

# GLOBAL AIRLINE EQUITY OWNERSHIP AND AIRCRAFT INVESTMENT VALUATION

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In this paper the constraints to equity capital flows in airline financial regulations are examined, and the shareholding patterns found in airlines around the world are identified, resulting in a governance typology for the aviation sector. The propensity of the different governance types to use classical financial techniques is identified, using the results of an airline CFO survey performed by the author.

## **1. Political & legal restrictions to airline capital flows**

Deregulation of airline markets – in the sense of allowing free choice of which air services to offer and liberalized fare-setting - has been gathered pace since it began in the U.S. with the Airline Deregulation Act in 1978. Williams (2002) traced the evolution of market deregulations, finding that Canada, China, Taiwan, and Chile deregulated domestic markets during the 1980s, followed by another 20 countries in the 1990s. The results of this deregulation have been spectacular growth in capacity offered in countries such as China, Taiwan, Chile, Turkey, and Thailand, while growth was more modest in the USA, and negative in Canada and Venezuela, owing to airline failures in those countries. Williams also showed that the impact on number of routes operated has been far less uniformly positive, as 17 out of the 30 countries studied operated fewer routes in 2000 than in 1989, reflecting closure of unprofitable routes and the rise of the hub and spoke system of operations. On the other hand, emerging market countries such as Turkey and China showed increases around 150% in routes operated.

Concerning international services, Williams found that both seats-offered and routes-operated growth has been more uniformly positive since 1989: all thirty countries studied increased seat capacity between 112% and 585%, while route growth ranged from 93% to 400%, in spite of the fact that most international markets remain governed by restrictive treaties among International Civil Aviation Organization (ICAO) member states.

Under the near-universal interpretation of the ICAO Conference in 1944 (commonly known as the Chicago Convention after the host city), which established the legal framework for establishing international airline services, airlines must be "substantially owned and effectively controlled" by nationals of the country in which they are based, in order to benefit from the bilateral Air Service Agreements (ASAs) negotiated between countries.

The framework of these agreements is embodied in the "Five Freedoms" of international operations, defined as part of the Chicago accords. Each succeeding "freedom" grants a nation the following cumulative rights:

- 1) to fly over the territory of a foreign nation
- 2) to land on the territory of a foreign nation for refuelling or repairs
- 3) to unload passengers and cargo in a foreign nation
- 4) to load passengers and cargo in a foreign nation for travel to the home nation
- 5) to carry passengers and cargo from one foreign nation to another, given a route origination or destination in the home country

To this original list three more have been added:

- 6) carry passengers and cargo between foreign countries by connecting in the home country
- 7) carry passengers and cargo between two foreign countries, without connecting in the home country
- 8) carry passengers and cargo wholly within a foreign country

The eighth Freedom, known commonly as cabotage, is extremely rare in practice, though the 2008 services agreement between the U.S. and the European Union does grant U.S. carriers the right to transport passengers within the European Union. European airlines certainly hope that the E.U. transport officials will achieve similar treatment within the U.S., in the next round of negotiations.

Within this framework, the ASAs simultaneously open and restrict operations between countries, specifying routes, designating carriers and their allowed capacity, and tariffs in more or less restrictive forms, calling either for each state to approve fares, or for both states to disapprove them.

The complex web of bilateral agreements worldwide severely restricts airline opportunities to grow and generate cash flows for their projects. The ownership and effective control provision is often interpreted as the requirement that 50% or more of voting shares be held by nationals of the home country. This restriction alone creates a substantial barrier to free flow of capital among the world's airline finance markets. In addition, many national governments place further legal limits on foreign shareholdings of airlines. Chang and Williams (2001 and 2004) analyse the reasons for this, the difficulties it poses, and evolution and potential for further change. Chang and Williams (2004) present an extensive list of ownership restrictions in effect reproduced in Table 1, below.

Country	Maximum percent foreign ownership
Australia	49% for international airlines 100% for domestic airlines
Brazil	20% of voting equity
Canada	25% of voting equity
Chile	No limitation
China	35%
Colombia	40%
India	26% for Air India 40% for domestic carriers
Israel	34%
Japan	33.33%
Kenya	49%
South Korea	50%
Malaysia	49%, 20% for any single foreign entity
Mauritius	40%
New Zealand	49% for international airlines 100% for domestic airlines
Peru	49%
Philippines	40%
Singapore	None
Taiwan	33.33%
Thailand	30%
U.S.	25 of voting equity

Table 1: National airline equity ownership restrictions in Chang and Williams (2004)

One example of the potential effect of ASA restrictions can be seen in the 49% foreign investment limitation on international airlines in effect in Australia and New Zealand, where by contrast, purely domestic airlines have no restrictions to ownership. Many of the most restrictive laws are seen in countries such as the U.S., Canada, and Japan, where capital markets are highly developed. Airlines in these countries have extensive access public equity markets, and may and do use classical financial theory to establish the viability of investments. Morrell (2007) indicated that 41 of the top-150 revenue airlines had listed shares, and that the market appetite for airline Initial Public Offerings has been substantial in the most recent decade, with 13 airlines – most using low-fare business models – had successfully offered shares in no less than 12 different share markets around the world.

The regulation and restrictions of share ownership in airlines around the world do not themselves constitute an obstacle to listing shares, or to using classical valuation techniques to justify investments to Boards of Directors representing

holders of listed shares. They do however, in many cases, prevent airline companies from fully benefiting from the depth and size of more advanced share markets to finance their growth and investments.

Chang and Williams (2001) reviewed several cases on international investments in airlines, discussing the benefits and opportunities, as well as the risks and dangers of opening airline capital internationally. An update of these cases since the dramatic events of 2001 reveals more the latter than the former, showing how the effective control provisions can hinder the effective management of international airlines. The authors cite the adventures of SAir Group with a 49.5% stake in Sabena, and 20% in TAP Air Portugal, to which were added minority shares in Air Outre Mer (AOM), Air Littoral, Air Liberté (through AOM), LOT, and South African Airways. One very plausible line of argument is that the over-extension and eventual collapse of SAir Group in 2001 was largely caused by the inability of the minority shareholder to manage these companies as part of a clear overall strategy to gain access to markets, notably on a European level. An irony of the SAir saga is that were Switzerland part of the E.U., absolute majority ownership stakes in foreign airlines would be largely permissible under today's evolving ASA agreements at E.U. level, as we see with the probable acquisition of 100% of British Midland by Lufthansa, as well as its takeover of Austrian Airways and of Swiss. One failed minority venture was the 25% stake that British Airways held in U.S. Airways the 1990s, subsequently written off by the British carrier. A similar ongoing struggle by a British company to enter the U.S. air transport market is the ongoing Virgin U.S. saga, with its 25% share regularly challenged by competitors and U.S. regulatory authorities. Another current example of muddled management control with a minority share is the 49% stake of SAS in Spanair, which has for several years faced the prospect of bankruptcy, a situation now exacerbated by the crash on take-off of a MD-80 in Madrid in the fall of 2008 under questionable safety procedures. More successful was BA's 25% stake in Qantas, which allowed the two companies to strengthen their alliance and co-operate in systems development, before BA sold the share.

Even holding majority shares of foreign airlines or outright mergers is no guarantee of success, as witnessed by the meltdown of the very confusing Air New Zealand / Ansett Australia merger in the wake of the 2001-2003 airline recession, resulting in the renationalization of ANZ and the outright demise of Ansett in 2002. Several of the partial acquisitions cited by Chang and Williams and updated above were allowed by the national governments to improve the market prospects of national carriers (Sabena, LOT, the French regionals) or simply to allow domestic airlines access to international capital.

Although not directly related to this paper, it should be noted that the most serious economic disadvantage of the current ASA system is the structural impediment to international consolidation, contributing to the lack of economic rationalisation which negatively impacts industry profitability. Airlines have resorted to forming Alliance groupings – usually without equity participations – to compete globally, offer travellers a more seamless alternative to the old IATA interlining system, improve procurement conditions with suppliers, and rationalize maintenance operations. Across the North Atlantic, anti-trust immunity is routinely sought by Alliance groupings who seek to go a step further, fully coordinating the carriers' schedules. These moves do little or nothing to improve the member carriers' access to capital markets.

Europe has gone furthest to eliminate such structural impediments among E.U. member states, creating a very dynamic environment where consolidation has become a reality, and where new carriers can obtain capital in various European share markets. Of the 12 national equity markets tapped for IPOs and cited by Morrell (2007), half are in Europe, and all but two (London, Warsaw) took place in the Euro area.

Chang and Williams (2001) argued that one of the strongest impetuses to the 1990s wave of minority stake acquisitions was the objective of obtaining access to air travel markets in neighbouring countries, citing moves in this direction by British Airways, KLM, Lufthansa, and SAS. The first major-airline successor these somewhat tentative movements on a European scale was brought about with the groundbreaking Air France-KLM merger of 2004. This carefully-worded merger bridged the way to today's more liberal environment, leaving majority voting control for KLM in the hands of Dutch shareholders while creating a combined holding company which holds the "economic rights" to the KLM's cash flows. This merger has led the way to many other such proposed and consummated groupings, including the Austrian Airways and British Midland acquisitions cited above, as well as the ongoing saga of a perspective merger between British Airways and Iberia. The 2008 Air Services Agreement between the U.S. and the European Union (E.U.) reinforced the notion of a European carrier, effectively granting any E.U. carriers "unrestricted" access to landing rights – though not cabotage – in the U.S. The successful Air France-KLM tie-up and the new precedent-setting ASA between the E.U. and the U.S. have opened the door to more straightforward international mergers within the E.U., although in the spring of 2010, the Russian authorities challenged the landing rights of Austrian Airlines based on the Russia-Austria bilateral, "violated" by Lufthansa's outright ownership of Austrian.

Chang and Williams (2004) reviewed and discussed recent international agreements that may reduce the ownership requirements, if adopted in future ASAs between countries or regions. They began by reviewing the fundamentals of the many "Open Skies" agreements signed following the 1992 U.S. Open Skies initiative adopted by the U.S. Department of Transport: 20 "Open Skies" agreements were signed with European countries (one notes the conspicuous absence of the U.K., which long remained an effective duopoly), 12 in Africa, 13 in Latin America, 8 in the Middle East, though only 6 in the vast and fast-growing Asia-Pacific region. These agreements principally eliminate the former restrictions on capacity (seats), flight frequency and route operating rights, while leaving entirely intact the principle of "effective ownership and control" of the respective airlines, and refusing any form of cabotage on U.S. soil. One reason for this somewhat peculiar protectionism in the U.S. is the requirement that airlines provide capacity for military purposes during both peace and wartime: under this logic, foreign-owned airlines could not necessarily be relied on to perform this function. The authors stated flatly that the Open Skies policy was intended to divide Europe, and indeed, only sixteen year later in 2008 was this policy revised regarding European airlines.

The authors also examined significant progress made outside the large and contentious North Atlantic and U.S. markets. The ICAO Worldwide Air Transport Conference of 2003 produced a suggested "model" airline designation clause for future ASAs, which separates the notion of ownership from that of effective control. ICAO retained a strict definition of regulatory control (as opposed to management control), particularly regarding Safety and Security, its traditional purview. Rather than ownership, on the other hand, the suggested clause is that the airline "has its principal place of business (and permanent residence) in the territory of the designating [country]." A footnote defining criteria for "principal place of business" includes local incorporation, base of operations and capital investment in facilities, tax, aircraft registration, and employment of nationals. In this definition, capital could flow internationally as it can in other businesses. The Organization of Economic Co-operation and Development (OECD) "all-cargo" proposal of 2002 took a similar approach, as did the 2001 Agreement within the Asia Pacific Economic Council (APEC), where Brunei, Chile, New Zealand, Singapore and the U.S. agreed to strike the ownership provision among carriers in these five states. These agreements are limited in scope, and to date, a level playing field for airline access to capital has yet to be achieved.

Clearly, progress is being made to grant airlines more liberal access to capital they need to develop their businesses, but the impediments identified by

ICAO in 2001, and cited in Chang and Williams (2004), will be difficult to completely overcome. Using a points scale, the member states were asked the reasons for imposing national ownership and control (note that they ownership and control were not separated). In descending order, the most significant reasons given were:

Order	Issue	Points
1	National development/economic interests	107
2	Conformity with international agreements	103
3	Economic interests of national airlines	88
4	Trade and tourism needs	82
5	Aviation safety	81
6	Job creation and preservation	74
7	National security	58
8	Foreign exchange earnings	46

Table 2: Reasons cited for imposing national ownership regulations in Chang & Williams (2004)

The priorities and the nature of items in the list demonstrate the tangle of interests in the world's airlines, and the difficulty of finding solutions which satisfy all. Items one, four, and six are standard arguments advanced by developing countries, and go along way to explain why each country in the world has at least one airline. Since 2001, several national governments have chosen to dissociate the national carrier from economic development: Kuwait's creation of competitors to Kuwait Airways (Jazeera, Wataniya), the creation of AirAsia with substantial funding from the Persian Gulf, GOL's creation and listing on the NYSE and eventual acquisition of Varig, are examples of political and economic development without protection of the "national champion" airline.

The second item points up the self-perpetuating nature of capital restrictions, which are held to be necessary in light of current ASAs: it would take at least one complete "generation" of ASAs around the world to remove this item from the list.

The third reason given is outright protectionism of the kind highly disfavoured under World Trade Organization multi-lateral accords as well as many and bilateral "most-favoured-nation" trade agreements. Item seven is the standard argument in the U.S., and is not without a certain legitimacy in a world where wars can and do break out suddenly (the allied bombing of Serbia, 9/11 and subsequent wars in Afghanistan and Iraq). I

Item five is probably the most legitimate concern of all, fully addressed in ICAO's suggested new ASA clause, as well as in the OECD and APEC agreements cited by Chang and Williams.

In contrast to the dubious third and fourth economic arguments, item eight is a powerful economic argument for mandating national ownership of airlines: indeed, the cash flows from international traffic accrue directly to the national carrier and hence the home country's reserves. It is certainly relevant in countries such as Egypt (for example), which are net importers of food and clothing and highly dependent on in-bound tourist revenue. Then again, the Egyptian government is showing an increasing willingness to allow third-party airline start-ups such as Air Cairo to compete with the national carrier. As in Kuwait and Brazil, this tolerance implies a policy-maker calculation that the on-the ground expenditure of the marginal inbound traffic created by new carriers is more important than the foreign-exchange revenue lost by EgyptAir for these same travellers.

The inevitable inertia created by a web of bilateral agreements, confusion of economic interests, national security and aviation safety concerns combine to create a unique set of legal and financial gymnastics required to reduce severe impediments to smooth international capital flows to airlines. In this rigid context, airlines in countries with broad and deep financial markets and widely-held shares are expected to more carefully follow capital budgeting procedures consistent with financial theory to justify investments, while countries without such markets certainly display more diverse approaches to the question of economic justification. In practice, given the global nature of the airline business, there is substantial diversity in airline shareholding from one region to the next.

## **2. International financial markets & financing opportunities**

Recent studies in the financial literature raise questions about the use of classical financial analysis techniques in less-developed regions of the world. Both the governance models of emerging markets and the financing patterns and opportunities are held to influence the investment decisions of companies in these markets.

Pinches and Lander (1997) suggested that the whole question of appropriate capital budgeting techniques should be re-opened when looking at "newly industrialised and developing countries" such as South Korea, Taiwan, Singapore, and India. The authors conducted thirty formal interviews with company managers, as well as informal interviews with "government officials,

development officials, and professors knowledgeable and interested in capital budgeting.”

They found that NPV is not used by the companies, although the managers interviewed are familiar with the technique. Rather, they appear to prefer PBK and ARR to NPV, citing the difficulties in the process of estimating cash flows as a primary source of concern with NPV.

In addition to methodological concerns, the authors identified four broad reasons for the rejection of NPV

- Firms are pursuing strategic goals such as seizing “now-or-never opportunities,” building market share, or substituting capital for labour override preclude a purely financial evaluation, and this in markets which are higher-growth and more volatile than more mature markets such as the U.S.;
- Government incentives for investments, such as tax credits, cheap financing, and land grants can override market-driven economics;
- Banks are very influential in the decision to invest or not, and commonly “the initial standards used by firms in all these countries were dictated by the banks”;
- Company founders tend to make decisions more intuitively, relying less on formal analysis and quantification of results, and are less risk-averse than professional managers.

The authors suggested that in these markets, more dynamic methods of investment appraisal such as Monte Carlo and Real Options Analysis are appropriate tools than ‘static NPV.’

These business practices suggest that the appropriate investment appraisal techniques in these markets are very much subject to governance questions such as government and bank influence, as well as the ownership of the company and the attitudes of company founders and managers pursuing long-term strategic goals, overriding rigorous financial analysis. In countries where the ownership of companies is widely held, such governance questions are addressed in financial terms by properly estimating the cost of capital.

The work of Booth et al. (2001) also suggests that financing patterns in developing countries may influence the way firms analyse investments. They investigate capital structures in ten developing countries for clues as to why this might be so, and discover major differences from developed countries. In developing Asian countries such as India, Malaysia and Pakistan, companies

rely much more on short-term debt than in developed countries, including South Korea, the U.K. and the U.S.

