield that is vertically integrated into an airline, would undoubtedly face a stringent access regime, that would likely be similar to today's slot access rules, and the mechanics of the access regime would be such as to eliminate possibilities of savings in transactions costs and double marginalisation.

In sum, vertical integration of airlines into airport terminals (passenger and cargo) may be worthy of consideration as a mechanism to increase air transport economic efficiency and improvement in and stabilisation of airline financial performance. Vertical integration of airlines into airfield operations is unlikely to provide any benefits.

5.4. Increasing vertical competition in distribution markets: alternative distribution means and standards

The marketing and distribution sector of the aviation industry has been profoundly affected by the emergence and penetration of Internet technologies in recent years. There has been a clear shift away from off-line sources (physical travel agents and airline ticketing offices) to online sources (internet sales, online travel agents and aggregator websites). There has also been some shift away from intermediaries (GDSs and traditional travel agents) to direct sales (airline websites, online travel agents and search engines linked to supplier websites), although globally GDS based distribution channels still sell roughly 60% of airline industry revenues, representing 50% of tickets. These two major trends toward new distribution channels have been largely enabled by the penetration and wide adoption of the Internet. This has provided unprecedented transparency in the price of airline services, including prices of ancillary service (e.g., via airline websites) and unprecedented customisation of services to traveller preferences. Today an online traveller can see the entire choice of airline seats.

¹² In Australia, the domestic terminals were originally developed exclusively by the two domestic carriers, Ansett and Australian (which later was merged into international carrier Qantas). New entrants in the Australian domestic market experienced difficulty accessing terminal space controlled by the two carriers, with some failures of entrant carriers attributed, at least in part, to inability to obtain access to terminal services. With the failure of Ansett, all the operators of major Australian airports acquired the Ansett terminals, establishing a regime of airport-controlled access to terminal facilities for carriers competing with Qantas. The government of Australia has also subsequently established a broad infrastructure access regime under which incumbent airlines could be forced to grant access to terminal facilities to competing airlines.

¹³ There is an issue of redistribution of benefits for airports currently using single till pricing policies. With the single till, airport profits from terminal based non-aeronautical services are shared, with a lag, with all carriers (potentially including all-cargo carriers). With vertical integration, these profits would accrue to vertically integrated airline(s). One solution would be to design the policy so that the access price for competing airlines shares some of the non-aeronautical profits.

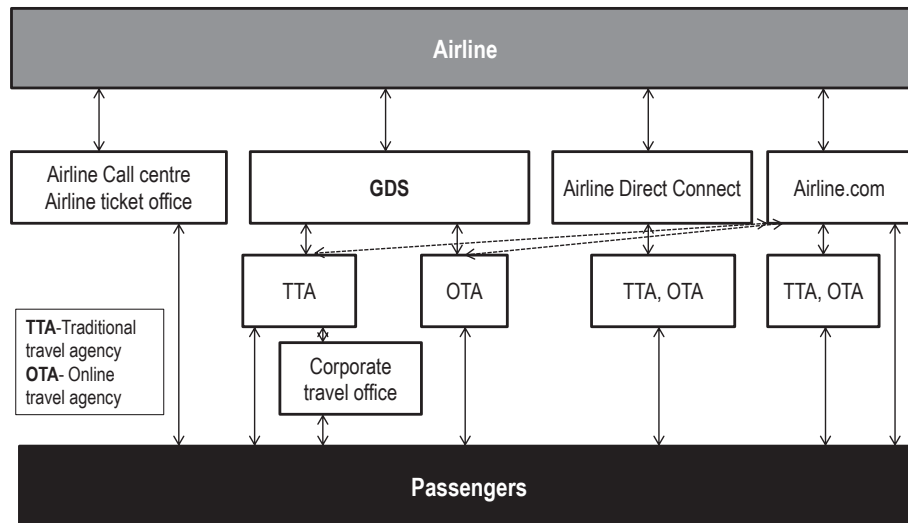


Fig. 10. Distribution channels in the Airline industry.

