How Should Airlines Structure?

A Comparison of Low Cost and Legacy Carriers

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1. Executive Overview

The difference in financial performance between low-cost carriers (such as Southwest Airlines and JetBlue) and legacy carriers (such as American Airlines, Delta Airlines, and United Airlines) has been stark, especially between 2001 and 2004. During this period, low-cost carriers earned an operating income of 0.934 cents per available seat mile (ASM), whereas legacy carriers lost 3.933 cents per ASM[1].

The objective of this paper is to first identify the significant drivers of this difference in performance based on statistical analysis. For example, we identify the number of employees per ASM as a key driver of operating income. The data clearly shows that low-cost carriers have consistently operated with a lower number of employees per ASM than legacy carriers. We then focus on a key difference in network and operating structure between low-cost and legacy carriers – whereas low-cost carriers operate point-to-point networks, legacy carriers operate hub-and-spoke networks. We try to explain the difference in performance between low-cost and legacy carriers in the context of the difference in this operating structure. Our goal is to identify advantages that are likely to persist and those that are not.

Our results show that there are two sets of drivers that influence an airline's operating income: cost drivers and revenue drivers. We have found that an airline can either choose to be a cost-driven or revenue-driven airline, but it is hard to be both. Maintaining a low number of employees per ASM, a low salary per employee, and a low fuel cost allows an airline to lower its operating expense and therefore achieve a cost advantage. Maintaining high revenue per revenue passenger mile (RPM), a high load factor, and a longer flight stage allows an airline to increase its sales and therefore achieve a revenue advantage.

Given the difference in operating structures, we argue that low-cost carriers with point-to-point networks have an advantage in terms of employees per ASM that allows them to lower cost. In contrast, legacy carriers with hub-and-spoke networks have an advantage in terms of revenue per RPM and load factors that allows them to grow revenue. Their international lanes allow legacy carriers to increase the average flight stage, further enhancing revenue. This difference explains why legacy carriers do better in high-demand environments where they are better able to exploit opportunities to increase their load factors and revenue per RPM.

[1] Airline Monitor

Our conclusion, based on the drivers we have identified, points to areas where low-cost and legacy carriers should attempt to excel. Low-cost carriers should expand their networks with a focus on lowering their employees per ASM to lower cost. This favors a point-to-point network operating along high-traffic lanes. In contrast, legacy carriers should design their network with a focus on opportunities to increase the revenue per RPM, their load factors and the length per stage. This favors a focus on connecting spoke cities through a hub to increase revenue-enhancing opportunities and load factors as well as a growth in international lanes to increase the length of each stage. Thus, low-cost and legacy carriers have complementary strengths and should operate complementary networks. In the long term, we see both types of airlines surviving and even thriving as long as they stay focused on improving the drivers that are of importance to their success.

2. Key Market Drivers that Influence Operating Income

Operating data between 1994 and 2004 was gathered from Airline Monitor for both low-cost carriers ("LCCs")[2] and legacy carriers ("Legacies")[3]. A statistical analysis was performed on airline performance over this period comparing the two groupings of carriers. From this analysis, we identified the following six drivers which can be classified into two main groups.

<u>COST FACTORS</u>

1. Lower number of employees per ASM or per departure
2. Lower salary expense per employee
3. Lower cost per gallon of fuel

<u>REVENUE FACTORS</u>

4. Larger revenue per RPM
5. Higher load factor
6. Longer flight stage

We then used multi-factor regressions to verify that these factors have a statistically significant relationship with operating income (operating income per ASM and operating income per departure). Combined, these six factors account for almost all of the variation in profitability by airlines over the past decade. All six factors were significant in multiple categories of overall airline performance. A summary of the significance of these factors is shown in the table below.

[2] Low Cost Carrier group includes: AirTran , jetBlue, America West, Southwest, ATA, Spirit, and Frontier
[3] Legacy Carrier group include: US Airways, Northwest, Continental, United, Delta, American, Alaska

	Expenses per ASM	Expenses per Departure	Revenues per ASM	Revenues per Departure	Operating Income per ASM	Operating Income per Departure
Employees per ASM	Significant	Significant			Significant	Significant
Salary per employee	Significant	Significant			Significant	Significant
Cost per gallon of fuel	Significant	Significant			Significant	Significant
Revenue per RPM			Significant	Significant	Significant	Significant
Load factor			Significant	Significant	Significant	Significant
Length of flight stage			Significant	Significant		Significant

TABLE 1: Significant Factors Impacting Costs, Revenues and Operating Income for Airlines

Over the past decade, low cost carriers have performed better than legacy carriers in terms of employees per ASM and the salary per employee. Legacy carriers have maintained an advantage on the revenue side: in revenue per RPM, load factor, and flight stage length. The cost of fuel per gallon has not been significantly different between the two types of airlines.

In the rest of this section, we first describe each factor in detail and highlight the competitive advantage. In the following section, we then link the underlying operating structure and discuss sustainability of the competitive advantage. In the final section, we will discuss these ideas collectively and recommend future strategies for airlines.

Factors Favoring Low Cost Carriers

Over the decade from 1994 to 2004, Low Cost Carriers had significantly lower employees per ASM and salary expense per employee than legacy carriers.

Employees per Available Seat Mile (ASM) or Per Departure

Employees per available seat mile is a measure of labor productivity at an airline that depicts the number of employees at the airline per seat mile flown. Employee-related expenses, including salary and pensions, are by far the highest cost factor for any airline and account for over a third of all costs.[4] Our analysis indicates that employees per ASM is a very significant factor that impacts costs and profitability. The ability of an airline to manage this expense is therefore of utmost importance. When comparing low-cost and legacy carriers in Figure 1, it is clear that the low-cost carriers have consistently maintained a lower number of employees per ASM, and this has been an important reason for their profitability.

[4] 36.3% average from 1994 – 2004, Airline Monitor

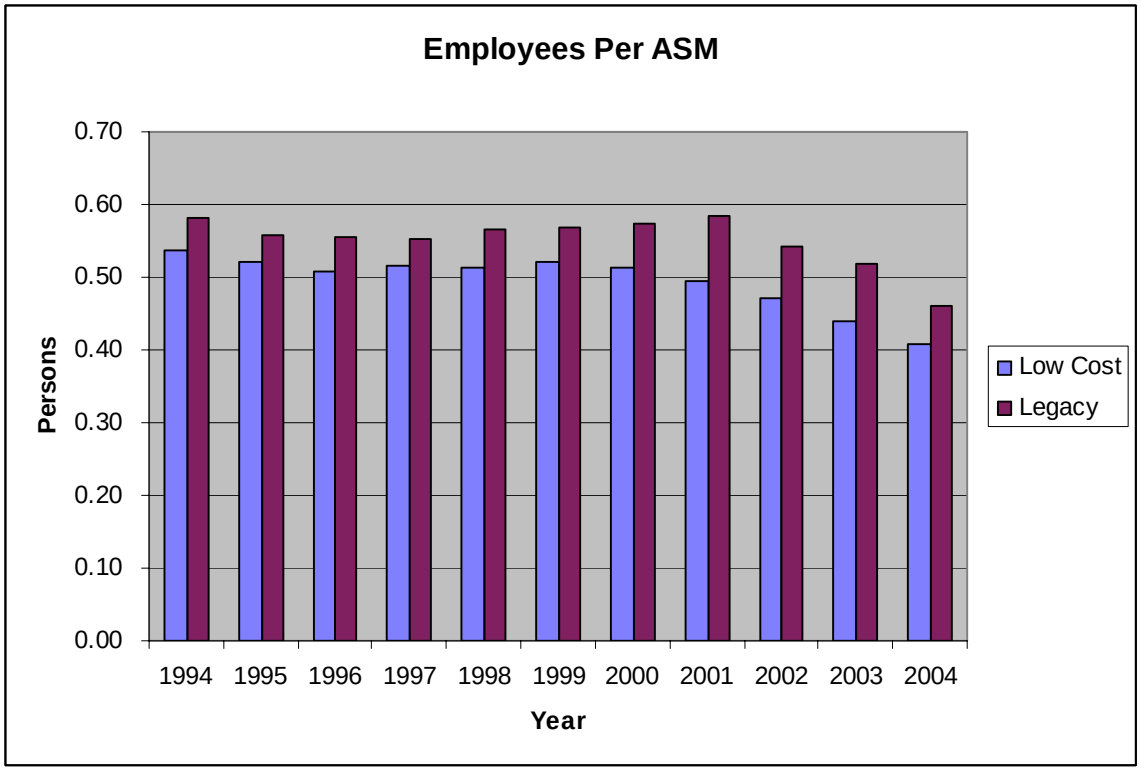


Figure 1: A Comparison of Employees Per ASM Between Low-Cost and Legacy Carriers

Figure 2 below is an example of the way in which low-cost airlines have maintained a lower number of employees per ASM relative to legacy carriers. This chart shows that pilots with low-cost carriers fly a significantly higher number of hours than pilots at legacies.