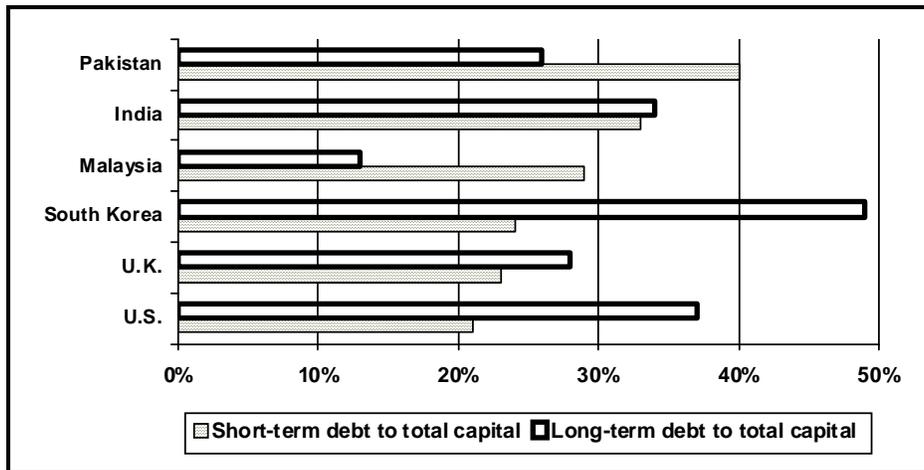


Figure 1: Short- and long-term debt in company capital structures in Booth et al., 2001

Figure 1 shows the emerging-markets in the same region as Pinches and Lander study, for comparison: Booth et al. find that in countries such as Mexico and Brazil, the reliance on short-term borrowing is even more pronounced. While this difference does not in itself prove that WACC is not a valid measure of the company's cost of capital, it does point up the possibility that financing arrangements can significantly alter their investment valuations. Under WACC, the debt in the capital structure is long-term debt, used to finance long-term investment projects. If firms cannot or do not raise significant long-term borrowing, WACC may well be considered an inappropriate measure of the firm's true cost of capital.

LaPorta et al. (1999) observed the 20 largest firms in each of 27 'wealthy' countries, and group ownership structures into three broad categories, widely held (traded on bourses), Family controlled, and State controlled. Looking (for comparison to the other studies surveyed) at countries in Asia, broad differences in control, defined as a minimum 20% shareholding by one group, are found.

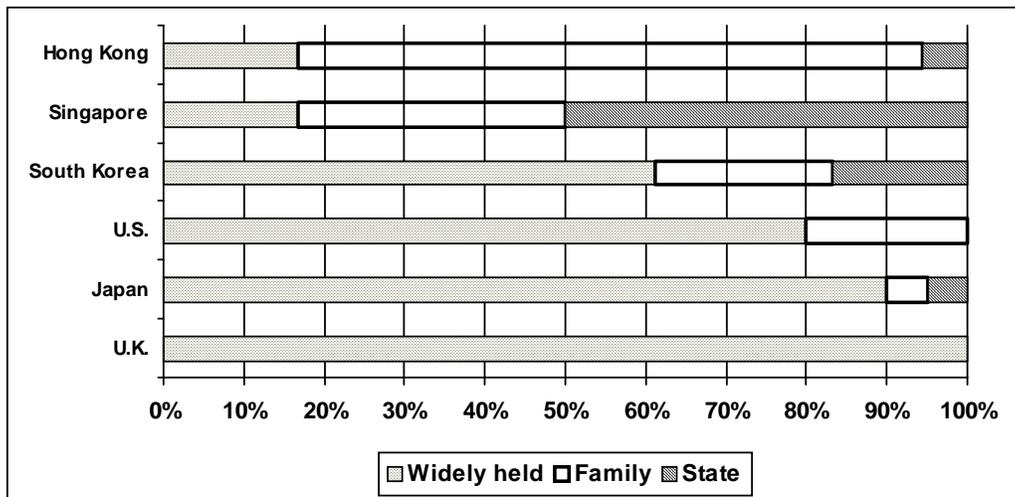


Figure 2: Company ownership structures in LaPorta et al., 1999

While in the U.K., the U.S. and Japan broad share ownership is the rule, families control significant numbers of large companies in Hong Kong, Singapore, South Korea and the U.S. Pinches and Lander found that founder-controlled firms use more intuitive techniques to evaluate investments, and are less averse to risk than professional managers.

LaPorta et al. found a significant positive relationship between the number of widely held firms and the level of minority shareholder protection under the legal systems of the various countries.

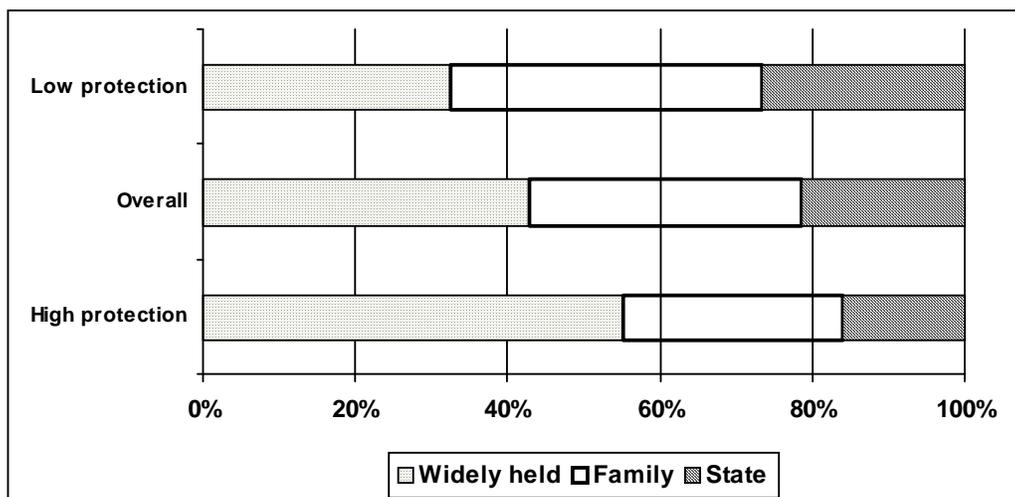


Figure 2: Company ownership structures in LaPorta et al., 1999

The authors found a pattern of family and state ownership in countries where small shareholders are not well-protected (including Hong Kong and Singapore), and a majority of firms widely held in countries where minority shareholder protection is strong.

Both of these studies raise substantial questions about the use of classical financial analysis techniques in emerging markets. In the next section, governance patterns that may strongly influence the investment analysis process are identified for the world's airlines.

Against this backdrop of the unique regulatory restrictions faced by airlines, as well as substantial difference in financial market practice and governance patterns around the world, we now examine in detail the ownership patterns found in the world's major airline companies.

### 3. Regional patterns of airline shareholding

Gibson and Morrell (2005) compared the shareholding pattern found among 149 international airlines cited in the 2001 Airline Business Alliance Survey - hereafter AB (2001) - with the respondents to our survey of airline capital budgeting techniques. This annual survey is one of the few trade publications where one can find consistent and relatively comprehensive information about the shareholding of international airlines. We identified the largest shareholder in each company, and totalled each category to compare with our Airline CFO survey respondents, who were asked to identify "the largest shareholder in the company."

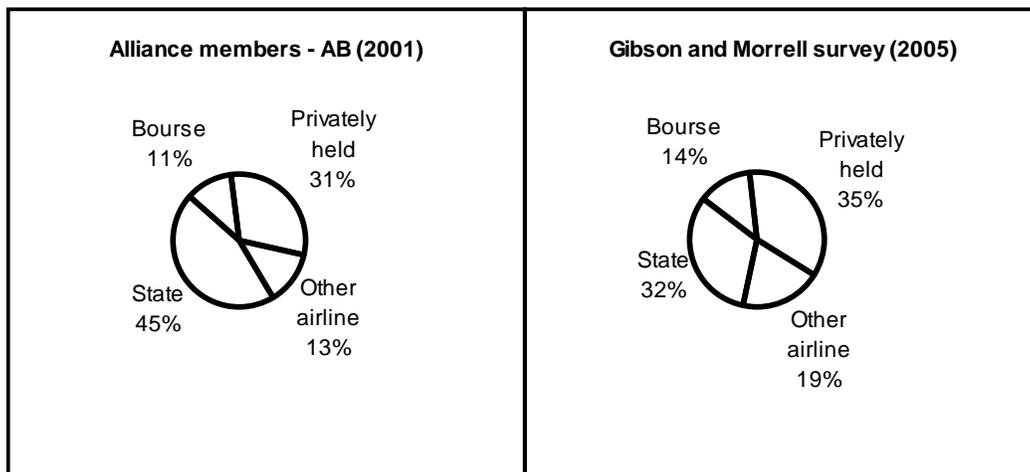


Figure 3: Majority ownership of the world's airline alliance members (left), and airline survey (right) in Gibson and Morrell (2005)

There were marked differences between the two samples, at least partially reflecting the fact that 54% of survey respondents were European airlines. Respondents were substantially more frequently in private hands, 32% only had the state as the largest shareholder, compared to the AB (2001) sample which was 45% state-owned. Relative to AB 2001, the private shareholding of our respondents was rather evenly spread among the categories: +3% were

held in the form of publicly traded shares ("Bourse" in the article), +4% privately held (aka closely held), +6% majority owned. That is, the shape of the pie-chart in Figure 3 is not dramatically different from AB (2001): our airline respondents were more private, but the pattern is roughly similar to the broader AB (2001) sample.

We now examine in substantially greater detail the airline population, using the following definitions:

- **Listed company** – widely traded on a public stock exchange
- **Governments** – held by national, regional or municipal authorities
- **Other airline** – held by another airline or airline group
- **Closely held** – held by private investors
- **Institutional investors** – held by financial institutions, broadly defined
- **Management** – held by employees or managers of the company

The sources of the data used are the Reed Air Transport Intelligence online service, Airline Business, Air Transport World, and Flight International.

The sources of the airline ownership data are diverse and somewhat anecdotal. Precise shareholder information is considered confidential in many countries, making disclosure uneven and in many cases fragmented among the different sources. Similarly, significant shareholdings can also exist even when shares are listed, with sometimes patchy reporting of such blocks of shares in ATI. Finally, the nature of private investors with large stakes can be masked by a corporate identity of the investor which does not indicate the extent or nature of the investor's role in the management of the company and hence, its role in capital budgeting. In spite of these difficulties, clarity on the nature of the shareholding and associated governance bodies is useful to understand and predict how airlines will approach fleet and investment planning processes.

The airlines included in this analysis are the largest 200 passenger airlines in the world in 2007, measured by Revenue Passenger Kilometers (RPK), as well as the largest 150 in terms of Revenue in 2007, which adds to the sample cargo operators such as Fed Ex, UPS, DHL and others. Added to this are the airlines analysed in the sample from AB (2001) and not part of the 200/150 largest airline group: they were included in AB 2001 because they are Alliance members, regardless of size. The airline data compiled in this research is presented in the Appendix to this article.

Capacity and financial performance is measured over the five-year period from 2004 – 2008. The data source for the airline capacity, revenue and profit figures is the annual Airline Business survey, published in August of each year.

Eliminated from the sample were the nine airlines for which no reliable shareholding data was available from ATI, Airline Business' 2007 Alliance survey, or a web search by the author.

The resulting sample of 249 airlines covers all regions of the world, allowing the linking of ownership with performance data in terms of production (passengers, RPK), capacity (fleet size) and financial performance (revenue, profits) for those airlines included in the annual Airline Business surveys. Regionally, Europe has the largest number of airlines in this group (97), followed by Asia-Pacific with 61 and North America with 55. Twenty Middle-Eastern airlines are within the group, 13 from Latin America, while only three African airlines are large enough to be in the sample.

The results of this analysis are summarized in aggregate, and the specific characteristics of each group are then discussed. Table 3 below summarizes the results for each region, showing the percentage of airlines having each shareholder type as the largest single group.

<u>Largest shareholder type, 2009</u>	<u>Africa</u>	<u>Asia-Pacific</u>	<u>Europe</u>	<u>Middle East</u>	<u>North America</u>	<u>South America</u>	<u>Totals</u>
<b>Listed</b>	33%	13%	14%	5%	<b>44%</b>	8%	20%
<b>Government</b>	<b>67%</b>	<b>33%</b>	23%	<b>85%</b>	2%	0%	25%
<b>Other airline</b>	0%	21%	22%	0%	25%	31%	21%
<b>Closely held</b>	0%	31%	<b>32%</b>	5%	24%	<b>62%</b>	29%
<b>Institutionals</b>	0%	2%	8%	5%	5%	0%	5%
<b>Management</b>	0%	0%	1%	0%	0%	0%	0%
<b>Totals</b>	100%	100%	100%	100%	100%	100%	100%
Number of airlines	3	61	97	20	55	13	249

Table 3: Majority ownership of 249 large airlines in 2009, by region

In total, the results show wide diversity of airline shareholder types around the world, as well as consistency with the respondents in Gibson and Morrell (2005). The main divergence from the CFO survey is that the Government-owned group is smaller (25% vs. 32%), while the Listed-share group is six percentage points greater. The other categories are largely consistent with the earlier study, keeping in mind that an "institutional" group is added to the current analysis, which must be added to "Closely held" to compare with Gibson and Morrell (2005).

Looking at regional ownership patterns Africa and particularly the Middle East show a strong propensity to government ownership of the largest share of equity. Asia-Pacific has a more muted – but still relative majority - propensity to government ownership, with diverse types of private shareholding and relatively few listed companies. On the other hand, North America has no government-owned airlines: 44% of airlines are listed, with a near-equal 25/24% of companies captive subsidiaries of other airlines or held by individual investors. South American carriers tend to be closely held, mostly by private investors but also by other airlines.

The differences in shareholding pattern among the regions are more sharply drawn when a measure of capacity is used to distinguish among the groups, especially when a distance-weighted production indicator such as Revenue Passenger Kilometres (RPK) is used, as in Table 4.

<b>Largest shareholder and RPK distribution, 2004-2008</b>	<b>Africa</b>	<b>Asia-Pacific</b>	<b>Europe</b>	<b>Middle East</b>	<b>North America</b>	<b>South America</b>	<b>Totals</b>
<b>Listed</b>	19%	30%	54%	0%	83%	13%	51%
<b>Government</b>	81%	46%	14%	93%	0%	0%	23%
<b>Other airline</b>	0%	4%	9%	0%	6%	19%	7%
<b>Closely held</b>	0%	20%	21%	0%	9%	68%	17%
<b>Institutionals</b>	0%	0%	1%	7%	1%	0%	2%
<b>Management</b>	0%	0%	1%	0%	0%	0%	0%
<b>Totals</b>	100%	100%	100%	100%	100%	100%	100%

Table 4: Majority ownership of 249 airlines, weighted by 2004-2008 RPK production

In total, listed airlines were the largest producer of RPKs over the five-year period from 2004-2008, producing just over half of the world's large airline revenue passenger kilometres. Middle East RPK production even is even more strongly government-owned than the simple count of airlines, reinforcing the dominant position of this ownership model in the region. The successive privatizations of Europe's major international carriers make listed carriers the largest segment, followed at a substantial distance by closely-held and government owned airlines. Fully 87% of North American capacity comes from listed carriers: the numerous airline subsidiaries operating as feeders, and smaller closely-owned companies total only 13% of total capacity. Closely-held ownership is confirmed as dominant pattern in South America. None of the numerous government-owned carriers in this highly-fragmented region is large enough to be in the top 249. The family-owned TAM, TACA and LAN are far and away the largest producers in the region. Finally, the diversity seen in Asia-Pacific airline ownership gives way to a more concentrated landscape when viewed in terms of production. Government-owned carriers produce a relative-majority 46% of capacity, followed by listed carriers at 30%, against 20% for closely-held airlines. Asia-Pacific is far and away the largest and most diverse region, including both Oceania with its British-style governance models, and the PRC, where majority ownership is in the hands of the central government. These results would tend to suggest that "pure" classical financial theory – with valuation metrics based on widely-held, liquid share markets - would be applied more commonly in Europe and North America than in the rest of the world, which shows greater diversity of governance.

### 3.1. Airline ownership and financial performance

The wave of major airline privatizations led by British Airways in the 1980s, followed by Lufthansa, Air France, Iberia and other carriers, both reflected and

created an airline industry dogma holding that private airline ownership should lead to superior financial performance and resistance to cyclical downturns. As these airlines all trade in relatively large and deep capital markets, the logical investor base was and is broad public shareholding. These companies have been found to be consistent practitioners of classical financial techniques. This section identifies the dominant ownership patterns in the world's regions, with profit (rather than production) as the weighting factor.

Measuring airline profits worldwide on a like-to-like basis raises the methodological issue of exchange rates. Airline revenue streams in different currencies are unique to each company. Cost currencies are equally variable, conditioned by the airline's geographical scope, national procurement regulations, and make-vs.-buy policy. The key commodity input, fuel, has its basis in global oil prices, currently denominated in USD: however, fuel is sold to airlines in domestic currency in most developing countries, at widely varying prices. The purchase and sale of aircraft and engines is transacted in USD, and loans against aircraft offered by international banks are usually denominated in that currency as well. Similarly, third-party maintenance, and operating leases are most commonly denominated in the U.S. currency. However, in preparing accounts, all airlines translate USD amounts at current exchange rates for both balance sheet and income statement preparation, creating wide variations in asset, liability, revenue, and cost valuations.

To examine financial performance, this paper will focus on operating profits reported in the Airline Business annual surveys. Operating profit (and not cash flow) is the performance metric used in the Value Based Management approach derived from classical theory, discussed below in the context of European airline financial management. Both top-line revenue and profits are translated at average exchange rates in these surveys, an approach which at allows broad comparison. This paper examines 2007, the most recent peak year for airline profits in spite of a high and increasing fuel price, as well as the five-year period 2004-2008, a period of recovery (2004-2007), and steep decline in 2008.

Examining the profit distribution of the world's 150 largest producers of revenue worldwide in 2007, the picture is markedly different from the production picture, in most regions.

In order to be consistent in comparing profit with RPK distribution, the contents of Table 4a below is revised to include only the passenger carriers among the top 150 airlines in terms of revenue generation. Keeping in mind that the top 150 airlines include cargo airlines (and by definition, only include the largest 150 airlines), the shares in each sample are broadly consistent.