On the passenger side, airlines compete directly with GDSs and travel agents at the distribution level of the value chain, as tickets can be sold by travel agents using a GDS-based booking process, by travel agents or online services which do not use GDSs or by airlines themselves through their own websites, call centers or ticket offices. Nevertheless, as discussed in Section 3, GDSs and travel agents continue to earn substantial premiums due to exercise of market power over airlines, in part by the threat of biasing GDS displays to discipline carriers attempting to develop lower cost or higher service distribution channels. It is important to emphasize that despite increased instances of travel agencies seeking direct supplier links to airlines' inventories and booking directly through the airlines' websites, the vast majority of travel agents (physical and online) still use GDSs to process travel booking. According to the American Society of Travel Agents (ASTA), 75% of all travel agencies in the United States used GDSs to book travel in 2011 (Travel Weekly, 2012). For air travel, GDSs remain the primary booking tool despite changes in the distribution market.

Fig. 10 illustrates the current structure of the distribution sector.

In a number of jurisdictions, government regulation was adopted with the aim to prevent abusive market practices by CRS owners. However, since deregulation of the GDS industry in the United States in 2004, GDSs appear to have used their position in the industry to extract premiums from airlines by charging high booking fees. In fact, anti-competitive practices by GDSs aimed at excluding competition in the distribution market have led several airlines to seek legal action in recent years (e.g., American Airlines sued Travelport and Orbitz and [US Airways](#) sued Sabre in 2011). At issue were abusive practices used by the GDSs to prevent travel agents from booking directly with the airlines. The US Department of Justice is currently investigating the GDSs market to determine whether GDS practices are consistent with the US antitrust laws. The exercise of market power by GDSs thwarts the implementation of new cost-effective distribution technologies, such as the New Distribution Capability (NDC) proposed and currently developed by IATA.

A good public policy would support (or, in the alternative, not hinder) the infusion of additional competition at the distribution level of the aviation value chain, even using the threat of re-imposing regulation of GDSs to reduce their market power over air carriers.

6. Conclusions

Several key conclusions can be drawn based on the analysis presented in this paper.

There is a value chain for commercial air transport services, with airlines as the centre or anchor of the value chain. Upstream value chain partners include manufacturers, lessors, airports, ANSPs and other suppliers. Downstream partners include GDSs, travel agents (online and physical) and freight forwarders.

Within the value chain, airlines achieve the lowest rate of return on assets, with average rates below the cost of capital. This suggests that financial sustainability of the industry is problematic in the long term. There are some value chain members, such as GDSs, travel agents and freight forwarders, who are earning returns substantially above their costs of capital, suggesting some exercise of market power. To the extent that it results in a redistribution of profits from airlines to other sectors, the exercise of market power by GDSs, travel agents and freight forwarders in the aviation value chain presents an issue.

A number of policy alternatives were discussed that might enhance airline financial sustainability in the long term.

First, the airline industry's development of charges for ancillary services may be desirable. It can enable continued horizontal airline competition, driving prices at the margin for core air transport services to marginal cost, while generating new airline revenues from those customers valuing non-core services. This may improve financial viability of airline services while not sacrificing economic efficiency.

Second, changing the airport-airline relationship transferring airport financial risk to airlines in an undesirable pro-cyclical way. Government regulatory policy and airport-airline use agreements could be changed to allow airports to hold down fees during economic contractions, but being allowed to earn offsetting, above normal returns during traffic expansions. Regulation should seek to limit airport aeronautical fees to costs plus a normal return *over an entire business cycle, rather than year-by-year*. The latter increases costs to airlines during contractions, worsening their financial sustainability. Regulators and governments should consider elimination of any requirement that airports and ANSPs must break even every single year.

Third, vertical integration of airlines into other parts of the value chain might be reconsidered. To the extent that airline investment and pricing decisions generate external revenues for other value chain members, some types of vertical integration may improve

economic efficiency (by internalising the external values) and improve airline financial viability. The key policy concern should not be on preventing vertical integration but rather should focus on ensuring access for airline competitors to essential facilities. Other sectors of the economy can be models for such access provisions. In particular, airline vertical integration into airport terminal investment and operation, with an appropriate access regime, might be studied further, although vertical integration to include airfield operations is unlikely to produce benefits.

Fourth, there appears to be an exercise of market power in the provision of GDS services, where returns being earned are significantly above cost of capital. GDSs may have been prematurely deregulated. There is a potential for GDSs to exercise market power and hinder competition in airline distribution markets by raising booking fees and biasing displays away from airlines pursuing innovations in the distribution channel.

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