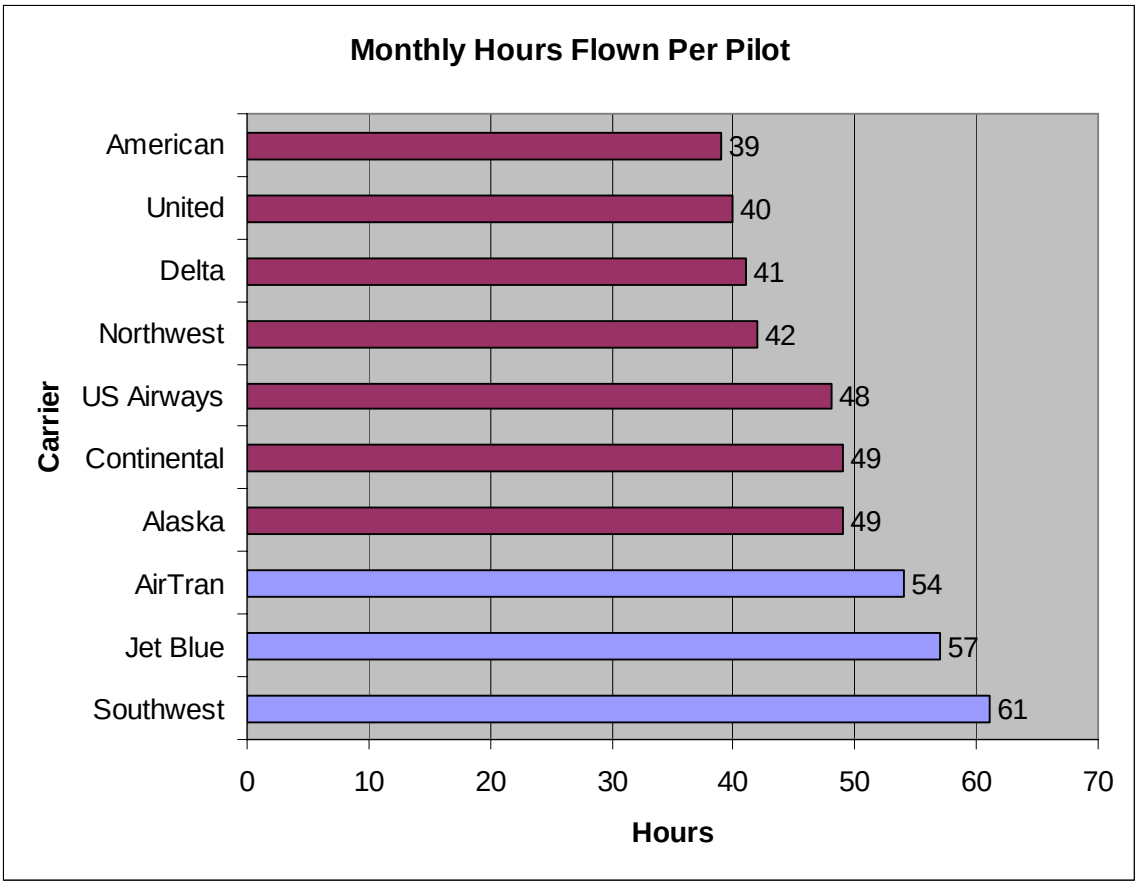


Figure 2: A Comparison of Pilot Usage by Various Low-Cost and Legacy Carriers, 2001[5]

Salary Expense Per Employee

Our analysis indicates that salary expense per employee is another significant factor that impacts airline costs and profitability. The figure depicts the average annual salary of a typical airline employee. Average employee salary costs differ dramatically between legacy and low-cost carriers, with almost a $20,000 difference in annual salary per employee over the period from 1994 to 2004, as shown in Figure 3.

[5] *Bureau of Transportation Statistics, 2002*

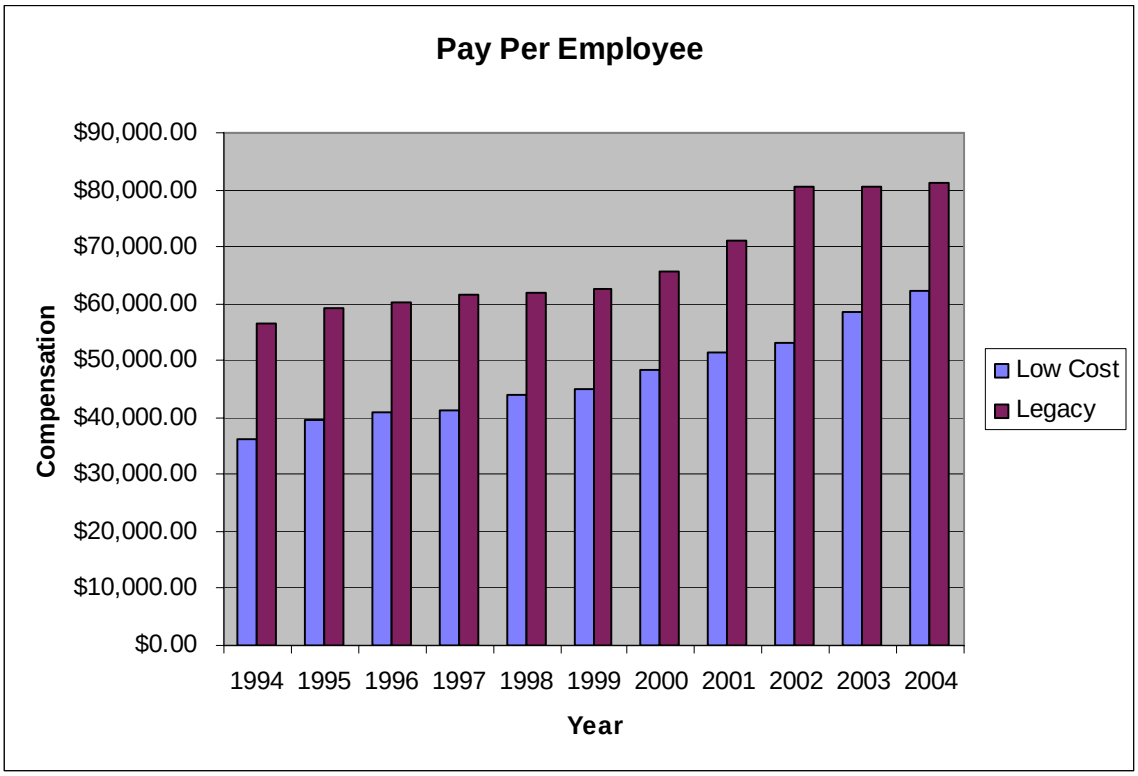


Figure 3: A Comparison of Salary Expense Per Employee between Low-Cost and Legacy Carriers

It is somewhat surprising that low-cost carriers have maintained such a significant difference in terms of salary per employee. A look at employees per ASM and salary expense per employee figures between 2001 and 2004 are revealing. While both low-cost carriers and legacy carriers decreased the employees per ASM over that period from 0.494 to 0.409 and 0.585 to 0.461 respectively, their salary per employee increased significantly from $51,546 to $62,188 and $71,156 to $81,258 respectively. This could be because most of the employee reduction came at the junior level, where there are lower salaries. The net impact was that any increase in labor productivity was wiped out by the increased salary expense per employee.