The exception is Europe, which has many airline subsidiaries that produce substantial RPKs, but with revenue not large enough to be included in the Airline Business Top 150 by Revenue.

<b>Largest shareholder and RPK distribution</b>	<b>Africa</b>	<b>Asia-Pacific</b>	<b>Europe</b>	<b>Middle East</b>	<b>North America</b>	<b>South America</b>	<b>Totals</b>
<b>Listed</b>	20%	28%	52%	0%	83%	16%	51%
<b>Government</b>	80%	46%	13%	93%	0%	0%	23%
<b>Other airline</b>	0%	6%	10%	0%	7%	9%	7%
<b>Closely held</b>	0%	20%	22%	1%	9%	75%	17%
<b>Institutionals</b>	0%	0%	2%	6%	1%	0%	2%
<b>Management</b>	0%	0%	1%	0%	0%	0%	0%

Table 4a: 2007 RPK distribution of 150 largest revenue producing airlines

Airline operating profits for each shareholder type, as a percentage of the regional total, is shown in Table 5.

<b>Largest shareholder and Operating Profit distribution, 2007</b>	<b>Africa</b>	<b>Asia-Pacific</b>	<b>Europe</b>	<b>Middle East</b>	<b>North America</b>	<b>South America</b>	<b>Totals</b>
<b>Listed</b>	82%	43%	89%	0%	90%	-2%	62%
<b>Government</b>	18%	41%	5%	100%	0%	0%	19%
<b>Other airline</b>	0%	0%	-2%	0%	5%	0%	1%
<b>Closely held</b>	0%	16%	8%	0%	6%	102%	17%
<b>Institutionals</b>	0%	0%	0%	0%	0%	0%	1%
<b>Management</b>	0%	0%	0%	0%	0%	0%	0%
<b>Totals</b>	100%	100%	100%	100%	100%	100%	100%

Table 5: 2007 profit distribution of 150 largest revenue producing airlines

In the very limited sample of Africa, the government-owned airlines (Ethiopian and South African) produced 80% of the RPKs, whereas listed carrier Kenya Airways produced 82% of the profits. In Asia-Pacific, listed airlines produced the highest profits are quite consistent with RPK shares, with listed carriers producing profits out of proportion with their production shares. Government-owned airlines produced slightly less profits than the listed carriers, and substantially less profit than production of RPKs. As La Porta et al. (1999) intimate, this growth region has a strong government and privately held corporate ownership pattern, reflected in the airline population

In Europe, the listed carriers dominate the profits with 89%, compared with only 52% of the RPK production. Particularly poor performers were the airline subsidiaries, where profits were negative in a boom year, and state-owned carriers which, thanks to Alitalia's \$427m operating loss, earned practically no profits as a group in 2007. The overall ownership landscape of the major airlines is today very similar between Europe and North America. Performance over the cycle could not however be more different between these two high-production regions, as discussed in the conclusion to this paper.

The Middle East region is dominated by government-owned airlines, both in terms of production and profits. In this it is similar to large portions of the

highly diverse Asia-Pacific region. In these regions, government ownership did not preclude profit-making among large airlines.

South America shows a unique pattern, with the family-held airlines earning profits out of proportion to their production of RPKs, and the listed carriers earning less.

Almost totally missing from the ranks of owners worldwide (Russia's Transaero is the exception) is the category of inside managers. This is quite significant, for it means that there is effective separation of ownership and control of the world's airlines (with some notable exceptions, such as Virgin Atlantic, but *not* more recent entrants such as Ryanair, which is only 4.5% owned by Michael O'Leary or AirAsia, in which Tony Fernandes' Tune Air owns 30.9%). In both theoretical and practical senses, the absence of management in majority shareholding necessitates highly formal processes for justifying investments, prepared by inside managers and presented to the governance body of the airline. These processes are precisely the type specified under classical financial theory, with capital budgeting practices presented in finance textbooks. On the other hand, the diversity of dominant shareholder types in all regions save Europe and North America gives rise to varying shareholder incentives and criteria for accepting investment projects in the world's airlines. Growth and profitability of the different shareholder models over the 2004-2008 period will be examined in the last section of this paper.

In order to discuss the implications for management decision-making, it is important to look at the size and potential dominance of these largest shareholdings at the individual airline level: notably, the size of these "largest" shareholdings will help determine whether they are in fact dominant in decision-making.

Figure 4 shows the number of different types of shareholders among the large airlines analyzed. A full 57% of the world's largest airlines (143 in number) have a single shareholder type, that is, they are 100% listed, or 100% government-owned, etc. Another 27% have two shareholder types, while the remaining 16% have three or four different types of shareholders, each of which may have a differing agenda regarding the firm's investment management.

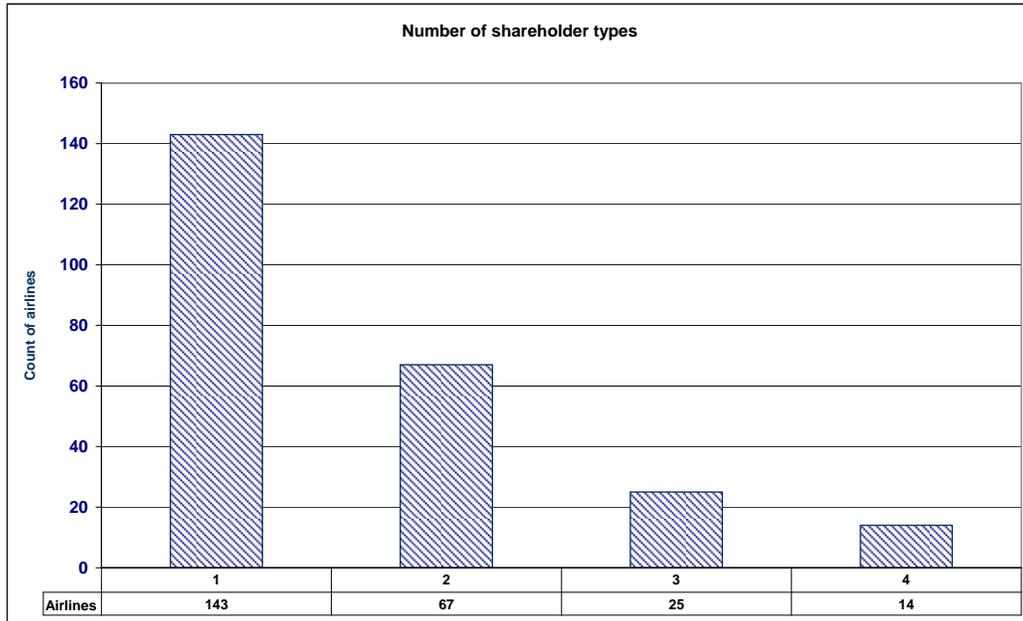


Figure 4: Number of different shareholder types among 249 largest airlines

The world's largest airlines tend to have a small number of different types of shareholders, with over half showing a single shareholder type and  $\frac{3}{4}$  one or two types. Figure 4, supported by the airline-by-airline analysis below, shows that airline companies tend to be either tightly controlled by a single dominant group of investors, or on the contrary show the highly diffuse ownership characterizing the traditional western-style listed-company governance pattern, with its accompanying strong separation of ownership and control.

The following sections analyse the categories of shareholding characterizing the world's regions in detail, working from the individual airlines that make up each type of shareholder to develop a comprehensive governance typology of the world's airlines. Results of the field research regarding investment valuation techniques are then examined for each individual category.

The criterion for "type of shareholding" for each group is that the type of shareholder makes up the largest single shareholder group in the company's equity. In very many cases, the largest shareholder group is also an absolute majority shareholder: relative-majority shareholdings, more problematic in terms of management control of the airline's investments, are found to be relatively uncommon worldwide. Exceptions to this are discussed in each section.

### 3.1.1. Listed carrier equity finance and investment analysis

#### Asia-Pacific

Listed airlines represent only 13% of large airlines in Asia-Pacific in number, but they produce over twice that proportion of RPKs. Among the eight airlines present in Table 6, three types of shareholding pattern can be identified.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
<b>Japan Airlines Corporation</b>		100.00%					0.00%
<b>Qantas</b>		100.00%					0.00%
<b>ANA Group</b>		80.02%	19.98%				0.00%
<b>Shandong Airlines</b>		77.20%				22.80%	0.00%
<b>Korean Air</b>		61.14%	21.49%	12.13%	5.24%		0.00%
<b>Shanghai Airlines</b>	40.66%	44.69%	14.65%				0.00%
<b>spiceJet</b>		44.00%	17.72%	35.00%			3.28%
<b>AirAsia</b>		43.50%	21.60%	30.90%	4.00%		0.00%

Table 6: Airlines with largest listed shareholders in Asia-Pacific

The first group are airlines in relatively advanced economies, which have broadly-listed shares along western lines: JAL, ANA, Qantas, and Korean Airlines. Compared to JAL, ANA has an institutional shareholding of nearly 20% in total, but the largest individual investor has only 4% shareholding.<sup>1</sup> The second group, spiceJet and AirAsia, have only relative majorities listed, while private investors hold shares of over 30%, giving them a substantial voice in management, with additional equity financing provided by shares raised from institutional investors. This pattern – a significant privately-held block often owned by the founder, and share listing supplemented by private placement - is common among the start-up airlines in the group.

The exception to many rules in airline governance, the two Chinese airlines listed have large listed shareholdings, but are largely ruled under the tight-knit Chinese government/civil aviation regime, with 40.66% of Shanghai owned by the government (with another 14.65% owned by the Bank of China), and 22.8% of Shandong owned by Air China, its largest shareholder. Thus, three of the eight airlines – four if we include Shandong – are significantly controlled by blocks of minority shareholders.

## Europe

<sup>1</sup> Analysis regarding detailed shareholdings in this section are based on ATI information on the airlines' shareholders. This industry-standard information can be considered reliable because it is in such common use in the industry, examined by the parties concerned, and updated frequently.

Listed carriers in Europe provide 54% of the region's RPK capacity from 2004-2008. Europe includes the largest number of national carriers privatized since the era of deregulation began, British Airways, Lufthansa, Air France-KLM, Iberia, and THY Turkish Airlines, to which one could add the "oddity" of SAS, which has 50% - one share controlled by the governments of Sweden (21.4%), Denmark and Norway 514.3% each). Among these airlines, BA and LH are shown to consistently and rigorously apply the techniques of classical finance theory to corporate financial management and investment appraisal.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Icelandair		100.00%					0.00%
Norwegian		100.00%					0.00%
FlyGlobespan.com		100.00%					0.00%
British Airways		100.00%					0.00%
Lufthansa Group		89.44%	10.56%				0.00%
Air France-KLM Group	18.70%	81.30%					0.00%
Ryanair		81.24%	14.26%	4.50%			0.00%
Iberia		72.40%	17.60%			10.00%	0.00%
SkyEurope Airlines		71.90%	28.10%				0.00%
Austrian Airlines		58.50%				41.46%	0.04%
THY Turkish Airlines	48.25%	51.75%					0.00%
Vueling Airlines		50.90%	37.80%		11.30%		0.00%
SAS Group	49.99%	50.01%					0.00%
Air Berlin		44.62%	44.00%	11.38%			0.00%

Table 7: Airlines with largest listed shareholders in Europe

A second group is the start-up no-frills carriers Ryanair, Skyeurope, Vueling, and Air Berlin. As in the case of the Asian start-ups, they have significant blocks of shares held by institutionals and/or private investors, with more participation from institutionals than in the Asian population. Ryanair exhibits an extreme case of the founder-owner pattern, with Michael O'Leary holding a stake now worth only 4.5%, which with his personal force of character is enough to ensure effective control of the company. Vueling is one of very few airlines worldwide with significant employee shareholding, with the balance of the private shares held by Catalan institutions. In 2009, the company agreed to merge with ClickAir, and Iberia offshoot which had been competing fiercely for Barcelona low-cost traffic. SkyEurope and Air Berlin represent classic venture capital start-up-IPO plays, with institutionals financing the start-up then selling a large stake to the markets (Vueling also exhibits this pattern).

### North America

The North American airline community predominantly accesses the continent's wide and deep public share markets, as 83% of RPKs are

provided by listed carriers. The continent's largest carriers are by and large 100% free-float, freestanding companies, although this is not true of the smaller, regional feeder airlines examined later in this section. Also conspicuously absent in this group is Air Canada, which became privately-held after its 2002 bankruptcy. The North American group is also distinguished by five additional Chapter 11 bankruptcies since 2001 – United (2002-2005), Atlas Air (2004-2007), Polar Air Cargo (2004), Delta and Northwest (2005 – 2008). All five emerged in the years indicated, but a sixth, Aloha Airlines, will certainly result in that airlines' liquidation.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline
ABX Air		100.00%				
Atlas Air		100.00%				
FedEx		100.00%				
Aloha Airlines		100.00%				
Allegiant Air		100.00%				
Pinnacle Airlines		100.00%				
Mesa Airlines		100.00%				
Hawaiian Airlines		100.00%				
Frontier Airlines		100.00%				
ExpressJet		100.00%				
WestJet Airlines		100.00%				
AirTran Airways		100.00%				
Alaska Airlines		100.00%				
US Airways Group		100.00%				
Southwest Airlines		100.00%				
Northwest Airlines		100.00%				
Continental Airlines		100.00%				
United Airlines		100.00%				
AMR Corporation		100.00%				
Delta Air Lines		89.30%			10.70%	
Republic Airlines		60.85%	39.15%			
Polar Air Cargo		51.00%				49.00%
JetBlue Airways		49.00%	15.00%	17.00%		19.00%

Table 8: Airlines with largest listed shareholders in North America

Only the last four of the listed airlines in Table 8 are under 100% free-floating, with JetBlue exhibiting once again the classic start-up founder/institutional/IPO pattern, albeit with a lower "cash-out" share sold to the public than Europe's carriers (and somewhat more than Asia's). The closely-held shares are owned by George Soros, whereas Lufthansa stepped in to take a 19% stake in the airline 2008. Here, as with the other start-ups, significant blocks of shares remain closely-held, whether by individuals, institutions, or other airlines.

### Other regions

Of the world's other regions, each has exactly one airline for which the largest shareholder type is a public share market.

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Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Jazeera		70.00%		30.00%			0.00%
GOL Transportes Aéreos		100.00%					0.00%
Kenya Airways	22.00%	32.50%	4.36%			26.00%	15.14%

Table 9: Airlines with largest listed shareholders in the Middle East, South America, and Africa

Kuwait's Jazeera is, as stated above, a clear distancing of the Kuwaiti civil aviation community from its national flag carrier, and is 70% listed on one of the only significant organized exchanges in the Arab Middle East. The Kuwaiti Boodai family controls the 30% closely-held share, easily enough to ensure management control of a widely-held company.

GOL is one of the few start-ups globally in which 100% of shares were floated in its 2004 IPO. Finally, Kenya Airways is the only African airline that managed to sell a relative majority stake to its domestic share exchange, leaving the government with 22%. KLM owns the largest individual stake at 26%, and is commonly viewed as having a close eye on the airlines operations (particularly maintenance), while not managing the company's fleet planning.

Having adopted western financing model of widely-held shareholding, these majority-listed airlines should be expected to use classical financial techniques to analyse fleet investments. The airline survey respondents from the field research showed a pattern consistent with this intuition.

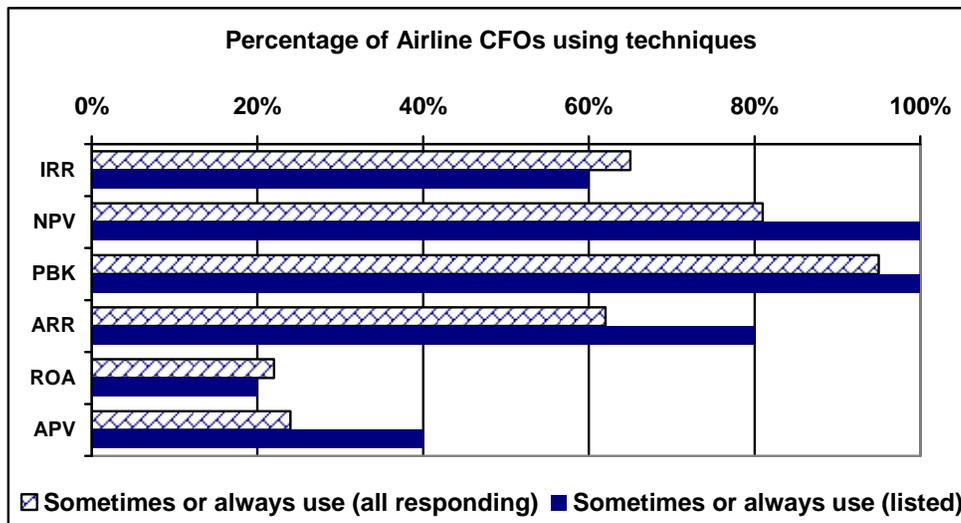


Figure 5: Valuation technique use by all airlines vs. majority listed airlines, Gibson & Morrell (2005)

All of the listed-majority respondents – two from European airlines, two from North America, one from Asia-Pacific use both NPV and PBK to evaluation investments, higher than the overall frequency in the airline sample. Fewer use IRR, which is consistent with the availability of cost of capital estimation data for their shares. Indeed, four of the five (the exception being the Asia-Pacific airline) use both WACC and CAPM to estimate the company's cost of capital.

Of less significance, four out of the five airlines also use Accounting Rate of Return (ARR) to evaluate investments, and two of the five also use Adjusted Present Value. Only one of these airlines uses Real Options Analysis (ROA). The CFOs of listed carriers responding to our survey have fully adopted classical financial valuation techniques.

### 3.1.2. Value-based management in listed carriers

One of the more widely-accepted applications of classical financial theory is Value Based Management (VBM), which has company cost of capital, defined as WACC, as one of its primary inputs. Two European carriers, British Airways and Lufthansa, have adopted VBM in corporate financial management. There are various forms and metrics for VBM, but they all share the same conceptual framework, which is a combination of classical financial theory and accounting expediency: the company's investments (variously defined) are charged with an investment cost by multiplying the investment by WACC, and this implicit investment cost is compared with various measure of cash flow or profits, to determine whether the company's

managers are creating value by earning above investment costs, or destroying it by earning below such costs.

Since the introduction of the trade-marked Economic Value Added concept by the consulting Stern Stewart & Co, the most popular VBM metrics in the airline industry is Cash Value Added (CVA), adopted at the end of the 1990s by two major European carriers, British Airways (BA) and Lufthansa (LH). Scandinavian carrier SAS uses the related Cash Flow Return on Investment (CFROI) calculation. The methodology and issues surrounding these applications are discussed in detail in Morrell (2003). Of particular concern in Morrell's study was the valuation of assets, and the author finds a wide diversity of methods: the airlines studied use methods ranging from simple historic cost with or without adjustment for inflation, to estimation of replacement cost of assets based on actuarial or current market value appraisal methodologies. All the airlines studied by Morrell use an estimate of the value of assets including the implied investment in operating leased aircraft.

Classical financial theory is used in two specific calculations within CVA. First is the estimation of an "economic depreciation" to be deducted from operating cash flow (the usual proxy being Earnings before interest, tax, depreciation, amortization and rentals or EBITDAR). While depreciation is a fundamental concept necessary for any asset-based valuation, CVA substitutes a WACC-based calculation for simplistic accounting methods, be they linear or accelerated, purporting thus to calculate depreciation in a way consistent with financial market valuations (hence the "Cash" in CVA). A common approach to estimating economic depreciation is to find an annuity which discounts to the replacement cost of the firm's assets, a method requiring an estimate of the company's WACC or other appropriate discount rate.

Table 10 is a comparison of the parameters used, and resulting calculation, for the three airlines.

Comparison of WACC parameters	British Airways			LH 2001	LH 2008	SAS
Target debt/total capital ratio	50%	61%	61%	45%	50%	50%
Cost of debt	5.3%	4.8%	4.8%	6.3%	5.4%	N.S.
Risk-free rate	5.3%	5.3%	5.3%	5.1%	4.2%	N.S.
Beta	1.25	1.35	1.5	1.05	1.1	N.S.
Equity risk premium	6.6%	4.0%	2.5%	5.7%	5.7%	N.S.
Cost of Equity (calculated)	13.6%	10.7%	9.1%	11.1%	10.5%	N.S.
Cost of Equity (stated)	13.6%	12.5%	11.0%	11.1%	10.5%	N.S.
WACC (nominal calculated)	9.5%	7.8%	7.2%	8.9%	8.0%	N.A.
WACC (nominal - stated)	9.5%	7.8%	7.2%	8.9%	7.9%	10%
WACC (real -stated)	7.0%	5.4%	4.8%			
WACC (real - calculated)	6.8%	5.2%	4.6%			

Table 10: Cost of capital parameters & results: BA & SAS from Morrell (2003), LH from annual reports

While BA and LH are apparently calculating cost of equity and WACC broadly in line with classical theory, several methodological choices reveal divergences. BA calculated WACC under three scenarios, with the first column in Table 10 reflecting their base case WACC. In this scenario, the airline used the same risk-free rate as the company cost of debt, an expediency not consistent with the notion that corporate debt is not truly risk-free, though it does reflect Lintner's (1965) assertion that company managers tend to view their own debt as risk free.

In the other two scenarios, BA is presumably demonstrating the conservatism of their calculation. The cost of equity estimation shows the wide divergence in estimating the equity risk premium, as their estimates range as low as 2.5%, certainly below any estimates identified in the author's prior research. On the other hand, the company uses substantially higher betas of 1.35 and 1.5. This substantial range finds an echo in the dispersion of estimates from professional providers - betas from 1.27 to 1.857 in the case BA - found in Turner and Morrell (2003). Using these parameters, BA calculates equity costs substantially lower than the 13.6% used in the base case analysis. These wide-ranging parameter estimates demonstrate the lack of methodological certainty faced by practitioners attempting to put CAPM into practice.

Concerning that WACC sensitivity analysis, BA used an after-tax 4.8% for the company cost of debt, resulting in the questionable (but theoretically not impossible) estimation that BA's after-tax cost of debt is lower than the risk-free rate, which is by definition tax free. Again demonstrating the "conservatism" of the base case, they use equity costs of 12.5% and 11%, but this is countered by a higher 61% gearing and the lower cost of debt used.

These scenarios appear geared to demonstrate that BA's cost of capital estimates are "realistic" or conservative, but to the researcher they are more revealing of methodological difficulties faced by practitioners.

The comparison with LH's estimates in 2001 and 2008 reveals many differences, most of which should reflect capital market and operational differences between the two countries. The two most striking differences are the substantially lower beta used by LH, consistent with the 2003 Turner and Morrell study, which found provider estimates of 1.12 to 1.19 for LH, both lower and in a narrower range than that of BA. LH also used a lower equity risk premium than BA's base case, which at 5.7% is very close to the "CFO practice" 5.5% reported by Bruner et al. (1998), a full percentage point lower than the 101-year German geometric average risk premium reported in Dimson et al. (2002), though again close to the forward-looking 5.9% "world" premium suggested by those authors. Not much can be said of the SAS methodology reported in Morrell (2003), as the company only provides the barest of information.

### 3.1.3. Government-owned carrier equity finance & investment analysis

#### Asia Pacific

This paper identified 20 large, government-controlled carriers in Asia-Pacific, a vast region stretching from China to New Zealand, and including India as well. The airlines in this group produce 50% of the region's RPKs, and their shareholding patterns reflect the region's size and diversity of financial markets and cultures. Also distinctive is the fact that the government share is in no case less than 50%, a legacy of the rigidities inherent in ASA's.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
<b>Air India</b>	100.00%						0.00%
<b>Biman Bangladesh Airlines</b>	100.00%						0.00%
<b>Garuda Indonesia</b>	100.00%						0.00%
<b>Royal Brunei Airlines</b>	100.00%						0.00%
<b>Vietnam Airlines</b>	100.00%						0.00%
<b>Air Madagascar</b>	90.60%					3.10%	6.30%
<b>Pakistan International Airlines</b>	87.00%			13.00%			0.00%
<b>Air New Zealand</b>	76.50%	12.90%		4.20%		6.30%	0.10%
<b>Malaysia Airlines</b>	72.05%		5.69%		10.72%		11.54%
<b>China Airlines</b>	70.05%						29.95%
<b>Air Tahiti Nui</b>	64.42%		8.61%	19.92%		7.05%	0.00%
<b>Air China</b>	55.80%	24.20%				20.00%	0.00%
<b>Singapore Airlines Group</b>	54.70%		45.30%				0.00%
<b>Thai Airways</b>	53.76%		46.24%				0.00%
<b>Air Mauritius</b>	52.87%			15.50%		31.64%	-0.01%
<b>SriLankan Airlines</b>	51.05%				5.32%	43.63%	0.00%
<b>China Eastern Airlines</b>	50.30%	38.38%		11.32%			0.00%
<b>China Southern Airlines</b>	50.30%	49.70%					0.00%
<b>Air Calédonie International</b>	50.28%		43.31%	4.32%		2.09%	0.00%
<b>Air Pacific</b>	50.00%					49.97%	0.03%

Table 11: Airlines with largest government shareholders in Asia-Pacific

Five of these airlines are under 100% government control, found mostly in South Asia. With the notable exception of Air India, these airlines are found in countries without large public share markets. Air India, Garuda and Biman are part of a substantial group of airlines whose government shareholders have several times announced their intention to privatize the airline, processes which clearly have not as yet found the combination of political will and private interest which would allow them to open their capital. Air India, the largest of these companies and ranked 35 in worldwide revenue generation, was merged with Indian Airlines in 2007.

Singapore, Malaysia, and Thai show a mix of a substantial majority government stake and institutional investment. These countries do have substantial share markets, but the control of these national airlines is firmly in the hands of companies controlled their respective governments, while allowing them to benefit from additional institutional financing capacity.

Seven of the government-owned airlines have minority shares held by major airlines, giving them access to a certain amount of management expertise from their airline shareholders, while providing the shareholding airline with inside information on these government-controlled carriers. Three of these airline shareholdings are small stakes held by Air France in the airlines of former French colonies and Territoires d'Outre Mer (TOM): Air Madagascar (Air France 3.1%), Air Tahiti Nui (Air France 7.05%), Air Calédonie (Air France 2.09%). Air Mauritius has a more complex airline stakeholder group (B.A.

13.24%, Air France 9.58%, Air India 8.82%), reflecting its own colonial and historic ties to the Indian mainland. Emirates' 43.63% share of Sri Lankan's equity and concomitant management agreement gives the Dubai carrier a substantial say in Sri Lankan's management and fleet decisions, for this airline in the South Asian market very much in Emirates' sights. Similarly, Air Pacific can be considered highly controlled by (Qantas 46.3% and Air New Zealand's 3.67%). The final airline with a minority stakeholder is Air New Zealand (Singapore 6.3%), reflecting both ANZ's see-saw performance in the early years of this decade and the continuous flirtation of Singapore Airlines with stakes in carriers in Austria and New Zealand. Given the absolute government-held majority in all cases, none of these airline shares represents a controlling stake, but we can assume a certain amount of information-sharing and 'advice' from the outside airline regarding fleet decisions, particular in the case of the larger shares (Sri Lankan, Air New Zealand)

China's "big three" airlines have significant listed capital, while remaining majority controlled by the government. China Southern was the first of the three to privatize in 1997, and has a mix of Hong Kong listed shares (26.84%) denominated in HK\$, and Shenzhen-listed denominated "A" shares (22.86%) denominated in CNY. China Eastern privatized the same year, but raised a smaller stake (H shareholders 32.2%, A shareholders 6.18%). Finally, the highly complex Air China has a 24.2% listed stake since its IPO in 2004, in addition to cross-shareholding with Cathay, giving the Hong Kong carrier a 20% stake (Air China owns 10% of Cathay's shares). The Chinese government's two-step aircraft procurement process through the China Aviation Services Group Company (CASGC) ensures that fleet decisions among these carriers will be complex, and highly subject to the overall procurement and industrial development policies and plans of the central government.

## Europe

Europe's government-owned airlines number 22 (two more than in Asia-Pacific), but only account for 14% of the region's RPKs as a group vs. 50% in the Asia-Pacific region. Eight of the 22 are 100%-owned by the respective governments, and are found primarily in the former-communist countries of Central and Eastern Europe as well as Russia, as are an additional eight of the 22 airlines with less than 100% state ownership. The closely-held stakes of Croatia, Adria, LOT, Ukraine, CSA Czech, Aeroflot and KrasAir are typical of the unclear communication of the nature of private ownership found in this region. All of these airlines have experienced rapid growth over the last ten years, and all are included in the Airline Business top 200 airlines worldwide:

TAROM, LOT, CSA Czech and Aeroflot, but also Air Astana and KrasAir are now within the top 150 revenue producing airlines, whereas in 2002 (for example), only LOT, CSA Czech and Aeroflot were in this group.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Azerbaijan Airlines	100.00%						0.00%
Jat Airways	100.00%						0.00%
Olympic Airlines	100.00%						0.00%
Rossiya Airlines	100.00%						0.00%
SATA International	100.00%						0.00%
TAP Portugal	100.00%						0.00%
TAROM	100.00%						0.00%
Uzbekistan Airways	100.00%						0.00%
Air Malta	98.00%			2.00%			0.00%
Croatia Airlines	96.30%		2.20%	1.50%			0.00%
Adria Airways	76.00%		8.00%	13.00%	3.00%		0.00%
Cyprus Airways	69.62%			30.38%			0.00%
LOT Polish Airlines	67.97%			25.10%	6.93%		0.00%
Ukraine International Airlines	61.60%		15.90%			22.50%	0.00%
CSA Czech Airlines	61.08%		4.33%	34.59%			0.00%
Finnair	57.04%	22.83%	20.13%				0.00%
airBaltic	52.80%				47.20%		0.00%
Aeroflot Russian Airlines	51.17%			27.00%	19.00%		2.83%
Air Astana	51.00%						49.00%
KrasAir	51.00%			49.00%			0.00%
Alitalia	49.90%		12.41%	35.69%		2.00%	0.00%
Aer Lingus	28.82%	28.29%			16.76%	25.22%	0.91%

Table 12: Airlines with largest government shareholders in Europe

With these former eastern-block airlines clearly under state tutelage as the largest group of the government-owned airlines in Europe, there are two exceptions that do not fit one particular pattern. Latvia's airBaltic is 47% owned by its employees, making it a rarity in the airline world. Air Astana was the result of an interesting approach in Kazakhstan: rather than try to reform Air Kazakhstan, the former flag carrier was disbanded, in favour of a joint venture between the government and BAE Systems.

Three Western European airlines in the group are the "remains" of the wave of privatization that has swept the E.U. in the last 25 years, a trend started by British Airways. Finnair is a typical partially-privatized carrier, with nearly 43% of the airline privately owned, around half of this in the hands of institutional investors. TAP Air Portugal and Olympic remain 100% in state hands<sup>2</sup>. None seems likely to participate in the current wave of consolidation sweeping the continent, even if TAP is a Star Alliance member and Finnair is trying to be the

<sup>2</sup> Olympic was sold to private investors at the end of 2009

eastern wing of the oneworld alliance by focussing on Asian destinations through Helsinki.

Aer Lingus and Alitalia, on the other hand, were in 2007 takeover targets, and Aer Lingus is still so today, with over 25% of the company's shares held by Ryanair. The 2% of Alitalia held by Air France after its 50.1% privatization in January 2007 has now become 25%, with 75% held by "CAI", a group of Italian investors, in what seems like a face-saving deal destined to leave the carrier under the control of Air France-KLM in coming years.

### Middle East

The other significant region of the world with large swathes of government ownership is the Middle East, where state-owned carriers produce 93% of the region's RPKs, and 98% of its profits.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Air Algérie	100.00%						0.00%
Atlas Blue	100.00%						0.00%
Egyptair	100.00%						0.00%
Emirates	100.00%						0.00%
Etihad Airways	100.00%						0.00%
Gulf Air	100.00%						0.00%
Iran Air	100.00%						0.00%
Iran Aseman Airlines	100.00%						0.00%
Kuwait Airways	100.00%						0.00%
Royal Jordanian Airlines	100.00%						0.00%
Saudi Arabian Airlines	100.00%						0.00%
Middle East Airlines (MEA)	99.37%						0.63%
Royal Air Maroc	95.39%					3.82%	0.79%
Oman Air	80.00%		20.00%				0.00%
Tunisair	74.42%	20.00%				5.58%	0.00%
Air Arabia	51.00%		49.00%				0.00%
Qatar Airways	50.01%			49.99%			0.00%
Ethiopian Airlines	100.00%						0.00%
South African Airways	98.20%				1.80%		0.00%
Air Jamaica	100.00%						0.00%

Table 13: Airlines with largest government shareholders in the Middle East, Africa, and North America

Eleven of the 17 airlines are 100% owned by their governments, but within these 11, there are two distinct management cases. First are the "traditional" state-owned airlines, founded practically at the same time as the country itself: Air Algérie, Egyptair, Iran Air, Kuwait Airways, Royal Jordanian, and Saudia. These airlines fill the traditional role of the state-owned carrier, serving destinations based on a mix of economic and political agendas, a mix that often confounds any management attempts to make sustained profits.

A second case among the state-owned carriers is the more recent and far more dynamic "start-up" carriers such as Atlas Blue (a Royal Air Maroc offshoot serving secondary destinations in Europe and Morocco), Gulf Air, a former "pan-Arab" carrier now the property of the state of Bahrein, Iran Aseman, and two of the three sixth-freedom mega-hub carriers of the group, Emirates and Etihad. Within the former group of staid airlines, Royal Jordanian and more recently Egyptair stand out as more dynamic, having joined global alliances (oneworld and Star respectively), largely to boost efficiency and modernize management, as well as to extend their networks facing the threats from the Gulf. One would like to add Middle East Airlines (MEA) to the dynamic group, but the airline has borne the brunt of hostilities between Arabs and Israelis in the years since 9/11.

The remaining Middle Eastern airlines fit the same two moulds, but have sold shares to some mix of different investor types: Royal Air Maroc fits the "tutelage" model previously seen in the South Asian carriers, with stakes held by Air France (2.87%), Iberia (0.95%). Tunisair also has a 5.58% share in the hands of Air France, and as well has the dubious benefit of having listed 20% of its shares on the languishing Tunis Stock Exchange.

The United Arab Emirates' no-frills carrier Air Arabia is 49% privately owned, with "substantial free float" according to ATI, while Qatar Airlines, the third sixth-freedom carrier channelling Europe-Asia traffic through the Gulf while building the Doha's attractiveness for business and leisure, is 50% minus one share privately owned. The salient characteristic of these "private" shares, and the funding model of the Gulf airlines in general, is substantial opacity regarding the exact nature of the shares and their owners. In the Gulf particularly, public and private ownership structures are not so easily distinguished.

In the interest of completeness Ethiopian and South African, and Air Jamaica are included in Table 13. SAA is known in the trade to be quite business-oriented and has a small employee-owned share. No other particular governance characteristics stand out in these three.