As legacy carriers have reworked their contracts and shed part of their pension responsibilities, it does seem that low-cost carriers will see their current salary-per-employee advantage shrink in the future.

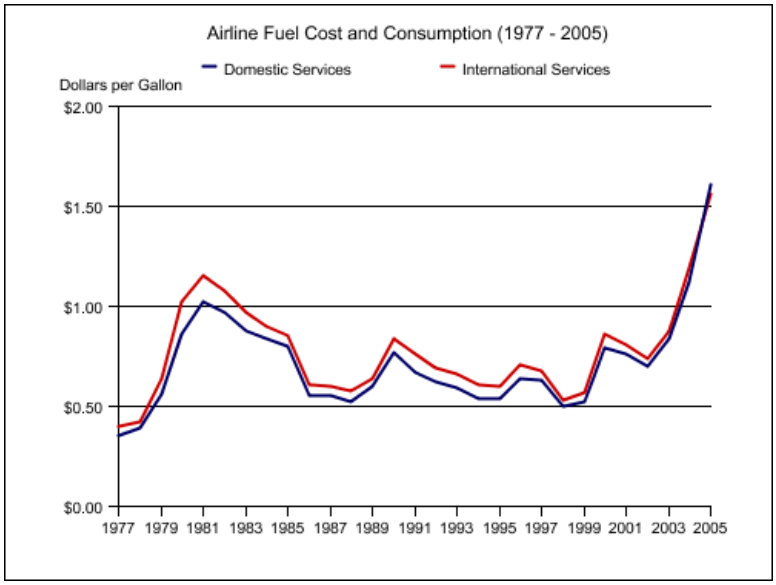
Factors Favoring Neither Carrier

Over the decade from 1994 to 2004 neither carrier type had a significant advantage in terms of the average fuel cost per gallon.

Fuel Cost

The third major factor impacting an airline's profitability is fuel cost per gallon. Fuel represents approximately one-seventh of an airline's total expenses[6] and is a significant driver of airline expenses and profitability. After being relatively stable for over 20 years, fuel costs have doubled over the past five years (see Figure 4). But there is little that airlines can do to manage fuel costs beyond leveraging scale and using financial derivatives to hedge fuel prices.

Figure 5 shows that in almost all years other than 2004, legacy carriers have enjoyed a slight fuel-cost advantage over low-cost airlines in spite of the higher price paid for international services. Any differences in fuel costs have primarily resulted from the scale of purchase, and, in recent years, from successfully hedging fuel costs (Southwest Airlines). Fuel costs will continue to play an important role in the profitability of each airline. In the long run, however, this factor is unlikely to be a differentiator between the profitability of low-cost and legacy carriers.



Source: Bureau of Transportation Statistics
Figure 4: Airline Fuel Costs per Gallon

[6] 14.12% and 15.73% for Legacy and Low Cost Carriers, respectively; Airline Monitor

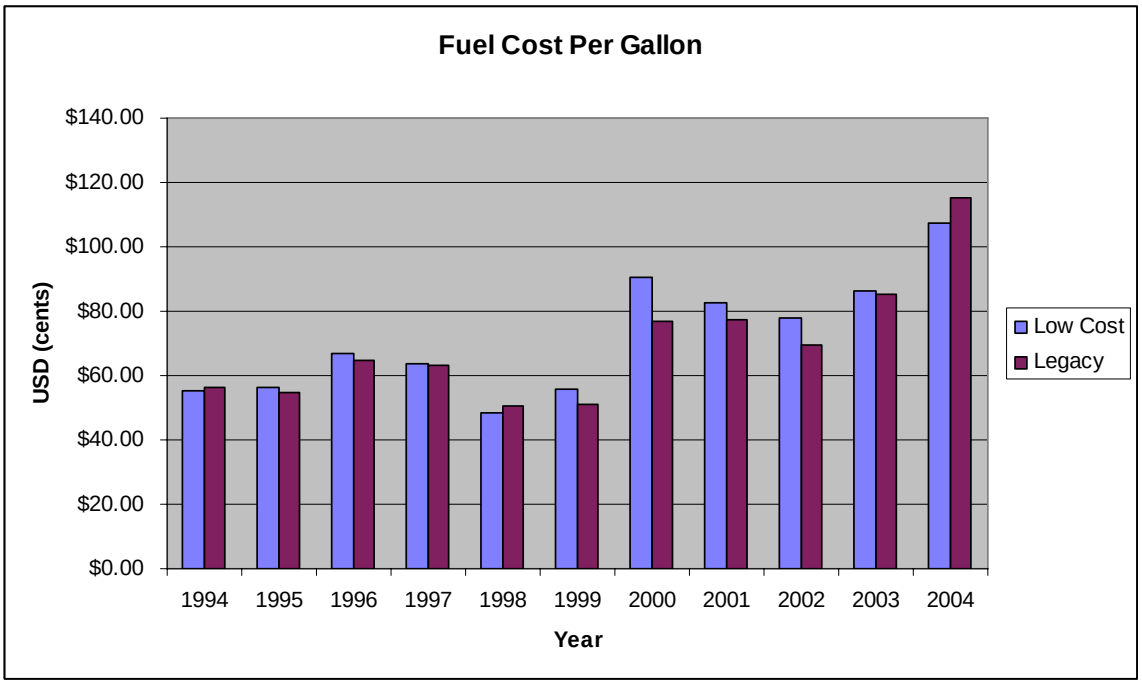


Figure 5: A Comparison of Fuel Costs Between Low Cost and Legacy Carriers

Factors Favoring Legacy Carriers

Over the decade from 1994 to 2004, legacy carriers have had higher revenue per RPM, load factor and average length of flight stage compared to low cost carriers.

Revenue per Revenue Passenger Mile (RPM)

Whereas the first three factors linked to operating cost, the fourth significant factor we identify is the revenue per RPM, an indicator of revenue efficiency. The revenue per RPM depicts the average price that an airline is able to charge per mile flown by a passenger. Figure 6 shows that legacy carriers have consistently been able to charge a higher price than low-cost carriers, for a higher revenue per RPM.