Twelve state-owned carriers responded to the airline CFO survey, one from Asia-Pacific, three from Europe, four from the Middle East and from Africa. As a group, they are less likely to use the classical techniques of IRR and NPV than the listed group. They in fact use ALL the techniques less than the listed group, reflecting the mixed agenda government ownership often brings to air transport.

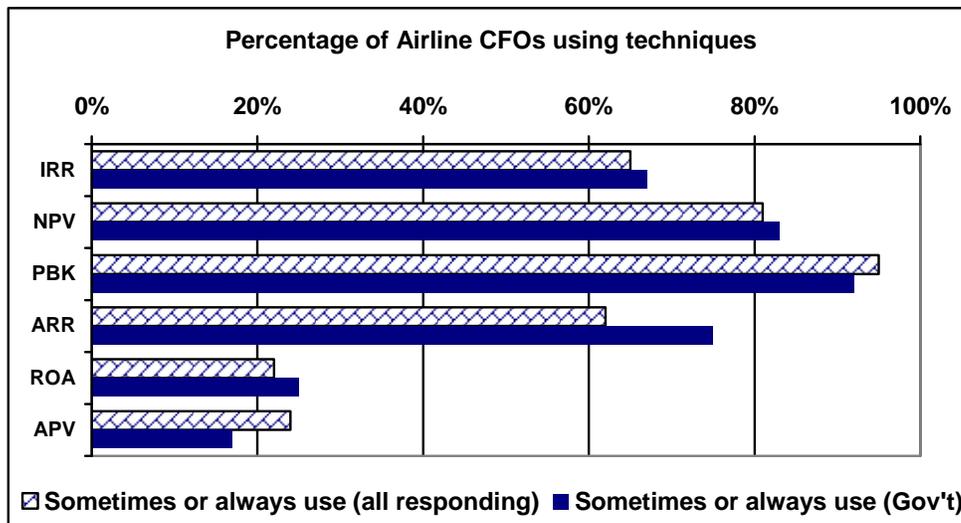


Figure 6: Frequency of valuation technique use by all airlines & majority government airlines

Within the averages there are large regional disparities: the four Middle-Eastern respondents show an analysis pattern nearly the same as the listed group, in that they all use IRR, NPV and PBK, and three out of the four use ARR as well. On the other hand, the Middle Eastern group does not use the more sophisticated ROA and APV techniques at all.

The Asia-Pacific respondent uses all the listed techniques, while the three European carriers are a mixed bag: all use PBK, and two out of three use NPV, whereas only one uses IRR.

Excluding Africa from the list of government-owned carriers, a picture of the analysis techniques in use by the responding state-owned carriers is similar to that found among the listed population, although they are less likely to adopt advanced techniques than listed carriers.

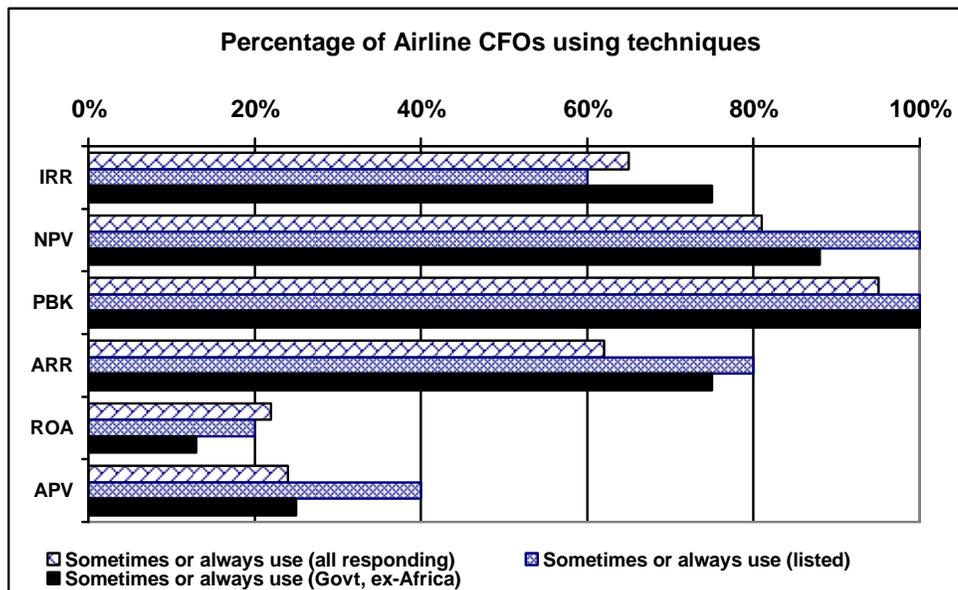


Figure 6a: Frequency of valuation techniques used by all airlines & majority government airlines ex-Africa

This adoption of classical financial techniques in the absence of market-based shareholding and governance by professional managers accountable to profit-oriented shareholders leads to questions of methodology (eg., for cost of capital estimation in the absence of traded shares).

#### 3.1.4. Closely-held carrier equity finance & investment analysis

##### Asia Pacific

Of the 19 Asian airlines with the largest blocks closely-held, 17 show a clear absolute majority of this category of shareholders, and can be said to be wholly controlled by these blocks. They are certainly not the largest producers of RPK in the region, with only 20%, but they are the second most numerous group of airlines in the region, after state-owned carriers. Producing together 66% of Asian airline RPKs, the government and closely-held patterns of shareholding are dominant in the region, in sharp contrast to Europe and North America, but consistent with the findings concerning Asian shareholding patterns in LaPorta et al (1999). With the exception of Nippon Cargo Airlines (owned by Japanese shipping firm NYK Line), the 100% Closely-held airlines show a strong pattern of the “family”, or individual, shareholding described in the LaPorta article, as do the larger Philippines Airlines (controlled by Lucio Tan), and Jet (by N. Goyal). Several have started operations within the last ten years (GoAir, IndiGo, Juneyao, Kingfisher, Lion, Skymark), and are largely run by their founders (although Kingfisher, in difficulty, may be edging closer to Jet). This is precisely the type of airline

shareholding which Pinches and Lander suggested use “more intuitive” investment planning, with lower risk-aversion than publicly held firms.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
<b>Bangkok Airways</b>				100.00%			0.00%
<b>Cebu Pacific Air</b>				100.00%			0.00%
<b>GoAir</b>				100.00%			0.00%
<b>IndiGo Airlines</b>				100.00%			0.00%
<b>Juneyao Airlines</b>				100.00%			0.00%
<b>Kingfisher Airlines**</b>				100.00%			0.00%
<b>Lion Airlines</b>				100.00%			0.00%
<b>Nippon Cargo Airlines</b>				100.00%			0.00%
<b>Skymark Airlines</b>				100.00%			0.00%
<b>Asiana Airlines</b>			9.63%	90.37%			0.00%
<b>Air Macau</b>	5.00%		5.00%	90.00%			0.00%
<b>Philippine Airlines</b>	4.26%			88.87%	2.75%		4.12%
<b>Jet Airways</b>		20.00%		80.00%			0.00%
<b>Hainan Airlines</b>			12.72%	78.36%			8.92%
<b>Virgin Blue</b>				74.74%		25.26%	0.00%
<b>EVA Air</b>		28.00%		72.00%			0.00%
<b>Skynet Asia Airways</b>	3.30%	24.20%		57.60%		14.90%	0.00%
<b>Cathay Pacific</b>		25.00%	24.84%	40.00%		10.16%	0.00%
<b>Air Austral</b>			26.30%	37.72%			35.98%

Table 14: Airlines with largest closely-held shareholders in Asia

Three carriers have a significant block held by another airline, and fall into two categories. First are the start-ups at the behest of a parent airline, with Virgin’s 25.26% share in Virgin Blue and All Nippon’s nearly 15% of Skynet Asia. Second, and of course unique worldwide, is Cathay Pacific, with its cross-shareholding of 10.16% with Air China and the continuing controlling block held by the Swire Group providing consistent profit-driven management practices. Finally, EVA Air and Asiana are controlled by diversified holding companies (“Evergreen” for the former, and Korea’s Kumho Construction for the latter). Airlines belonging to diversified groups are thus quite rare in the region. This suggests that the potential conflicts of interest in the diversified-group shareholding patterns many authors consider endemic to the region<sup>3</sup> would not logically be a significant problem in the Asian airline world.

## Europe

In Europe, the closely-held pattern is very different, with 12 of the 31 closely-held airlines (39%) controlled by travel groups. These airlines are italicized in Table 15. The aircraft utilisation pattern (highly seasonal) business model and investment priorities of travel groups are significantly different from those of

<sup>3</sup> The most obvious examples are the Japanese Zaibatsu and the South Korean Chaebol groups, another being the Hong Kong conglomerate Hutchinson Whampoa.

scheduled carriers. All of the travel-group held airlines are 100% subsidiaries (save Tuifly in which Air Berlin holds a 19.9% stake), giving the owners complete control over all capital budgeting decisions.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Air Europa				100,00%			0,00%
Corsairfly				100,00%			0,00%
Futura International Airways				100,00%			0,00%
Hello				100,00%			0,00%
Iberworld Airlines				100,00%			0,00%
Livingston				100,00%			0,00%
Monarch Airlines				100,00%			0,00%
MyTravel Airways				100,00%			0,00%
Novair				100,00%			0,00%
Onur Air				100,00%			0,00%
Silverjet				100,00%			0,00%
Sterling Airlines				100,00%			0,00%
Thomas Cook Airlines (UK)				100,00%			0,00%
Thomsonfly				100,00%			0,00%
XL Airways France				100,00%			0,00%
XL Airways UK				100,00%			0,00%
Air One				99,00%			1,00%
Meridiana				84,00%	16,00%		0,00%
TUifly				80,10%		19,90%	0,00%
Clickair				80,00%		20,00%	0,00%
AeroSvit Airlines	22,00%			78,00%			0,00%
Aegean Airlines		23,60%		76,00%			0,40%
Virgin Blue				74,74%		25,26%	0,00%
S7 Airlines	25,50%			74,50%			0,00%
Ural Airlines		19,50%	14,50%	66,00%			0,00%
Brussels Airlines				55,00%		45,00%	0,00%
Eurowings				51,00%		49,00%	0,00%
Virgin Atlantic Airways				51,00%		49,00%	0,00%
Malév			49,00%	51,00%			0,00%
easyJet		49,90%		50,10%			0,00%
bmi				50,01%		49,99%	0,00%
flybe				50,00%		15,00%	35,00%

Table 15: Airlines with largest closely-held shareholders in Europe

The second type of European closely-held carrier consists of seven airlines (including Tuifly) that have a substantial block of shares controlled by another airline, Iberia for ClickAir, Lufthansa for Brussels Airlines (a greatly pared-down Sabena) and for Eurowings, SIA for Virgin Atlantic, Lufthansa and SAS for bmi (soon to be 100% LH), and British Airways for Flybe. This pattern largely confirms the assertion in Chang and Williams (2001) that the moves have been intended to gain access (notably slots) in neighbouring countries, with a second group (flybe, Eurowings) part of the major carriers' on and off flirtation with new business models run separately from the mainline carrier.

There are entrepreneurial start-ups of the kind identified in Asia above, including easyJet, Aegean Airlines, AirOne (now merging with Alitalia), and Meridiana, and the late Silverjet. A significant difference from their Asian peers is that the majority of successful European start-ups were put into IPOs and are no longer closely-held after their start-up phase: this group includes Ryanair, SkyEurope (bankrupt in September 2009), Vueling, and Air Berlin. The start-up/IPO/listed western entrepreneurial pattern is more consistent with classical valuation (including corporate valuation) and hence closer to classical financial theory.

A final significant group comprises eastern European and Russian airlines, either started up or rescued from the wreckage of the Russian aviation meltdown after the collapse of the Soviet Union in 1989. Airlines such as AeroSvit, S7, Ural Airlines and Malev tend to have a rather murky disclosure of shareholdings, which include diverse groups including government, listed, and institutional investors. This governance pattern suggests rather tortuous capital budgeting procedures and attendant management practices.

### North America

Closely-held airlines in North America produce only 9% of the regions RPKs. Among the group in Table 16, 84% of the group's RPKs are produced by four: Aeroméxico, Air Transat, Mexicana and Air Canada.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Aeroméxico				100.00%			0.00%
Air Transat				100.00%			0.00%
Air Wisconsin				100.00%			0.00%
Aviacsa				100.00%			0.00%
Evergreen International Airlines				100.00%			0.00%
GoJet				100.00%			0.00%
Kalitta Air				100.00%			0.00%
Mexicana				100.00%			0.00%
Omni Air International				100.00%			0.00%
Trans States Airlines				100.00%			0.00%
USA 3000 Airlines				100.00%			0.00%
Air Caraibes				85.00%			15.00%
Air Canada		25.00%		75.00%			0.00%

Table 16: Airlines with largest closely-held shareholders in North America

Mexicana is since 2005 owned by travel group Posada after the failed "Cintra Group" combination with Aeroméxico, while the latter is now controlled by entrepreneur Jose Luis Barraza. Air Transat is a North Atlantic charter carrier serving tourist markets. By far the largest of the four, Air Canada has been through a lengthy restructuring since the bankruptcy in the wake of 9/11,

and is currently controlled by investor group BCE Holdings. The rest of these airlines are niche carriers, largely held by individuals or small groups of private investors.

### South America

South America RPKs are 68% provided by closely held companies, making this governance pattern the dominant one in the region. Further, the closely held shareholdings are in most cases strongly dominant over other types of shareholders, as Table 17 shows.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline	N.S.
Avianca				100.00%			0.00%
Grupo TACA				100.00%			0.00%
OceanAir				100.00%			0.00%
TAM Linhas Aéreas				100.00%			0.00%
BRA Transportes Aéreos			20.00%	80.00%			0.00%
Aerolíneas Argentinas	20.00%			77.00%	3.00%		0.00%
LAN Airlines		26.80%		73.20%			0.00%
Copa Airlines				51.00%		10.00%	39.00%

Table 17: Airlines with largest closely-held shareholders in South America

The largest airline in the group, TAM Linhas Aéreas, is controlled by Brazil's Amaro family (with 54%), while LAN Airlines, the second largest, is controlled by an informal consortium of the Piñera and Cueto families (28% and 27% respectively), and completed by the Eblen Group with 17%. LAN's free-float of 26.8%, listed on the Santiago and New York stock exchanges makes it the most transparent of these closely-held companies, with extensive annual reports providing insight into the company's management and accounts prepared under both Chilean and U.S. accounting standards. Panama's Copa is only major South American carrier with a significant share held by another airline, with 10% held by Continental of the U.S. The chronically unprofitable Aerolíneas Argentinas was controlled in 2001 by Iberia, a stake then sold to Spanish travel company Grupo Marsans. By 2007, the Argentine government had re-taken a 20% shareholding, and subsequently announced in October 2008 its intention to re-nationalize the airline. Aerolíneas is thus the exception in a South American region which shows a clear pattern toward closely-held ownership, and with the emergence of strong international players leading consolidation in the region.

### Institutional investor-controlled airlines worldwide

This paper distinguishes institutional investor control from other closely-held airlines. Institutional investors are defined as banks, mutual funds, insurance companies, which play no direct role in the airline management, while seeking

investor returns valued in the classical manner. This is the most challenging group to identify among worldwide airlines, because the disclosure of such shareholding varies from region to region and country to country. Using ATI as a uniform source, the companies in Table 18 were clearly identified as majority owned by institutions, and the airlines' country and region are included.

Airline	Country	Region	Government Listed	Institutional investors	Closely held	Employees	Other airline
Air Do	Japan	Asia-Pacific		96,07%	3,93%		
Air Nostrum (Iberia Regional)	Spain	Europe		97,50%			3,00%
Volga-Dnepr Airlines	Russia	Europe		84,00%			16,00%
UTair Aviation	Russia	Europe	24,31%	75,69%			
VIM Airlines	Russia	Europe	25,00%	75,00%			
Blue Panorama Airlines	Italy	Europe		66,60%	33,40%		
Astraeus	UK	Europe		51,00%		49,00%	
Hamburg International	Germany	Europe		50,01%		49,99%	
Luxair	Luxembourg	Europe	23,10%	38,60%			13,00%
El Al	Israel	Middle East	21,97%	31,36%	39,50%		8,12%
North American Airlines	USA	North America		100,00%			
Sun Country Airlines	USA	North America		100,00%			
Spirit Airlines	USA	North America		51,00%	49,00%		

Table 18: Airlines with largest institutional investors worldwide

The most striking feature of this group is that for the most part, the majority institutional shareholding is held by a single institution. Japan's Mizuho Asset Ltd., part of the Mizuho investment bank, owned the 96.07% share in Japanese start-up Air Do in 2007, making the airline a "pure" institutional investor play. The majority of the airlines disclosing institutional majority ownership are in Europe. Air Nostrum, a significant player in Iberia's strategic move to build a hub in Madrid, and also had a single dominant investor, NEFINSA S.A., which owned 75.5%. S

Similar patterns exist at Blue Panorama (Distal & Itr Group 66.6%), Astraeus (Northern Lights 51%), North American (part of Global Air Logistics in turn controlled by MaitlinPatterson), Sun Country (Petters Group, currently in Chapter 11 bankruptcy proceedings, and Spirit Airlines (Oaktree Capital, 51%).

The major exceptions to this single-institution pattern were largely in Russia, whose three airlines in Table 19 are controlled by a long list of institutional investors whose nature and shareholding are very difficult to determine through public-domain sources, another indication of the opacity of the Russian financing environment.

Another exception was El Al, in which investor group Knafaim-Aria Holdings only held 39.5%, making it the largest minority shareholder in one of the world's most politically-charged airlines.

Privately-held airlines showed a tendency to use the classical financial valuation techniques consistent with the survey results as a whole. Gibson and Morrell (2005) found that the 13 airlines stating their majority shareholder as “private” (closely-held) exhibited strong tendency to use NPV and PBK, somewhat less pronounced than the listed carriers. The preference for NPV over IRR is similar to that found in airlines worldwide. Only slightly more than half of these 13 carriers used accounting measures of profitability (ARR), showing that these techniques were quite a bit less popular than among listed carriers. Similarly, they were less likely to use APV and ROA than their listed counterparts, and indeed, less likely to use these advanced techniques than the total sample of airlines responding to the survey.

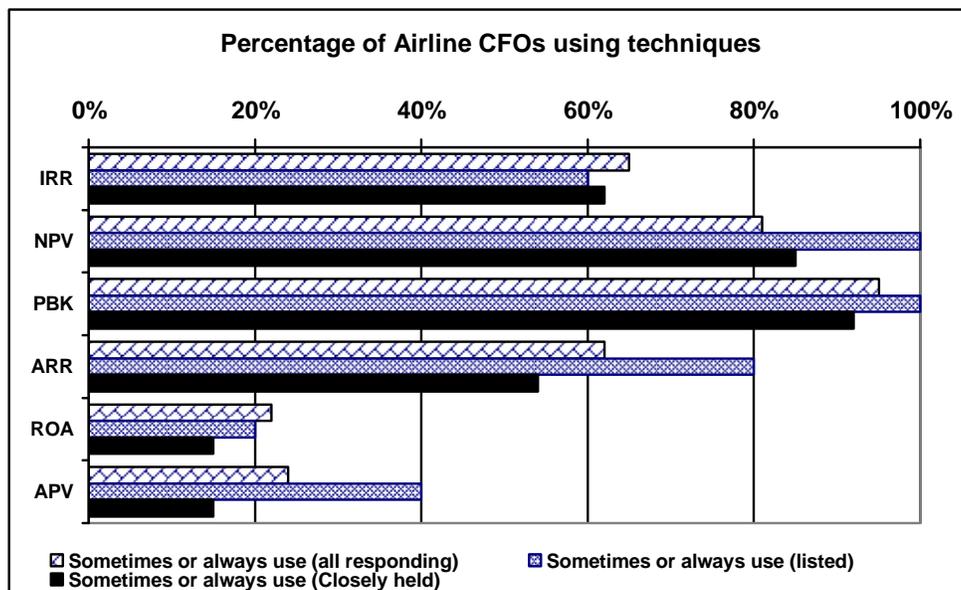


Figure 7: Frequency of valuation techniques used by all airlines, listed airlines & majority closely-held airlines

### 3.1.5. Other airline-owned carrier equity finance and investment analysis

The final type of equity ownership analysed is large airlines owned by other airlines. This type of ownership is present in Asia, Europe, and North America, and quite distinctly absent in the Middle East, Africa and South America. This group is striking in two ways. First, airlines do not share ownership of subsidiaries: in all cases, there is a single airline parent of the majority share. Second, the ownership share of the parent airlines is near or at 100% in 40 of the 52 companies majority-owned by other airlines. These two features give the parent companies complete control over the management of these captive subsidiaries, which has major considerations regarding strategic management decisions, investment analysis, and the application of classical financial analysis techniques at the level of the subsidiary.

In Asia-Pacific, several patterns emerge.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline
China Eastern Airlines Wuhan						100,00%
Continental Micronesia						100,00%
Deccan						100,00%
Dragon Air						100,00%
JetLite						100,00%
Jetstar						100,00%
QantasLink						100,00%
SilkAir						100,00%
Japan TransOcean Air				12,90%		17,00%
China Xinhua Airlines						40,00%
Xiamen Airlines				40,00%		60,00%
Sichuan Airlines						41,00%
						59,00%

Table 20: Airlines with largest other-airline ownership in Asia-Pacific

Dragon Air and Silk Air are clear strategic plays by their parent companies, respectively Cathay Pacific and Singapore Airlines. The first was a successful attempt to open Hong-Kong-Beijing (and other mainland China) destinations, while Silk Air allowed Singapore Airlines to experiment with a lower-cost operating model to open extensive short and medium-range services in its immediate vicinity, primarily Malaysia and Indonesia. In a very similar vein, Jetstar was started by Qantas to serve regional markets using a low-cost business model, with management and labour agreements separate from that of the parent. The reasons behind this model – ie, market access - are quite similar to those identified in Chang and Williams (2001) in a European context, with the difference that the parent control is absolute. The absolute control implies limitations of network patterns to the first four freedoms of the air, with fifth freedom rights dependent on the bilateral service agreements in place. The full advantages of point-to-point service to optimize aircraft utilisation are limited for these carriers.

A second group reflects the ongoing consolidation in the fast-growing and highly dynamic Indian market, comprising Deccan (taken over by Kingfisher) and JetLite (formerly Sahara, taken over by Jet). Again, the airlines are 100% subsidiaries of the parent companies.

The third and largest group of four airline subsidiaries is in China, which once again shows equity financing pattern distinct from the other countries of the world. First of all, the ownership is less than 100%, except for the anomaly of China Eastern Wuhan Airlines: though the airline continues to report results separately, the airline should be consolidated under China Eastern following the consolidation of Chinese airlines into the “big three.” China Xinhua is 60%

owned by Hainan Airlines, the first privately-owned airline in the P.R.C. The China Xinhua brand will probably “swallow” the parent airline brand, reflecting the ambition to go beyond the traditional Hainan/tourist-based operations of the airlines.

Xiamen Airlines is 60% owned by China Southern, while Sichuan is the only airline showing a mixed ownership (China Southern 39%, Shanghai and Shandong 10% each). Neither Xiamen nor Sichuan was started by its current parent airline, with identities and operations closely affiliated with their regional governments. Operations and the brands are currently completely separate from that of China Southern, though one must assume that growth, air services and frequency decisions are strongly influenced by the Guangzhou-based carrier. In both cases, the airline parent shares are complemented by closely held blocks associated with their regional roots.

The remaining airlines (Continental Micronesia, Qantaslink, Japan TransOcean Air) are far less significant than the others, fundamentally representing air service connections to thinly-populated islands in the respective catchment areas.

## Europe

The ongoing European airline consolidation, as described in Chang and Williams (2001 & 2004), is fully reflected in the other-airline owned category in the region.

<b>Austrian Arrows</b>			100,00%
<b>Blue1</b>			100,00%
<b>bmibaby</b>			100,00%
<b>Brit Air</b>			100,00%
<b>CityJet</b>			100,00%
<b>Condor Flugdienst</b>			100,00%
<b>Edelweiss Air</b>			100,00%
<b>GB Airways</b>			100,00%
<b>germanwings</b>			100,00%
<b>Martinair</b>			100,00%
<b>Monarch Scheduled</b>			100,00%
<b>Régional</b>			100,00%
<b>SunExpress</b>			100,00%
<b>Swiss</b>			100,00%
<b>Swiss European Air Lines</b>			100,00%
<b>Thomas Cook Airlines Belgium</b>			100,00%
<b>Transavia Airlines</b>			100,00%
<b>Spanair</b>		5,10%	94,90%
<b>Travel Service Airlines</b>		34,00%	66,00%
<b>Eurofly</b>		15,74%	38,16%
<b>Cargolux Airlines International</b>	34,00%	31,10%	34,90%

Table 21: Airlines with largest other-airline ownership in Europe

The tendency toward 100% equity ownership of these airlines heralds a new approach compared to the minority-share strategy which led to the SAir Group debacle of 2001. These more clear ownership patterns have been made possible by internal European open skies policies and Europe-wide ownership rules codified in the 2008 “Open Skies” agreement with the U.S.

Of the 21 airlines in this group, fully eight involve Lufthansa’s extensive subsidiary strategy recent airline acquisitions: Austrian Arrows, bmibaby, Condor, Edelweiss, germanwings, SunExpress, Swiss, and Swiss European are all either direct (Condor, SunExpress and Swiss) or indirect subsidiaries of Lufthansa, a group of wholly-controlled subsidiaries soon to fully include Austrian, Brussels Airlines, and bmi.

An additional five wholly-owned subsidiaries – BritAir, CityJet, MartinAir, Regional, and Transavia – are part of Air France-KLM’s European consolidation and regional expansion strategy. Regional Airlines has been part of the French group’s hub development strategy for many years, BritAir and CityJet are inroads into the U.K. market, while Martin-Air and Transavia were inherited with the Air France KLM merger.

A third much smaller group of strategic plays includes’ SAS’ Blue1 and Spanair, bringing the total of major-owned airlines in this group to 15 of the 21. The other airlines are composed of indirect travel group control - Eurofly (46.1% owned by Meridiana), Thomas Cook Belgium, smaller airline subsidiaries - Travel Service Airlines (Icelandair), Cargolux (Luxair), and GB Airways (easyJet), and the anomaly “Monarch Scheduled”, part of Monarch Airlines.

Wholly airline-owned equity in North America reflects trends strikingly similar to those in Europe.

Airline	Government	Listed	Institutional investors	Closely held	Employees	Other airline
Air Canada Jazz						100.00%
American Eagle Airlines						100.00%
ATA Airlines						100.00%
Atlantic Southeast Airlines						100.00%
Chautauqua Airlines						100.00%
Click Mexicana						100.00%
Comair						100.00%
Freedom Airlines						100.00%
Horizon Air						100.00%
Midwest Airlines						100.00%
Shuttle America						100.00%
SkyWest Airlines						100.00%
US Airways Express						100.00%
World Airways						100.00%
Varig						100.00%
AeroRepública						99.90%
Austral Líneas Aereas		5.00%				95.00%
SAM Colombia				6.00%		94.00%

Table 22: Airlines with largest other-airline ownership in the Americas

While consolidation is underway – one might say, *finally* underway - the reasons for holding airline subsidiaries are quite different than in Europe, since the U.S. never suffered from internal “bilateral” restrictions on domestic consolidation across the states. American Eagle, Comair and Midwest belong to American, Delta and Northwest (now Delta), and operate as hub feeders for their respective carriers.

Many of the point-to-point, low-fare airline ventures started by North American majors (including Delta Express and United’s short-lived division ted, for example) have ceased operation over the years. Air Canada Jazz, US Airways Express, and Click Mexicana continued today to represent this model of subsidiary.

Airline consolidation in the U.S. is typified by the five relatively small airlines owned by larger, purely domestic U.S. carriers, including Atlantic Southeast (SkyWest), Chautauqua and Shuttle America (Republic), Freedom Airlines (Mesa Group), and Horizon Air (Alaska Air). ATA and World Airways have a mixed government-private transport business model, and are owned by Global Aero Logistics, which could justifiably be considered either an airline or a private investor group.

### South America

In South America, other airline ownership is the exception rather than the rule<sup>4</sup>. As shown above, dominant and most successful ownership model in the region is closely-held (largely family) ownership and control. The exceptions prove the rule. Brazil's former second carrier Varig is now owned by GOL, an operation the very successful low-fare carrier has yet to turn around. The Colombian market has been in near-chaos since the collapse of ACES and Avianca in 2001. SAM Colombia, including what remains of these two merged in 2002 into SAM, is now the country's second producer of RPKs to AeroRepublica, owned by Panama's closely-held Copa. Finally Austral Lineas Aéreas, a domestic subsidiary of Aérolíneas Argentinas, is bound up in the parent company's governance struggle between Grupo Marsans and the Argentine government.

Given the dominance of the parent company's strategy and the difficulties of consolidation, these airlines' managers have their "hands tied," to a large extent unable to apply the financial analysis techniques used by stand-alone carriers. The responses from the six airline CFOs from this group of airline subsidiaries definitely confirm this intuition.

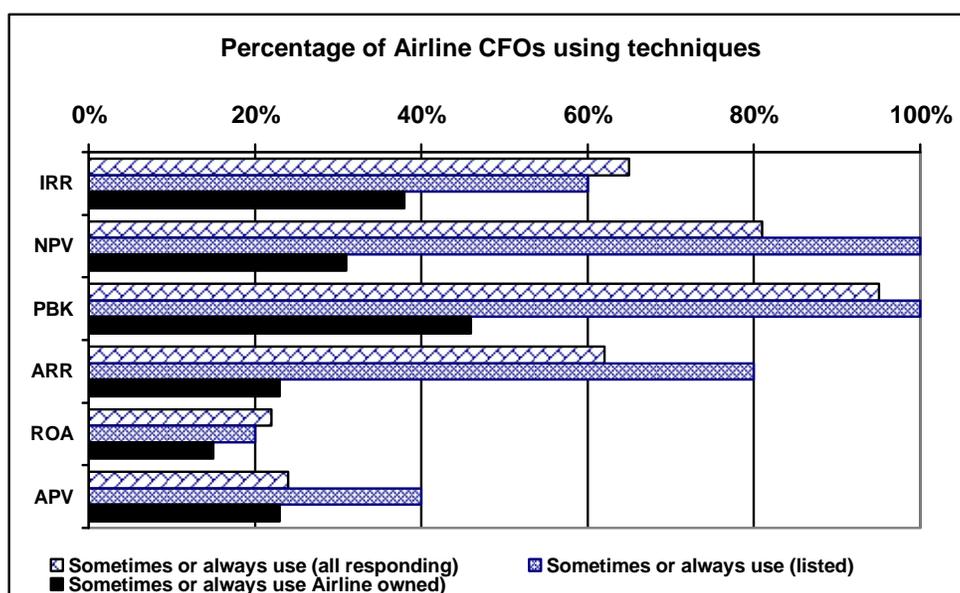


Figure 8: Frequency of valuation techniques used by all airlines, listed airlines & other airline-owned airlines

Of the analytical techniques in wide use elsewhere in the industry, none was stated as used even sometimes by a majority of CFOs. PBK was the most commonly used, while the classical techniques found use in fewer than three

<sup>4</sup> This may be changing with the recently-announced TACA/Avianca airline group, purported to encompass nine airlines in total

responding airlines. IRR was slightly more frequently used than NPV, as would be appropriate for a firm without its own cost of capital.

As a whole, this group of companies was found to be by far the least likely to use classical financial analysis techniques, less even than the government-owned carrier respondents, allowing the inference that their fleet decisions are largely made for them by parent companies.

#### **4. Conclusions**

Due to the information revolution, historical financial market information is increasingly and readily available to airline managers worldwide. Banking and capital markets are similarly developing in most regions, and the existence listed airlines in all of the world's regions – with the notable exception of the Middle East - shows that capital-market equity is available for the airlines with investor-friendly business models. Regarding access to debt financing, aircraft deliveries worldwide show that airlines can access long-term funding for the acquisition of aircraft, even if many require Export Credit Agency-guaranteed finance to access long-term financing. The worldwide availability of aircraft finance is distinctly true in the aviation industry, even in countries where the predominant debt financing pattern may be short-term funding. The increasing availability of market information, and the accessibility of market-based financing that marks the airline industry, both indicate that there is no reason airlines worldwide cannot use classical financial valuation methods to justify aircraft investments, if managers are directed to do so.

On the other hand, the governance models displayed around the world are not uniformly based on the western-style diffuse ownership/capital market funding approach and management-ownership split that underpins classical financial theory. The detailed analysis of airline governance in this paper reveals many different equity finance & governance patterns among the world's regions. These differences are summarized in Table 23 on the next page. The shaded square denotes the largest producer of the RPKs in the region. Listing is "only" dominant in Europe and North America. The majority of RPKs in Asia Pacific, Middle East and Africa are produced by government-owned airlines. Latin America production is strongly dominated by family groups. The text in each box summarizes the dominant airline business models with accompanying equity finance and governance characteristics.

	<b>Africa*</b>	<b>Asia Pacific</b>	<b>Europe</b>	<b>Middle East</b>	<b>North America</b>	<b>South America</b>
<b>Listed on public share markets</b>	<ul style="list-style-type: none"> <li>Kenya Airways early alliance with KLM</li> </ul>	<ul style="list-style-type: none"> <li>Majors</li> <li>Entrepreneurial start-ups</li> <li>Mixed ownership (China)</li> </ul>	<ul style="list-style-type: none"> <li>All successful majors</li> <li>LCC start-up / IPO plays</li> </ul>	<ul style="list-style-type: none"> <li>Start-ups only</li> </ul>	<ul style="list-style-type: none"> <li>All majors</li> <li>LCC start-up / IPO plays</li> </ul>	<ul style="list-style-type: none"> <li>Start-ups only</li> </ul>
<b>Government owned</b>	<ul style="list-style-type: none"> <li>Traditional flag carriers</li> </ul>	<ul style="list-style-type: none"> <li>Mature network carriers</li> <li>Emerging majors (China, Viet Nam)</li> </ul>	<ul style="list-style-type: none"> <li>Growth economies in Southern and Eastern Europe</li> <li>"Remains" of the privatization wave</li> </ul>	<ul style="list-style-type: none"> <li>Traditional flag carriers</li> <li>Sixth-freedom carriers</li> </ul>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>
<b>Closely or institutionally owned</b>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>	<ul style="list-style-type: none"> <li>Families dominant</li> <li>Group control minor</li> </ul>	<ul style="list-style-type: none"> <li>Travel groups dominant</li> <li>Entrepreneurial start-ups</li> </ul>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Families dominant</li> </ul>
<b>Other airline owned</b>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>	<ul style="list-style-type: none"> <li>Market access plays</li> <li>Indian and Chinese consolidation</li> </ul>	<ul style="list-style-type: none"> <li>Driven by consolidation</li> <li>Feeder airline control</li> <li>LCC start-ups</li> </ul>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>	<ul style="list-style-type: none"> <li>Driven by consolidation</li> <li>Feeder airline control</li> <li>LCC start-ups</li> </ul>	<ul style="list-style-type: none"> <li>None in large airline group</li> </ul>

Table 23: Summary of production-dominant governance model and equity investment patterns by region

The analysis in this paper shows that the world's airlines tend to have a strongly dominant type of governance (government, private, listed, other airline). Each region has a set of ownership patterns, as discussed and summarized above in Table 23. The airline business as a whole grew RPKs by 6.9% over the five year period, and produced an aggregate 2.2% operating profit margin. In aggregate over the 2004-2008 period, all save the largest North American regions exceeded these averages, in varying degrees. Both operating profit margins and the compound annual growth rate (CAGR) of RPKs have been highest in the Middle East (dominated by government ownership) and South America (dominated by family-owned airlines), compared with the larger and more mature markets of the northern hemisphere.