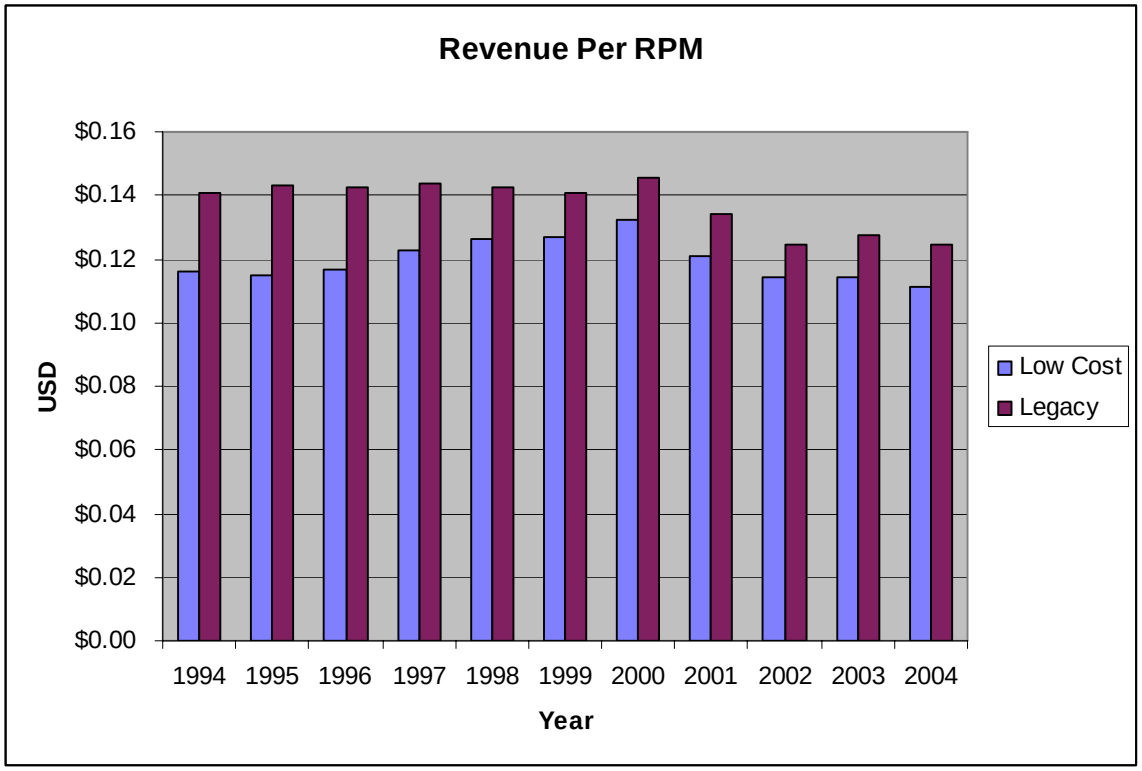


Figure 6: A Comparison of Revenue Per RPM Between Low-Cost and Legacy Carriers

Load Factor

The fifth main factor impacting profits is the load factor, a measure of asset utilization. An airline's load factor is the ratio of the number of occupied seats to the total number of seats flown. This ratio captures how efficiently an airline uses its fixed assets when flying. The load factor indicates how full planes are in flight, but it does not capture how much time they actually spend flying every day. Our analysis indicates that in the U.S., the load factor is a much more significant factor in determining the impact on airline profits, as opposed to block hour utilization, which simply indicates the number of hours per day that planes actually fly.

This is explained by the fact that lease and plane ownership costs in the U.S. represent only about 3% to 4 % of an airline's operating costs, whereas labor and fuel contribute over 50% of the costs (see Table 2). Labor and fuel costs increase each time a flight is added irrespective of the number of passengers flying. Thus, in high labor cost countries like the United States, it is more important for an airline to improve the revenue generated when the plane is flying (load factor and revenue per RPM) rather than to keep a plane flying for longer periods (block hour utilization). In low labor cost countries like India, however, block hour utilization is likely to play a more significant role.

	Fiscal Year 2004					
	Southwest			Delta Airlines		
(in millions of $)		% Cost	% Rev		% Cost	% Rev
Salaries, wages, and benefits	$ 2,443	40.88%	37.41%	$ 6,338	34.61%	42.25%
Fuel and oil	$ 1,000	16.73%	15.31%	$ 2,924	15.97%	19.49%
Maintenance materials and repairs	$ 458	7.66%	7.01%	$ 681	3.72%	4.54%
Aircraft rentals	$ 179	3.00%	2.74%	$ 716	3.91%	4.77%
Landing fees and other rentals	$ 408	6.83%	6.25%	$ 875	4.78%	5.83%
Depreciation and amortization	$ 431	7.21%	6.60%	$ 1,244	6.79%	8.29%
Total Operating Expenses	$ 5,976			$ 18,310		
Total Operating Revenue	$ 6,530			$ 15,002		

Table 2: A Comparison of Expense Categories of Two Carriers

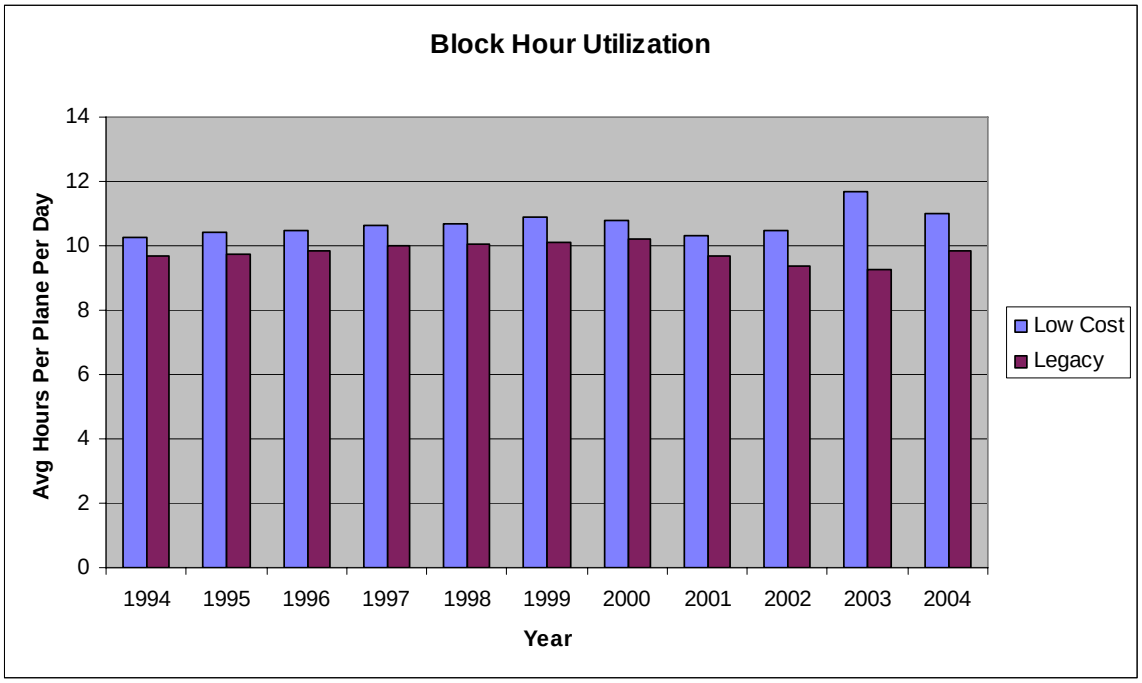


Figure 7: A Comparison of Asset Utilization between Low Cost and Legacy Carriers

As is evident from Figure 7, low-cost carriers have consistently performed better than legacy carriers in terms of the number of block hours they get per day from each plane. Our statistical analysis, however, indicates that this is not a significant driver of performance in the U.S. and does not help the low-cost carrier profits to the extent we might have expected.

In contrast, as shown in Figure 8, legacy carriers have maintained significantly higher load factors than low-cost carriers between 1995 and 2004. In point-to-point networks (typically used by low-cost carriers), load factors are only affected by traffic on a single lane. In contrast, in hub-and-spoke networks (typically operated by legacy carriers), every possible destination contributes to traffic on each lane. Given that hub-and-spoke networks are inherently designed to increase load factors, this advantage in terms of load factors is likely to be sustainable for legacy carriers.

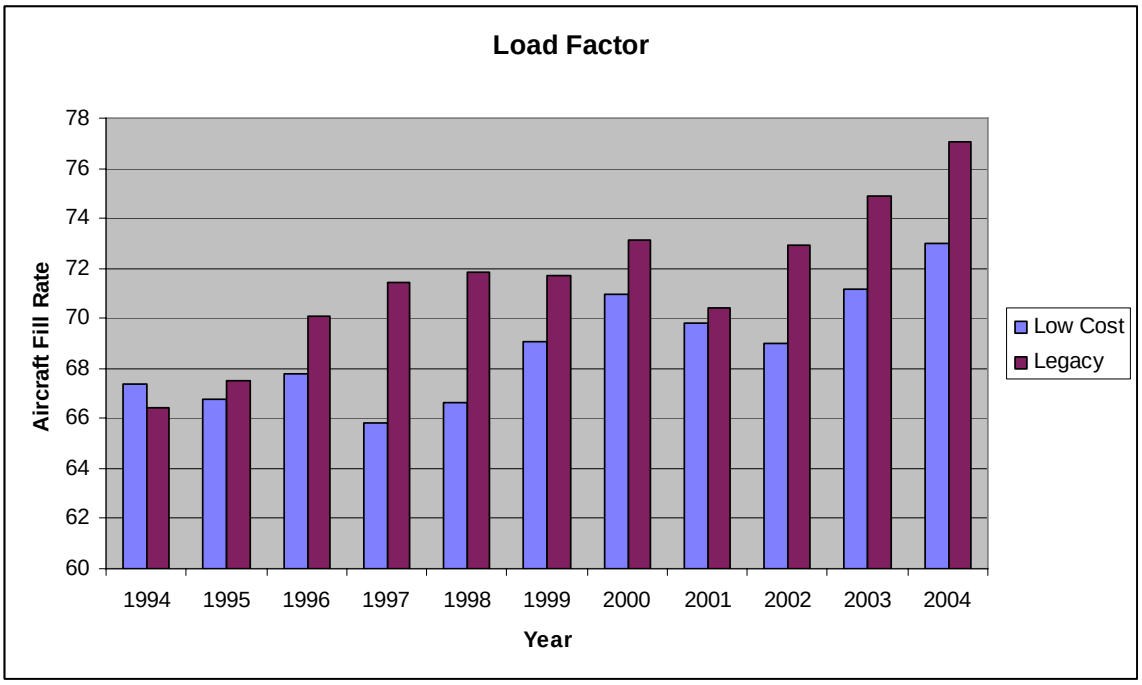


Figure 8: Load Factors for Low-Cost and Legacy Carriers.

Flight Stage

The final significant factor is the length of flight stage. Flight stage is the average distance of flight per leg of travel. Longer flight stages lessen the overhead impact of takeoffs and landings, particularly in congested airports. Longer flight stages also reduce exposure to cascading network disruptions caused by flight delays. Our analysis shows that the flight stage is not significant when considering the operating income per ASM, but it is significant when considering the operating income per departure.

As Figure 9 indicates, legacy carriers have significantly longer flight stages as compared to low-cost carriers. This difference primarily arises from the fact that legacy carriers also fly an international network along with their national routes. Our analysis thus indicates that international routes can be a valuable asset for legacy carriers, especially if they are able to maintain reasonable load factors.

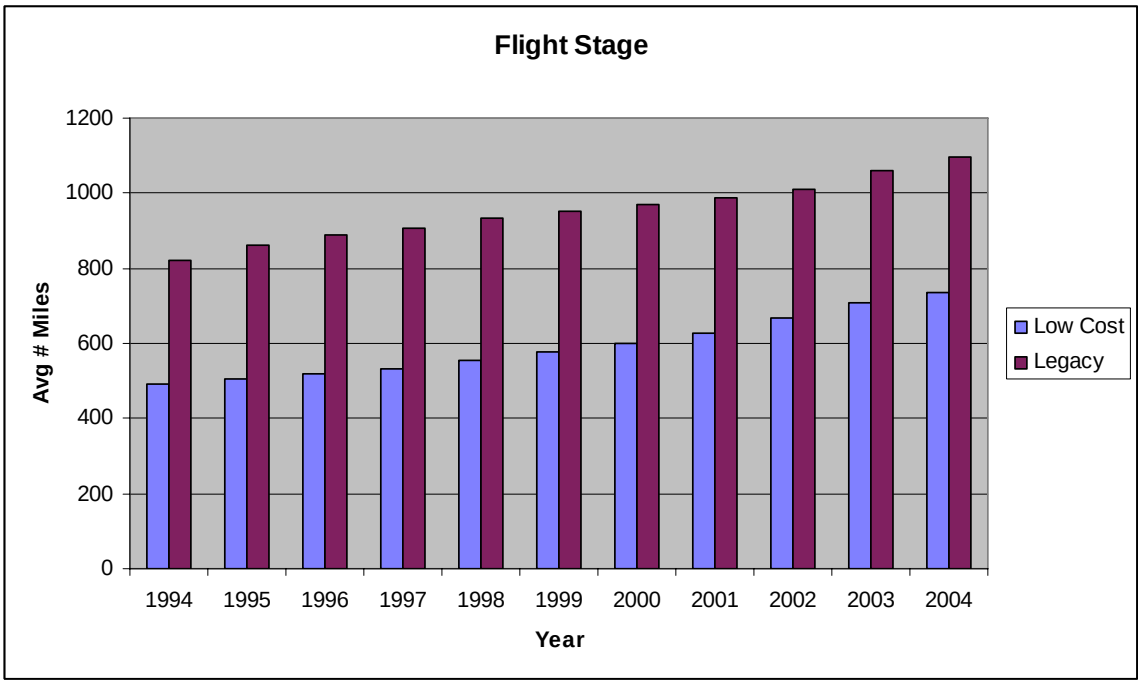


Figure 9: Comparison of flight stage across low cost and legacy carriers

3. Why the Difference in Factor Performance Across Airline Types?

In this section we will discuss, by factor, why there is a difference in performance between low-cost airlines and legacy carriers. The goal is to isolate factors where differences arise because of variations in network and operating structure. Because these differences are likely to be sustainable in the long term, such an analysis also helps us identify how an airline can further focus its positioning and improve its profitability.

Employees per Available Seat Mile

Employees at an airline can be divided into two groups: in-flight and ground personnel. Ground staff can further be divided between those at airports and those who handle maintenance (part of which is often outsourced today). There is no inherent reason that the number in-flight personnel per ASM will be significantly different between low-cost and legacy carriers, because these requirements are often mandated by the FAA. In fact, if anything, a legacy carrier's longer flight stages offer an advantage in this area. Thus, most of the difference between low-cost and legacy carriers in this area relates to ground personnel. Here, low-cost airlines have an advantage in employee cost per ASM.

Our analysis concludes that the network and operating structure of low-cost carriers enables them to maintain a lower ground-employee per ASM over the long-term. These carriers' point-to-point operating structure allows them to provide a more level load for the ground crew. At low-cost carriers, both departing and arriving flights are better

staggered over the day, because they are not designed to connect. In contrast, legacy carriers must maintain excess labor capacity on the ground to deal with the spikes of departure and arrival loads during peak times. As a result, ground staff are better utilized at a low-cost carrier than is possible at a legacy carrier that operates a hub-and-spoke network.

Some of the legacy carriers have tried to address this issue during the recent demand downturn. In 2002, American Airlines began engaging in load smoothing at Chicago O'Hare airport. By spreading arrival and departure banks and better balancing their volume across a day, American was able to increase the utilization of its workforce. Henry Joyner, the senior vice president of operations for American Airlines commented on the impact of this change: "With flights distributed more evenly throughout the day, we can operate more efficiently, thereby reducing our costs." He estimates that these efforts allowed American to increase its departures per employee by 8%.[7]

Within limits, such a strategy may help legacy carriers contain costs, but beyond a point, the increase in time between connections will hurt the basic principle of operating a hub-and-spoke network: providing good connectivity. In the long run, low-cost carriers with their point-to-point networks are likely to maintain an advantage in employees per ASM; This will continue to be one of the major sources of their low-cost position.

Salary Expense Per Employee

Given that labor costs account for over a third of total expenses for any airline, it is no surprise that the ability to control this cost is a major difference between low-cost carriers and legacy carriers. One might have expected the labor costs between these two carrier types to slowly converge, as low-cost carriers (and hence their workforces) age. However, there has been no noticeable convergence trend in pay per employee over the past decade.