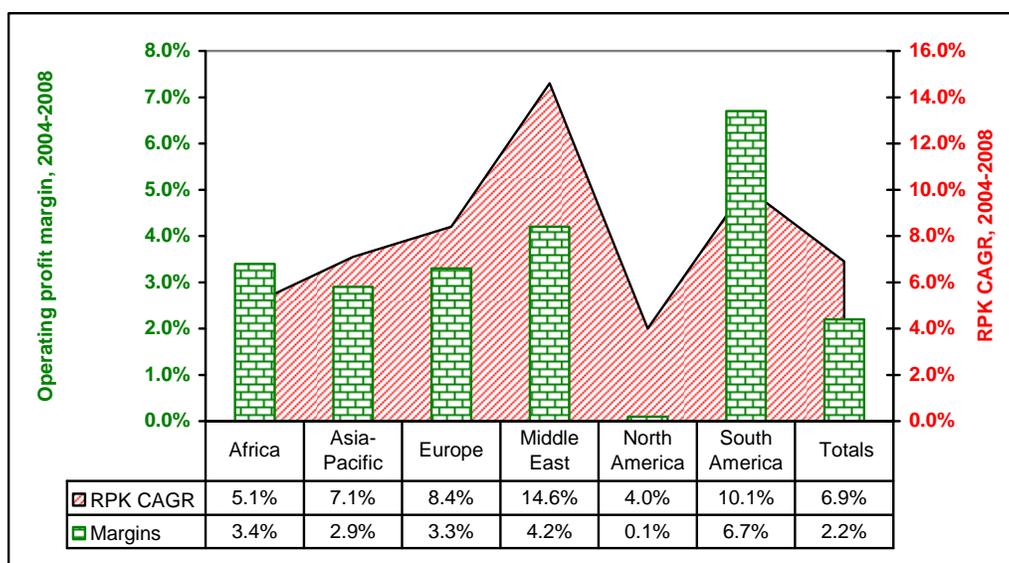


Figure 9: Profits and growth in the world's aviation regions, 2004-2008

The ownership model selected or imposed by ASA agreements and national authorities, and the attendant incentives to management, have been shown to influence the adoption and use of classical financial valuation techniques worldwide. As 4.14 below shows, growth strategies have been pursued most strongly in growth markets by closely-held and government-owned airlines. The closely-held group (led by South American carriers) is the only ownership pattern showing above-average profit margins, while the government-owned airlines have equalled the industry average over the period.

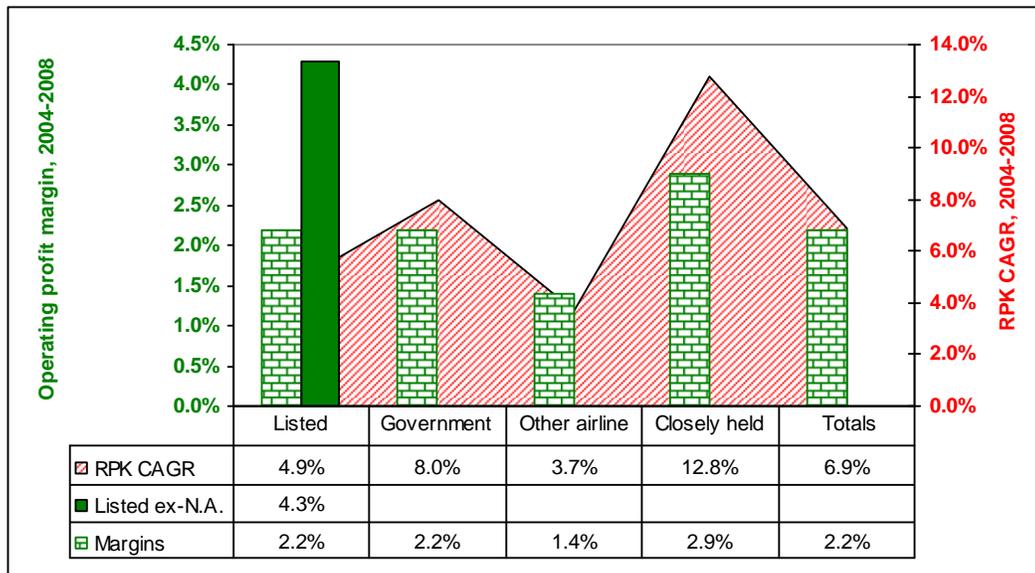


Figure 10: Profits, growth and largest share ownership, 2004-2008

Listed airlines in aggregate achieved the industry average profit levels, while growing at substantially lower rates. These aggregate figures are somewhat distorted by the disastrous performance of North American carriers, marked by Chapter 11 bankruptcies among three of the four largest airlines in the U.S. and the world (United, Delta, and Northwest). When the North American region is excluded, the listed carrier profit margins led the industry, with a 4.3% margin over the period. This performance has been led by the listed European carriers, which have opened a clear path toward airline consolidation and profit-oriented management, including the application of Value-Based Management techniques derived from classical financial theory. The lowest-growth/lowest-profit 'other airline'-owned group has been shown in this paper to be the least likely to employ classical valuation techniques.

The Airline CFOs responding to the author's survey— from airlines representing all ownership patterns - revealed substantial use of the "basic" NPV/PBK valuation methods. Estimation of the all-important discount rate parameter has shown to be challenging even for listed companies, implying that listing and statistical techniques such as CAPM are not in themselves sufficient to capture project risks.

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## Appendix - Airline ownership, production, revenue and profits, 2004-2008

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Ethiopian Airlines</b>	Ethiopia	Africa	100.00%						0.00%	30,553	2,615	141	130
<b>Kenya Airways</b>	Kenya	Africa	22.00%	32.50%	4.36%			26.00%	15.14%	35,524	3,958	444	149
<b>South African Airways</b>	South Africa	Africa	98.20%				1.80%		0.00%	120,161	14,626	133	183
<b>Air Austral</b>	Reunion	Asia-Pacific			26.30%	37.72%			35.98%	14,929	1,331	46	37
<b>Air Calédonie International</b>	New Caledonia	Asia-Pacific	50.28%		43.31%	4.32%		2.09%	0.00%	5,606	0	0	0
<b>Air China</b>	China	Asia-Pacific	55.80%	24.20%				20.00%	0.00%	292,374	28,788	1,538	145
<b>Air Do</b>	Japan	Asia-Pacific			96.07%	3.93%			0.00%	5,060	0	0	0
<b>Air India</b>	India	Asia-Pacific	100.00%						0.00%	93,900	10,787	-16	-1,073
<b>Air Macau</b>	China	Asia-Pacific	5.00%		5.00%	90.00%			0.00%	13,242	0	0	0
<b>Air Madagascar</b>	Madagascar	Asia-Pacific	90.60%					3.10%	6.30%	4,668	0	0	0
<b>Air Mauritius</b>	Mauritius	Asia-Pacific	52.87%				15.50%	31.64%	0.01%	25,897	2,786	76	-73
<b>Air New Zealand</b>	New Zealand	Asia-Pacific	76.50%	12.90%		4.20%		6.30%	0.10%	131,694	13,796	865	609
<b>Air Pacific</b>	Fiji	Asia-Pacific	50.00%					49.97%	0.03%	16,925	0	0	0
<b>Air Tahiti Nui</b>	French Polynesia	Asia-Pacific	64.42%		8.61%	19.92%		7.05%	0.00%	15,689	0	0	0
<b>AirAsia</b>	Malaysia	Asia-Pacific		43.50%	21.60%	30.90%	4.00%		0.00%	37,702	1,241	340	-2
<b>ANA Group</b>	Japan	Asia-Pacific		80.02%	19.98%				0.00%	295,484	63,831	3,114	1,289

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Asiana Airlines</b>	South Korea	Asia-Pacific			9.63%	90.37%			0.00%	111,006	17,056	452	312
<b>Bangkok Airways</b>	Thailand	Asia-Pacific				100.00%			0.00%	5,670	894	28	-8
<b>Biman Bangladesh Airlines</b>	Bangladesh	Asia-Pacific	100.00%						0.00%	22,518	0	0	0
<b>Cathay Pacific</b>	China	Asia-Pacific		25.00%	24.84%	40.00%		10.16%	0.00%	366,340	40,173	1,912	1,342
<b>Cebu Pacific Air</b>	Philippines	Asia-Pacific				100.00%			0.00%	16,167	813	39	6
<b>China Airlines</b>	Taiwan	Asia-Pacific	70.05%						29.95%	159,991	17,731	73	-936
<b>China Eastern Airlines</b>	China	Asia-Pacific	50.30%	38.38%		11.32%			0.00%	225,139	22,299	-2,386	-2,584
<b>China Eastern Airlines Wuhan</b>	China	Asia-Pacific						100.00%	0.00%	16,201	0	0	0
<b>China Southern Airlines</b>	China	Asia-Pacific	50.30%	49.70%					0.00%	333,050	28,558	-741	-630
<b>China Xinhua Airlines</b>	China	Asia-Pacific				40.00%		60.00%	0.00%	26,066	0	0	0
<b>Continental Micronesia</b>	Guam	Asia-Pacific						100.00%	0.00%	22,462	0	0	0
<b>Deccan</b>	India	Asia-Pacific						100.00%	0.00%	6,283	0	0	0
<b>Dragon Air</b>	China	Asia-Pacific						100.00%	0.00%	0	0	0	0
<b>EVA Air</b>	Taiwan	Asia-Pacific		28.00%		72.00%			0.00%	116,302	13,828	-291	-506
<b>Garuda Indonesia</b>	Indonesia	Asia-Pacific	100.00%						0.00%	75,117	6,846	-82	-61
<b>GoAir</b>	India	Asia-Pacific				100.00%			0.00%	2,795	0	0	0
<b>Hainan Airlines</b>	China	Asia-Pacific			12.72%	78.36%			8.92%	96,762	7,500	-113	-135
<b>IndiGo Airlines</b>	India	Asia-Pacific				100.00%			0.00%	8,051	0	0	0

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Japan Airlines Corporation</b>	Japan	Asia-Pacific		100.00%					0.00%	467,859	98,004	769	-756
<b>Japan TransOcean Air</b>	Japan	Asia-Pacific	12.90%			17.00%		70.10%	0.00%	7,874	0	0	0
<b>Jet Airways</b>	India	Asia-Pacific		20.00%		80.00%			0.00%	67,163	9,262	-124	-19
<b>JetLite</b>	India	Asia-Pacific						100.00%	0.00%	8,124	0	0	0
<b>Jetstar</b>	Australia	Asia-Pacific						100.00%	0.00%	37,154	0	0	0
<b>Juneyao Airlines</b>	China	Asia-Pacific				100.00%			0.00%	3,213	0	0	0
<b>Kingfisher Airlines</b>	India	Asia-Pacific				100.00%			0.00%	13,962	1,677	-395	-286
<b>Korean Air</b>	South Korea	Asia-Pacific		61.14%	21.49%	12.13%	5.24%		0.00%	257,511	40,987	1,880	-759
<b>Lion Airlines</b>	Indonesia	Asia-Pacific				100.00%			0.00%	14,239	0	0	0
<b>Malaysia Airlines</b>	Malaysia	Asia-Pacific	72.05%		5.69%		10.72%		11.54%	207,412	18,201	-104	-56
<b>Nippon Cargo Airlines</b>	Japan	Asia-Pacific				100.00%			0.00%	0	5,056	-197	1
<b>Pakistan International Airlines</b>	Pakistan	Asia-Pacific	87.00%			13.00%			0.00%	70,878	5,649	-641	-997
<b>Philippine Airlines</b>	Philippines	Asia-Pacific	4.26%			88.87%	2.75%		4.12%	81,107	6,278	87	150
<b>Qantas</b>	Australia	Asia-Pacific		100.00%					0.00%	462,735	54,389	5,169	3,022
<b>QantasLink</b>	Australia	Asia-Pacific						100.00%	0.00%	11,313	0	0	0
<b>Royal Brunei Airlines</b>	Brunei	Asia-Pacific	100.00%						0.00%	18,037	0	0	0
<b>Shandong Airlines</b>	China	Asia-Pacific		77.20%				22.80%	0.00%	24,798	2,436	98	-7
<b>Shanghai Airlines</b>	China	Asia-Pacific	40.66%	44.69%	14.65%				0.00%	49,667	6,486	45	-196

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Shenzhen Airlines</b>	China	Asia-Pacific				75.00%		25.00%	0.00%	48,283	3,196	0	88
<b>Sichuan Airlines</b>	China	Asia-Pacific				41.00%		59.00%	0.00%	34,499	0	0	0
<b>SilkAir</b>	Singapore	Asia-Pacific						100.00%	0.00%	12,668	0	0	0
<b>Singapore Airlines Group</b>	Singapore	Asia-Pacific	54.70%		45.30%				0.00%	431,098	46,640	4,475	5,093
<b>Skymark Airlines</b>	Japan	Asia-Pacific				100.00%			0.00%	13,693	1,206	-16	-39
<b>Skynet Asia Airways</b>	Japan	Asia-Pacific	3.30%	24.20%		57.60%		14.90%	0.00%	2,899	0	0	0
<b>spiceJet</b>	India	Asia-Pacific		44.00%	17.72%	35.00%			3.28%	10,507	0	0	0
<b>SriLankan Airlines</b>	Sri Lanka	Asia-Pacific	51.05%				5.32%	43.63%	0.00%	44,979	3,134	-26	-20
<b>Thai Airways</b>	Thailand	Asia-Pacific	53.76%		46.24%				0.00%	275,420	24,353	1,162	171
<b>Vietnam Airlines</b>	Vietnam	Asia-Pacific	100.00%						0.00%	58,404	5,543	39	92
<b>Virgin Blue</b>	Australia	Asia-Pacific				74.74%		25.26%	0.00%	83,534	7,453	768	505
<b>Xiamen Airlines</b>	China	Asia-Pacific	40.00%					60.00%	0.00%	45,989	3,237	126	49
<b>Adria Airways</b>	Slovenia	Europe	76.00%		8.00%	13.00%	3.00%		0.00%	4,449	0	0	0
<b>Aegean Airlines</b>	Greece	Europe		23.60%		76.00%			0.40%	14,236	2,833	211	161
<b>Aer Lingus</b>	Ireland	Europe	28.82%	28.29%			16.76%	25.22%	0.91%	68,301	7,391	368	-32
<b>Aeroflot Russian Airlines</b>	Russia	Europe	51.17%			27.00%	19.00%		2.83%	115,727	14,302	1,334	1,135
<b>AeroSvit Airlines</b>	Ukraine	Europe	22.00%			78.00%			0.00%	17,055	0	0	0
<b>Air Astana</b>	Kazakhstan	Europe	51.00%						49.00%	16,683	1,529	74	60

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
Air Berlin	Germany	Europe		44.62%	44.00%	11.42%			0.04%	152,631	13,630	124	-161
Air Europa	Spain	Europe				100.00%			0.00%	71,117	6,827	116	71
Air France-KLM Group	France	Europe	18.70%	81.30%					0.00%	973,826	148,038	5,181	2,623
Air Malta	Malta	Europe	98.00%			2.00%			0.00%	11,813	1,701	-18	-19
Air Nostrum (Iberia Regional)	Spain	Europe			97.50%			3.00%	0.50%	13,309	3,980	101	103
Air One	Italy	Europe				99.00%			1.00%	18,136	3,036	97	35
airBaltic	Latvia	Europe	52.80%				47.20%		0.00%	5,015	0	0	0
Alitalia	Italy	Europe	49.90%		12.41%	35.69%		2.00%	0.00%	177,887	23,638	-1,585	-2,688
Astraeus	UK	Europe			51.00%		49.00%		0.00%	11,688	0	0	0
Austrian Airlines	Austria	Europe		58.50%				41.46%	0.04%	106,483	16,605	-561	-911
Austrian Arrows	Austria	Europe						100.00%	0.00%	14,316	0	0	0
Azerbaijan Airlines	Azerbaijan	Europe	100.00%						0.00%	1,770	0	0	0
Blue Panorama Airlines	Italy	Europe			66.60%	33.40%			0.00%	15,138	0	0	0
Blue1	Finland	Europe						100.00%	0.00%	5,904	0	0	0
bmi	UK	Europe				50.01%		49.99%	0.00%	29,600	8,705	37	-96
bmibaby	UK	Europe						100.00%	0.00%	13,405	0	0	0
Brit Air	France	Europe						100.00%	0.00%	10,704	0	0	0
British Airways	UK	Europe		100.00%					0.00%	559,849	78,303	4,786	2,612