The difference is partly because low-cost carriers are not burdened by hefty pension plans or post-retirement insurance benefits (which have become grossly under-funded in recent years, as health care costs escalated to an estimated $33 billion for legacy carriers in 2004[8]). However, legacy carriers have begun to negotiate reductions in these benefits. Examples include U.S. Airways' conversion of its pension plan to a 401(k) plan and the United Airlines agreement to transfer its pension plans to the Pension Benefit Guaranty Corporation (PBGC), the federal agency that insures pensions. In contrast, low-cost carriers have not been saddled with these issues, so they have no way to lower salaries per employee. Thus, we expect the difference in salary expense per employee to shrink across low cost and legacy carriers going forward.

A surprising fact is that Southwest Airlines pays the highest salaries to workers in many industry categories. As Figure 10 shows, in 2005 Southwest pilots earned the highest salaries per hour in the industry compared to other airlines' pilots with the same experience (12 years) on the same aircraft (Boeing 737 or Airbus 320). In addition to high wages, Southwest has also maintained a profit-sharing plan, which has turned many

[7] The Airline Strategy Awards, 2003
[8] Airline Crisis and Labor, CRA International

of its senior employees into millionaires. The leading low-cost airlines are able to provide higher compensation for the higher utilization and workload placed on the employees. For example, a senior flight attendant at Southwest can make more than $100,000, as compared to United's high of $50,000 for the same type of employee.[9]

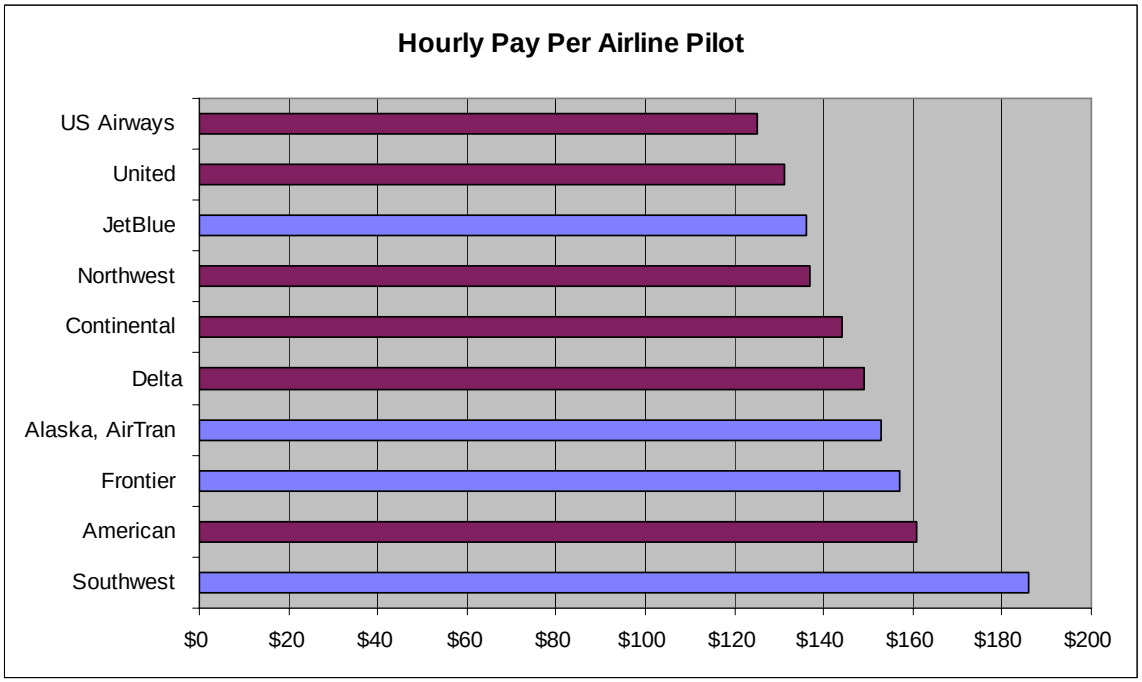


Figure 10: Comparison of Pilot Salaries for Various Low-Cost and Legacy Carriers, 2005

Fuel Costs

Since fuel is usually an airline's second-highest cost (after labor), any reduction in fuel costs or consumption directly leads to higher profits. From an operating perspective, the only factor likely to impact fuel costs is the scale of purchase, and even scale will only have a marginal impact. The ability to hedge fuel costs is very important but is independent of the network and operating structure and is unlikely to favor any one airline over the other consistently. Underscoring the impact of the importance of these financial instruments on airline profitability, U.S. Airways estimates that its $88 million net loss in 2000 Q4 would actually have been a profit of $38 million if the company's fuel costs had not increased.[10]

Southwest's use of fuel hedges has been well documented. For 2006, Southwest has secured contracts for more than 70% of its fuel needs at the equivalent of $36 per barrel of oil. However, this will steadily erode over the years, and it is estimated that by 2009, Southwest's hedge position will drop to about 30% of its fuel at a cost of $39 per barrel. While fuel costs have a significant impact on airline profits, they do not differentiate

[9] "On Some Flights, Millionaires Serve the Drinks", New York Times, May 15, 2006

[10] Carter, David A., Rogers, Daniel A. and Simkins, Betty J., "Fuel Hedging in the Airline Industry: The Case of Southwest Airlines", SSRN, July 2004

between a low-cost carrier and a legacy carrier. In the long run, we do not see this as a factor that can be used strategically to differentiate an airline.

Revenue per Revenue Passenger Mile

Revenue management, achieved by extracting revenue from passengers based on their willingness to pay, has played an important role in the airline industry since the 1980s. Revenue management is inherently much more important for an airline operating a hub-and-spoke network than one operating a point-to-point network, because a hub-and-spoke network has a much higher variety of itineraries on each flight. A flight on a point-to-point network is likely to have passengers for one or two destinations. In contrast, a flight from a spoke city to a hub city is likely to have passengers going to a large number of destinations. Revenue management is even more important for legacy carriers, because they target both the business and leisure segments, whereas the low-cost carriers do not attempt to differentiate between the segments to the same extent.

Thus, a good revenue management system that can increase the revenue per RPM is very important for the success of hub-and-spoke carriers. Most legacy carriers have taken this to heart and in recent years have tried to be creative in growing the revenue per RPM. Northwest Airlines, for instance, has taken customer segmentation to a new level by increasing charges on most domestic flights for exit-row seats or aisle seats near the front of the cabin. Called "Coach Choice," the program will incorporate about 5% of seats on Northwest's domestic flights.[11]

The difference in the revenue per RPM between low-cost and legacy carriers is evident from Figure 6. As shown in a recent study by Gordon and Jenkins (1999) in the context of Northwest Airlines, the ability to connect spoke cities through a hub offers a legacy carrier an opportunity to increase its revenue per RPM. With a hub-and-spoke network in place, and a history of differentiating the service offering to passengers, we feel that legacy carriers will continue to enjoy an advantage in terms of the revenue per RPM they are able to generate.

Load Factor

As is evident from Figure 8, legacy carriers have consistently maintained higher load factors than low-cost carriers. We feel this is one area where legacy carriers can continue to exploit their hub-and-spoke network and the many connection opportunities it provides to differentiate themselves from low-cost carriers. Historically, legacy carriers have focused on hub traffic because of a perceived "hub premium" in terms of fares. As shown by Lee and Prado (2002), the perception of a premium was almost entirely due to passenger mix, in that a greater percentage of business travelers frequented these legs and therefore placed a greater value on the variety of flight options.