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Brussels Airlines</b>	Belgium	Europe				55.00%		45.00%	0.00%	28,400	5,501	40	30
<b>Cargolux Airlines International</b>	Luxembourg	Europe		34.00%	31.10%			34.90%	0.00%	0	7,818	171	147
<b>CityJet</b>	Ireland	Europe						100.00%	0.00%	4,616	0	0	0
<b>Clickair</b>	Spain	Europe				80.00%		20.00%	0.00%	10,501	0	0	0
<b>Condor Flugdienst</b>	Germany	Europe						100.00%	0.00%	111,137	0	0	0
<b>Corsairfly</b>	France	Europe				100.00%			0.00%	58,379	0	0	0
<b>Croatia Airlines</b>	Croatia	Europe	96.30%		2.20%	1.50%			0.00%	5,034	0	0	0
<b>CSA Czech Airlines</b>	Czech Republic	Europe	61.08%		4.33%	34.59%			0.00%	37,620	5,175	88	34
<b>Cyprus Airways</b>	Cyprus	Europe	69.62%			30.38%			0.00%	16,575	2,073	-163	-146
<b>easyJet</b>	UK	Europe		49.90%		50.10%			0.00%	155,745	15,550	912	786
<b>Edelweiss Air</b>	Switzerland	Europe						100.00%	0.00%	8,321	0	0	0
<b>Eurofly</b>	Italy	Europe			15.74%	38.16%		46.10%	0.00%	0	1,387	-88	-94
<b>Eurowings</b>	Germany	Europe				51.00%		49.00%	0.00%	13,019	4,767	59	51
<b>Finnair</b>	Finland	Europe	57.04%	22.83%	20.13%				0.00%	92,463	13,300	227	185
<b>flybe</b>	UK	Europe				50.00%		15.00%	35.00%	13,479	3,053	77	10
<b>FlyGlobespan.com</b>	UK	Europe		100.00%					0.00%	15,722	1,189	7	3
<b>Futura International Airways</b>	Spain	Europe				100.00%			0.00%	20,624	1,397	32	25
<b>GB Airways</b>	UK	Europe						100.00%	0.00%	19,804	0	0	0

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>germanwings</b>	Germany	Europe						100.00%	0.00%	19,841	0	0	0
<b>Hamburg International</b>	Germany	Europe			50.01%		49.99%		0.00%	3,619	0	0	0
<b>Hello</b>	Switzerland	Europe				100.00%			0.00%	1,624	0	0	0
<b>Iberia</b>	Spain	Europe		72.40%	17.60%			10.00%	0.00%	254,591	34,231	937	1,434
<b>Iberworld Airlines</b>	Spain	Europe				100.00%			0.00%	17,032	1,423	101	67
<b>Icelandair</b>	Iceland	Europe		100.00%					0.00%	20,406	3,664	137	-44
<b>Jat Airways</b>	Serbia	Europe	100.00%						0.00%	4,983	0	0	0
<b>KrasAir</b>	Russia	Europe	51.00%			49.00%			0.00%	21,891	1,291	0	0
<b>Livingston</b>	Italy	Europe				100.00%			0.00%	10,578	837	-3	-8
<b>LOT Polish Airlines</b>	Poland	Europe	67.97%			25.10%	6.93%		0.00%	33,824	4,685	61	265
<b>Lufthansa Group</b>	Germany	Europe		89.44%	10.56%				0.00%	566,249	135,832	7,243	5,234
<b>Luxair</b>	Luxembourg	Europe	23.10%		38.60%			13.00%	25.30%	4,920	2,404	24	82
<b>Malév</b>	Hungary	Europe			49.00%	51.00%			0.00%	20,480	3,266	-12	3
<b>Martinair</b>	Netherlands	Europe						100.00%	0.00%	40,207	6,632	-92	-83
<b>Meridiana</b>	Italy	Europe				84.00%	16.00%		0.00%	14,470	2,670	22	27
<b>Monarch Airlines</b>	UK	Europe				100.00%			0.00%	71,743	3,879	51	27
<b>Monarch Scheduled</b>	UK	Europe						100.00%	0.00%	14,041	0	0	0
<b>MyTravel Airways</b>	UK	Europe				100.00%			0.00%	57,795	0	0	0

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
Norwegian	Norway	Europe		100.00%					0.00%	21,346	2,594	-38	14
Novair	Sweden	Europe				100.00%			0.00%	14,478	0	0	0
Olympic Airlines	Greece	Europe	100.00%						0.00%	35,098	4,143	0	0
Onur Air	Turkey	Europe				100.00%			0.00%	16,864	0	0	0
Régional	France	Europe						100.00%	0.00%	11,627	0	0	0
Rossiya Airlines	Russia	Europe	100.00%						0.00%	0	0	0	0
Ryanair	Ireland	Europe		81.24%	14.26%	4.50%			0.00%	204,220	14,684	2,379	2,069
S7 Airlines	Russia	Europe	25.50%			74.50%			0.00%	62,069	5,063	104	7
SAS Group	Denmark	Europe	49.99%	50.01%					0.00%	53,747	40,537	367	-627
SATA International	Portugal	Europe	100.00%						0.00%	7,457	0	0	0
Silverjet	UK	Europe				100.00%			0.00%	1,190	0	0	0
SkyEurope Airlines	Slovakia	Europe		71.90%	28.10%				0.00%	12,197	0	0	0
Spanair	Spain	Europe				5.10%		94.90%	0.00%	39,476	0	0	0
Sterling Airlines	Denmark	Europe				100.00%			0.00%	0	2,309	-35	-64
SunExpress	Turkey	Europe						100.00%	0.00%	21,148	0	0	0
Swiss	Switzerland	Europe						100.00%	0.00%	117,857	0	0	0
Swiss European Air Lines	Switzerland	Europe						100.00%	0.00%	3,156	0	0	0
TAP Portugal	Portugal	Europe	100.00%						0.00%	85,954	11,204	-102	-237

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>TAROM</b>	Romania	Europe	100.00%						0.00%	8,957	1,765	77	94
<b>Thomas Cook Airlines (UK)</b>	UK	Europe				100.00%			0.00%	86,919	3,356	258	172
<b>Thomas Cook Airlines Belgium</b>	Belgium	Europe						100.00%	0.00%	10,414	0	0	0
<b>Thomsonfly</b>	UK	Europe				100.00%			0.00%	104,072	0	0	0
<b>THY Turkish Airlines</b>	Turkey	Europe	48.25%	51.75%					0.00%	128,531	15,459	1,013	1,373
<b>Transaero</b>	Russia	Europe				20.00%	80.00%		0.00%	42,387	3,152	13	15
<b>Transavia Airlines</b>	Netherlands	Europe						100.00%	0.00%	41,970	0	0	0
<b>Travel Service Airlines</b>	Czech Republic	Europe				34.00%		66.00%	0.00%	10,593	0	0	0
<b>TUIfly</b>	Germany	Europe				80.10%		19.90%	0.00%	39,667	0	0	0
<b>Ukraine International Airlines</b>	Ukraine	Europe	61.60%		15.90%			22.50%	0.00%	10,192	0	0	0
<b>Ural Airlines</b>	Russia	Europe		19.50%	14.50%	66.00%			0.00%	10,630	0	0	0
<b>UTair Aviation</b>	Russia	Europe		24.31%	75.69%				0.00%	16,216	1,771	0	17
<b>Uzbekistan Airways</b>	Uzbekistan	Europe	100.00%						0.00%	21,169	0	0	0
<b>VIM Airlines</b>	Russia	Europe		25.00%	75.00%				0.00%	14,326	0	0	0
<b>Virgin Atlantic Airways</b>	UK	Europe				51.00%		49.00%	0.00%	179,343	19,711	158	316
<b>Volga-Dnepr Airlines</b>	Russia	Europe			84.00%			16.00%	0.00%	0	2,222	0	50
<b>Vueling Airlines</b>	Spain	Europe		50.90%	37.80%		11.30%		0.00%	16,436	1,441	-156	-88
<b>XL Airways France</b>	France	Europe				100.00%			0.00%	10,591	0	0	0

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>XL Airways UK</b>	UK	Europe				100.00%			0.00%	20,806	0	0	0
<b>Air Algérie</b>	Algeria	Middle East	100.00%						0.00%	17,511	3,353	32	120
<b>Air Arabia</b>	UAE	Middle East	51.00%		49.00%				0.00%	12,125	0	0	0
<b>Atlas Blue</b>	Morocco	Middle East	100.00%						0.00%	2,682	0	0	0
<b>Egyptair</b>	Egypt	Middle East	100.00%						0.00%	58,365	5,654	33	72
<b>EI AI</b>	Israel	Middle East	21.97%	31.36%	39.50%			8.12%	0.95%	81,490	8,736	128	46
<b>Emirates</b>	UAE	Middle East	100.00%						0.00%	387,713	43,122	4,715	4,096
<b>Etihad Airways</b>	UAE	Middle East	100.00%						0.00%	55,533	4,813	0	0
<b>Gulf Air</b>	Bahrain	Middle East	100.00%						0.00%	76,387	6,349	-321	-293
<b>Iran Air</b>	Iran	Middle East	100.00%						0.00%	45,912	2,779	-64	-42
<b>Iran Aseman Airlines</b>	Iran	Middle East	100.00%						0.00%	8,934	0	0	0
<b>Israil</b>	Israel	Middle East				100.00%			0.00%	1,803	0	0	0
<b>Jazeera</b>	Kuwait	Middle East		70.00%		30.00%			0.00%	0	0	0	0
<b>Kuwait Airways</b>	Kuwait	Middle East	100.00%						0.00%	36,490	4,279	-123	-452
<b>Middle East Airlines (MEA)</b>	Lebanon	Middle East	99.37%						0.63%	11,332	2,042	297	248
<b>Oman Air</b>	Oman	Middle East	80.00%		20.00%				0.00%	10,829	0	0	0
<b>Qatar Airways</b>	Qatar	Middle East	50.01%			49.99%			0.00%	122,757	9,787	0	0
<b>Royal Air Maroc</b>	Morocco	Middle East	95.39%					3.82%	0.79%	42,374	5,950	285	150

<b>Airline operation</b>	<b>Country</b>	<b>Region</b>	<b>Gov't</b>	<b>Listed</b>	<b>Institutional</b>	<b>Closely held</b>	<b>Employees</b>	<b>Other airline</b>	<b>Other/ Not stated</b>	<b>5-year RPK</b>	<b>5-year Revenue</b>	<b>5-year Op. Profit</b>	<b>5-year Net Profit</b>
<b>Royal Jordanian Airlines</b>	Jordan	Middle East	100.00%						0.00%	30,424	3,642	95	67
<b>Saudi Arabian Airlines</b>	Saudi Arabia	Middle East	100.00%						0.00%	144,051	20,783	124	-104
<b>Tunisair</b>	Tunisia	Middle East	74.42%	20.00%				5.58%	0.00%	27,165	3,596	39	95
<b>ABX Air</b>	USA	North America		100.00%					0.00%	0	6,372	217	179
<b>Aeroméxico</b>	Mexico	North America				100.00%			0.00%	74,744	12,038	162	137
<b>Air Canada</b>	Canada	North America		25.00%		75.00%			0.00%	373,615	45,152	1,062	1,247
<b>Air Canada Jazz</b>	Canada	North America						100.00%	0.00%	26,049	2,936	283	268
<b>Air Caraïbes</b>	Guadeloupe	North America				85.00%			15.00%	15,040	0	0	0
<b>Air Jamaica</b>	Jamaica	North America	100.00%						0.00%	19,836	2,040	0	0
<b>Air Transat</b>	Canada	North America				100.00%			0.00%	58,640	4,354	0	59
<b>Air Wisconsin</b>	USA	North America				100.00%			0.00%	18,234	3,166	311	194
<b>AirTran Airways</b>	USA	North America		100.00%					0.00%	112,422	9,246	152	-199
<b>Alaska Airlines</b>	USA	North America		100.00%					0.00%	141,808	16,202	-135	-85
<b>Allegiant Air</b>	USA	North America		100.00%					0.00%	16,333	0	0	0
<b>Aloha Airlines</b>	USA	North America		100.00%					0.00%	11,805	1,679	-113	-170
<b>American Eagle Airlines</b>	USA	North America						100.00%	0.00%	60,284	0	0	0
<b>AMR Corporation</b>	USA	North America		100.00%					0.00%	1,090,637	108,621	-101	-2,958
<b>ATA Airlines</b>	USA	North America						100.00%	0.00%	48,126	4,073	-573	-1,249

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
Atlantic Southeast Airlines	USA	North America						100.00%	0.00%	37,412	0	0	0
Atlas Air	USA	North America		100.00%					0.00%	0	4,647	299	256
Aviacsa	Mexico	North America				100.00%			0.00%	10,046	0	0	0
Chautauqua Airlines	USA	North America						100.00%	0.00%	25,297	0	0	0
Click Mexicana	Mexico	North America						100.00%	0.00%	1,612	0	0	0
Comair	USA	North America						100.00%	0.00%	42,480	0	0	0
Continental Airlines	USA	North America		100.00%					0.00%	632,626	63,553	573	-214
Delta Air Lines	USA	North America		89.30%			10.70%		0.00%	956,620	90,215	-12,469	-22,531
Evergreen International Airlines	USA	North America				100.00%			0.00%	0	1,939	172	28
ExpressJet	USA	North America		100.00%					0.00%	74,476	6,246	74	32
FedEx	USA	North America		100.00%					0.00%	0	110,397	7,431	0
Freedom Airlines	USA	North America						100.00%	0.00%	2,850	0	0	0
Frontier Airlines	USA	North America		100.00%					0.00%	66,756	5,687	-96	-366
GoJet	USA	North America				100.00%			0.00%	2,994	0	0	0
Hawaiian Airlines	USA	North America		100.00%					0.00%	57,374	4,671	202	-76
Horizon Air	USA	North America						100.00%	0.00%	20,716	0	0	0
JetBlue Airways	USA	North America		49.00%	15.00%	17.00%		19.00%	0.00%	178,692	11,560	566	44
Kalitta Air	USA	North America				100.00%			0.00%	0	1,554	7	6

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>Mesa Airlines</b>	USA	North America		100.00%					0.00%	49,970	5,994	234	6
<b>Mexicana</b>	Mexico	North America				100.00%			0.00%	74,799	4,100	0	0
<b>Midwest Airlines</b>	USA	North America						100.00%	0.00%	26,693	2,929	-570	-572
<b>North American Airlines</b>	USA	North America			100.00%				0.00%	13,559	0	0	0
<b>Northwest Airlines</b>	USA	North America		100.00%					0.00%	601,551	48,661	420	-4,123
<b>Omni Air International</b>	USA	North America				100.00%			0.00%	8,344	959	72	82
<b>Pinnacle Airlines</b>	USA	North America		100.00%					0.00%	33,883	3,954	319	174
<b>Polar Air Cargo</b>	USA	North America		51.00%				49.00%	0.00%	0	1,263	-36	-31
<b>Republic Airlines</b>	USA	North America		60.85%	39.15%				0.00%	11,583	5,361	957	273
<b>Shuttle America</b>	USA	North America						100.00%	0.00%	20,331	0	0	0
<b>SkyWest Airlines</b>	USA	North America						100.00%	0.00%	106,031	13,105	1,304	612
<b>Southwest Airlines</b>	USA	North America		100.00%					0.00%	526,373	44,084	3,453	2,119
<b>Spirit Airlines</b>	USA	North America			51.00%	49.00%			0.00%	44,033	3,063	-74	-165
<b>Sun Country Airlines</b>	USA	North America			100.00%				0.00%	16,018	0	0	0
<b>Trans States Airlines</b>	USA	North America				100.00%			0.00%	9,153	0	0	0
<b>United Airlines</b>	USA	North America		100.00%					0.00%	921,727	93,447	-3,950	-27,742
<b>United Parcel Service (UPS)</b>	USA	North America		100.00%					0.00%	0	22,118	1,530	88
<b>US Airways Express</b>	USA	North America						100.00%	0.00%	17,011	0	0	0

Airline operation	Country	Region	Gov't	Listed	Institutional	Closely held	Employees	Other airline	Other/ Not stated	5-year RPK	5-year Revenue	5-year Op. Profit	5-year Net Profit
<b>US Airways Group</b>	USA	North America		100.00%					0.00%	382,648	53,102	-1,421	-2,327
<b>USA 3000 Airlines</b>	USA	North America				100.00%			0.00%	5,195	0	0	0
<b>WestJet Airlines</b>	Canada	North America		100.00%					0.00%	79,641	7,947	776	456
<b>World Airways</b>	USA	North America						100.00%	0.00%	17,385	3,533	98	34
<b>Aerolíneas Argentinas</b>	Argentina	South America	20.00%			77.00%	3.00%		0.00%	49,172	4,114	45	-68
<b>AeroRepública</b>	Colombia	South America						99.90%	0.10%	12,360	0	0	0
<b>Austral Lineas Aereas</b>	Argentina	South America	5.00%					95.00%	0.00%	14,665	0	0	0
<b>Avianca</b>	Colombia	South America				100.00%			0.00%	38,692	5,873	267	215
<b>BRA Transportes Aéreos</b>	Brazil	South America			20.00%	80.00%			0.00%	5,702	0	0	0
<b>Copa Airlines</b>	Panama	South America				51.00%		10.00%	39.00%	33,314	3,394	598	453
<b>GOL Transportes Aéreos</b>	Brazil	South America		100.00%					0.00%	75,860	9,586	717	-100
<b>Grupo TACA</b>	El Salvador	South America				100.00%			0.00%	31,300	3,546	0	0
<b>LAN Airlines</b>	Chile	South America		26.80%		73.20%			0.00%	103,064	15,692	1,566	1,196
<b>OceanAir</b>	Brazil	South America				100.00%			0.00%	2,877	0	0	0
<b>SAM Colombia</b>	Colombia	South America				6.00%		94.00%	0.00%	2,546	0	0	0
<b>TAM Linhas Aéreas</b>	Brazil	South America				100.00%			0.00%	132,956	17,446	777	-227
<b>Varig</b>	Brazil	South America						100.00%	0.00%	79,369	0	0	0