Furthermore, Gordon and Jenkins (1999) argue that, in the context of Northwest, connecting traffic pays the premium, not those passengers whose beginning or final destination is the hub. This hub discount may be explained by the fact that hub-to-hub

[11] "Today in the Sky", USA Today

traffic often has the most direct competition with low-cost carriers who also tend to fly similar routes. The existence of intense competition on these routes has driven prices down towards commoditization. However, due to the lower volumes, spoke-to-spoke lanes remain an area where low-cost carriers cannot compete. Thus, legacy carriers have the most potential opportunity to grow both load factors and revenue per RPM through spoke traffic. This advantage cannot be matched by their low-cost counterparts, whose low-cost position is based on operating a point-to-point network.

For example, Netherlands-based KLM Royal Dutch Airlines has extended the use of revenue management strategies to analyze the estimated profit impact of offering the best product to the best channel. A new system called True Origin & Destination (O&D) allows KLM to assess each reservation according to a customer's total profitability looking across the entire network. The system has enabled KLM to both increase revenue per RPM and grow load factors to more than 78 percent.[12]

Flight Stage

For national flights within the United States, there is no reason that the flight stage should be significantly different for low-cost or legacy carriers, especially as low-cost carriers begin to fly more coast-to-coast routes. While low-cost carriers often start with a regional focus that results in shorter stages, but over time they tend to expand to include longer legs. For example, Southwest has matured from a short-haul, high-frequency carrier into a long-haul, high-frequency carrier.[13] Other low-cost carriers like JetBlue have also added long-haul flights across the United States.

There is one area, however, where the difference between point-to-point and hub-and-spoke carriers is likely to persist – international flights. A point-to-point carrier will always have greater difficulty operating international flights because of its inability fly people from across the country to the origin point of an international flight. This forces it to primarily fly a national network. Given their advantage with international flights, we feel that legacy carriers will continue to enjoy longer flight stages relative to low-cost carriers.

4. How Should Airlines Structure?

The six key drivers of performance naturally break up into two categories – cost and revenue. The number of employees per ASM (or departure), salary expense per employee, and fuel costs are primary drivers of cost. Revenue per RPM, load factor, and length of flight stage are primary drivers of revenue. Our analysis shows that different airline structures accentuate the benefits of each of these drivers, and certain drivers are sustainable in the long term whereas others are not:

[12] "In the Real World, Who's Flying When?", Unisys
[13] The Airline Strategy Awards, 2005

	Point-to-Point	Hub-and-Spoke	... Sustainable?
1) Employees Per ASM	√√√		Yes
2) Pay Per Employee	√√		No
3) Cost of Fuel Per Gallon	√	√	No
4) Revenue Per RPM		√√√	Yes
5) Length of Flight Stage		√√	Yes
6) Load Factor		√√	Yes

Successful low-cost airlines have flourished because of low employees per ASM and low salary expense per employee. The point-to-point network structure naturally favors a low number of employees per ASM. The advantage for low-cost carriers in terms of salary per employee is not related to their network structure and is not likely to persist far into the future. Thus, in the long term, low-cost carriers should work hard to ensure that they are able to maintain their advantage of having a lower number of employees per ASM (departure).

Unlike low-cost carriers, legacy carriers have had more of a schizophrenic personality, and this has hurt them in terms of financial performance. From our analysis, their attempts to reduce the number of employees per ASM (departure) are hindered by their hub-and-spoke structure and do not allow them to match the low-cost carriers. They have some likelihood of success if they were to focus their low-cost subsidiaries and run them like point-to-point carriers. Their hub-and-spoke operation, however, can never match the cost structure of the low-cost carriers because of the inherent disadvantage in terms of the number of employees per ASM (departure). Thus, the hub-and-spoke operations must exploit any advantage they can in terms of revenue per RPM, load factors, and the length of the flight stage. For national travel, this suggests a focus on traffic between spoke cities. Such a focus is likely to increase load factors and perhaps revenue per RPM, particularly given the findings of Gordon and Jenkins (1999). Such a national network should also support long-haul international flights. We see such a network as having the best possibility of exploiting the inherent advantages it offers in terms of revenue per RPM, load factor, and flight stage.

Our analysis indicates that an airline can either choose to be a cost-driven or revenue-driven airline, but it is hard to be both. Point-to-point network structures are better suited for cost-driven airlines, whereas hub-and-spoke networks are better suited for revenue-driven airlines. Scale provides an advantage both in terms of cost and revenues, but it seems that scale matters more for a hub-and-spoke structure. A low-cost airline can keep its employees per ASM low even if it only flies between a pair of hub cities on a regular basis. A hub-and-spoke carrier, in contrast, must connect a variety of spoke cities (preferably feeding an international network) to excel in terms of the three revenue factors – revenue per RPM, load factor, and flight stage. Thus, further consolidation among the hub-and-spoke legacy carriers may be essential for improved financial performance. In the low-cost category, in contrast, we are likely to see regular entrants as long as they can keep a low number of employees per ASM (departure) by picking high-volume lanes on which to fly point-to-point.

Appendix

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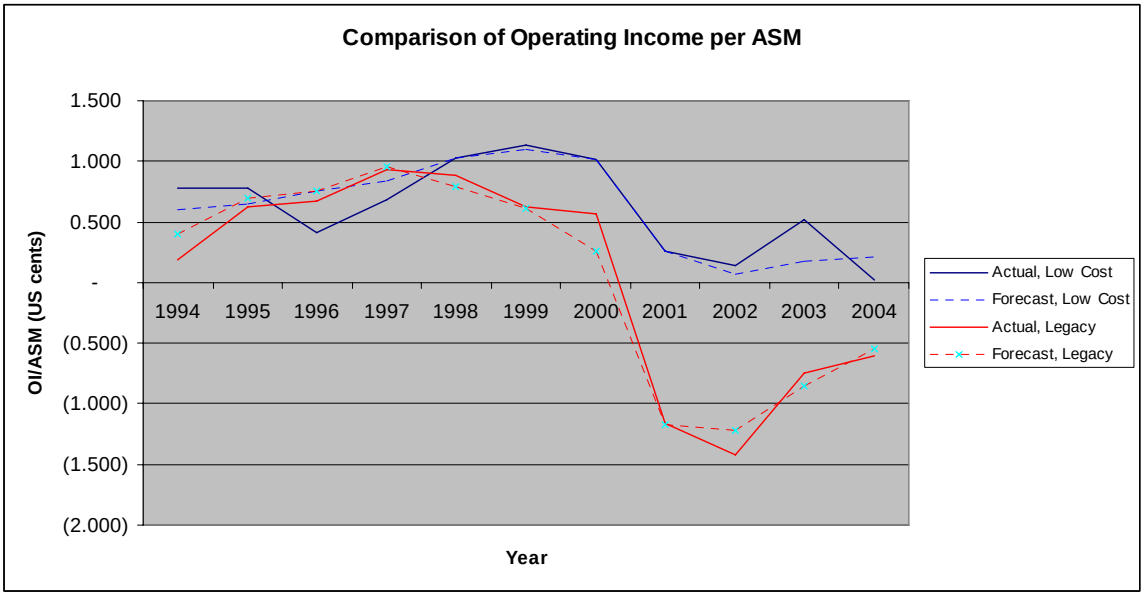
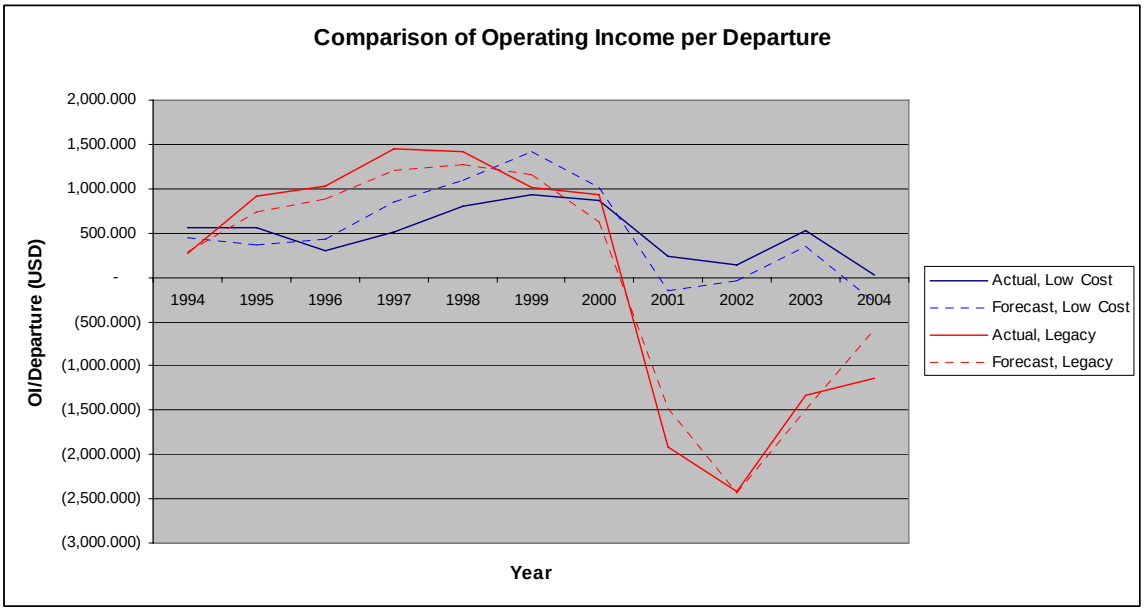
Comparison of Operating Income between Low Cost and Legacy carriers

Operations	Actual OI per Scheduled ASM - ¢	Forecast OI per Scheduled ASM - ¢	Actual OI per Departure - $	Forecast OI per Departure - $	Pay / Empl. ('000 $)	Cost per Gallon (¢)	Rev/RPM - (¢)	Load Factor	Emp/ASM (mil)
1994 - LC	0.778	0.596	556.883	439.444	36.315	55.340	11.141	0.574	0.537
1995	0.784	0.643	567.893	358.397	39.577	56.414	11.347	0.567	0.522
1996	0.417	0.750	308.791	425.272	40.806	66.866	11.579	0.570	0.509
1997	0.679	0.832	517.367	854.548	41.253	63.705	12.079	0.563	0.516
1998	1.021	1.026	807.557	1,092.362	43.963	48.541	12.280	0.560	0.514
1999	1.136	1.102	929.609	1,415.577	45.111	55.851	12.401	0.580	0.521
2000	1.013	1.011	862.007	1,014.872	48.388	90.645	12.959	0.596	0.514
2001	0.258	0.254	231.361	(149.412)	51.546	82.704	11.902	0.560	0.494
2002	0.138	0.073	131.788	(34.843)	52.954	77.922	11.253	0.547	0.470
2003	0.517	0.174	526.690	342.332	58.460	86.551	11.231	0.553	0.439
2004	0.020	0.210	21.628	(287.326)	62.188	107.582	10.859	0.577	0.409
1994 - LEG	0.188	0.402	264.537	291.589	56.407	56.504	14.084	0.561	0.581
1995	0.625	0.696	917.732	745.341	59.372	54.526	14.287	0.562	0.558
1996	0.675	0.749	1,024.991	878.913	60.210	64.630	14.268	0.578	0.556
1997	0.937	0.960	1,451.066	1,212.576	61.689	62.929	14.386	0.590	0.552
1998	0.888	0.796	1,414.136	1,277.222	61.925	50.660	14.243	0.583	0.567
1999	0.628	0.613	1,019.937	1,163.017	62.564	51.077	14.087	0.580	0.569
2000	0.570	0.255	935.499	625.055	65.752	76.640	14.572	0.578	0.573
2001	(1.160)	(1.175)	(1,920.861)	(1,476.112)	71.156	77.584	13.419	0.542	0.585
2002	(1.420)	(1.224)	(2,422.238)	(2,435.966)	80.544	69.660	12.457	0.555	0.542
2003	(0.750)	(0.852)	(1,335.585)	(1,490.620)	80.395	85.247	12.740	0.568	0.519
2004	(0.603)	(0.548)	(1,133.487)	(584.936)	81.258	115.401	12.442	0.583	0.461


Comparison of Operating Income per ASM
1.500
1.000
0.500
-
(0.500)
(1.000)
(1.500)
(2.000)
OI/ASM (US cents)
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year
Actual, Low Cost
Forecast, Low Cost
Actual, Legacy
Forecast, Legacy


Comparison of Operating Income per Departure
2,000.000
1,500.000
1,000.000
500.000
-
(500.000)
(1,000.000)
(1,500.000)
(2,000.000)
(2,500.000)
(3,000.000)
OI/Departure (USD)
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year
Actual, Low Cost
Forecast, Low Cost
Actual, Legacy
Forecast, Legacy

Regressions

SUMMARY OUTPUT - Operating Income Per ASM

Regression Statistics	
Multiple R	0.974761636
R Square	0.950160247
Adjusted R Square	0.930224346
Standard Error	0.188337951
Observations	22

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	6	10.1435019	1.69058365	47.66076	6.29E-09
Residual	15	0.53206776	0.035471184		
Total	21	10.6755697			

	Coefficients	*Standard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	-2.08308316	2.30616141	-0.90326859	0.380661	-6.99855	2.832384	-6.99855	2.83238351
Pay / Empl. ('000 $)	-0.06172824	0.01990078	-3.10179946	0.00729	-0.104146	-0.019311	-0.104146	-0.01931072
Cost per Gallon (¢)	-0.01393545	0.00440716	-3.16200156	0.006446	-0.023329	-0.004542	-0.023329	-0.00454181
Rev/RPM - (¢)	0.43713633	0.09030496	4.840668	0.000216	0.244656	0.629617	0.244656	0.62961679
Load Factor	12.40521111	3.6630625	3.386568237	0.004068	4.597578	20.21284	4.597578	20.212844
Emp/ASM (mil)	-12.8455348	2.06941802	-6.20731757	1.68E-05	-17.25639	-8.434675	-17.25639	-8.43467476
Avg. Flight Stage ('000 miles)	1.337079159	1.43446433	0.932110428	0.366041	-1.720409	4.394567	-1.720409	4.39456748

SUMMARY OUTPUT - Operating Income per Departure

Regression Statistics	
Multiple R	0.9562234
R Square	0.91436318
Adjusted R Square	0.88010846
Standard Error	360.375133
Observations	22

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	20799797.73	3466632.956	26.693052	3.41085E-07
Residual	15	1948053.544	129870.2363		
Total	21	22747851.28			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Ipper 95.0%*
Intercept	-12186.0789	3778.23571	-3.2253358	0.0056623	-20239.19765	-4132.96	-20239.19765	-4132.96
Emp/Departure	-142940.904	25866.6327	-5.52607315	5.814E-05	-198074.3266	-87807.48	-198074.3266	-87807.48
Rev/RPM - (¢)	728.308094	174.27252	4.179133312	0.0008062	356.8550118	1099.761	356.8550118	1099.761
Pay / Empl. ('000 $)	-163.650777	38.92993351	-4.20372608	0.0007671	-246.6279653	-80.67359	-246.6279653	-80.67359
Avg. Flight Stage	22.3096802	4.316505746	5.168458357	0.0001145	13.10926603	31.51009	13.10926603	31.51009
Load Factor	10642.2752	7090.498525	1.500920593	0.1541307	-4470.76454	25755.32	-4470.76454	25755.32
Cost per Gallon (¢)	-20.0113526	8.687212136	-2.30354138	0.0359771	-38.52770691	-1.494998	-38.52770691	-1.494998

Research Methodology (not to be included)

The authors used data aggregated by the source Airline Monitor to conduct a statistical analysis of airline performance over the past decade. From this data, six (6) key factors were found to have a significant influence on airline profitability. The authors also used supporting arguments from other sources to justify and explain the uncovered causes.