

## **Airlines within airlines: an analysis of US network airline responses to Low Cost Carriers**

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### **Abstract**

The establishment of Low Cost Carriers offshoots by network carriers has three possible objectives: to spin off profitable businesses; to see off low cost competition in key markets; and to establish a test-bed for adapting low cost business processes to their mainline operations. It is argued that US network carrier offshoots have failed on all three counts. The significant cost differences between network and Low Cost Carriers are identified, and it is shown that network carriers have made little inroads into closing this gap, whether or not they set up Low Cost Carriers offshoots. Some reasons for the failure of the offshoots are proposed by examining operating differences: mixed fleets, keeping interlining and two class cabins and the lack of progress on reducing labour costs. Union restrictions and the lack of separation from the main airline were crucial.

Keywords: US network carrier responses to LCCs; US airline productivity; US airline costs

## 1. Background

The network model for scheduled airline service has delivered market growth and in good years modest profits, increased productivity and declining average fares over the past twenty or more years. However, even prior to the events and aftermath of 9/11 its efficacy was becoming increasingly questioned. Some commentators have suggested that hubs would be by-passed, and point-to-point operations take a much greater share of the market. Alternatively, can the network or legacy<sup>1</sup> carriers reduce labour costs sufficiently in the longer term to meet the new competition?

First in North America, and more recently in Europe, low cost point-to-point airlines have offered low fares that have led to high, profitable, growth. These airlines have been helped by the declining attractiveness of congested, hub airports and high walk-up fares of network carriers. The recent focus on security has further exacerbated hub airport delays.

The Low Cost Carrier (LCC) business model mantra is simplicity. This helped to get costs down to 40-50% of incumbent airline costs (see Doganis, 2001). With higher load factors and a marked labour cost advantage, the resulting drop in fares of 60% has resulted in the creation of new markets and traffic growing to between 3-4 times previous levels on some routes (Roberts Roach & Associates, 2004). As LCCs have grown they have increasingly overlapped with network carrier markets. For example

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<sup>1</sup>These airlines are referred to both as network and legacy carriers, and occasionally full-service carriers. They usually target both business and leisure passengers, and facilitate on-line and interline connections through their own or alliance partner hubs.

Southwest started transcontinental flights in the US and selected Philadelphia, an existing network carrier hub city, as a base for expansion.

Network airlines have responded in two ways:

- The establishment of ‘low cost’ no frills divisions or ‘airlines within airlines’ (applying all or some elements of the new business model)
- Attempts to remove a significant amount of cost from their operations, without changing their business model or reducing service levels to their business passengers

The first strategy has three possible objectives:

- a) To spin off profitable businesses;
- b) To see off low cost competition in key markets (eg Song vs JetBlue);
- c) To establish a test-bed for adapting low cost business processes to their mainline operations.

The first objective would be very hard to achieve in today’s competitive climate. This would in any case take a number of years to achieve, and has only so far been achieved by British Airways with their low cost offshoot ‘go’, operated as an entirely separate subsidiary company. A combination of the last two objectives is the most likely motive. Graf (2004) also cites the exploitation of economies of scale and scope as a key objective, but, if this were the case, it has been singularly unsuccessful (as will be shown below for the US carriers).

The second strategy focuses on trying to introduce greater efficiency and lower costs overall without the low cost offshoot. In North America, examples of the first are Air

Canada, United, Delta, Continental (earlier on) and US Airways. Examples of the second are American, Northwest, America West and (later on) Continental.

In Europe, British Airways initially used the first strategy to gain entry into what was seen as a new market, and to compete with the fast growing low cost airlines such as Ryanair and easyJet. It was not seen so much as a means of evaluating new processes, and indeed an important reason for its subsequent disposal (at a profit) was the possibility that it undermined any attempts to significantly reduce mainline costs.

Much has been written about the plight of the network carriers, the future of the hub or network model and the low cost carriers themselves.<sup>2</sup> Brueckner et al. (1992) found evidence of the importance of networks in reducing costs, but more recent work by Wei and Hansen (2003) found that increasing aircraft size (to meet denser traffic flows across networks), especially over shorter stage distances, does not reduce unit costs as much as expected. Pil and Holweg (2003) suggested that the ‘failure of the hub approach’ will be due to attacks both from the new point-to-point discount airlines as well as from a new generation of small business jets. Hubs have been debated with growing intensity since the rapid growth of low cost point-to-point operations both in North America and the EU since the middle of the 1990s. Significant moves by US majors to improve hub profitability occurred in the mid-1990s, with a number of hub closures in the US and a shift from ‘directional’ to ‘continuous’ hubbing (Treitel, 1996).

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<sup>2</sup> The Unisys R2A Scorecards provide a comprehensive analysis of both low cost and legacy carriers in the US, with the fundamental problems described in their first volume (Unisys, 2002).

For example, Northwest moved at this time to re-structure its network and strengthen its hubs. It had been a staunch defender of the network model from the early 1990s to the present day, arguing that by setting up low cost offshoots US majors like United ‘risked losing their brand identity by falling between two markets’ (O’Toole, 1994). They also doubted at that time that Southwest’s threats to enter long-haul markets would materialise. According to Henry Joyner, SVP Planning of American Airlines, their airline did not try the low cost model because:

*‘There’s not enough benefit to justify the difference that you make, treating one group of customers in a different way from others. Without significant cost-savings, you just cause brand confusion.’* (Calder, 2002)

More recent support has come from Button (2002) who re-affirmed the strength of the hub concept by exploding some of the myths put forward by its critics. Still (2002) suggested that hubs should be strengthened by achieving higher yields to cover their higher costs, focusing on core cities and offering global access. He also concluded that copying Southwest was not the answer, nor flying only point-to-point routes. Hansson et al (2003) propose ‘redesigning the airline’s network around the needs of non-stop passengers, and making connections a by-product of the system ...’. Most recently, Taneja (2004) foresees the convergence of low cost and network models, the latter being seen as invalid in today’s marketplace.

Whether the network carriers’ hub model has a future or not, they clearly face erosion of a significant amount of point-to-point traffic across their networks. This paper will

evaluate the degree to which this challenge is best met by the establishment of low cost offshoots, based on evidence from the US.

First the network airline low cost entity operational and service characteristics will be compared with those of the stand-alone low cost airlines. Two airlines have started a second attempt at low cost entry (Delta and United), and their latest versions will be compared to earlier failures. This will provide indications as to how far future cost reductions might be possible from these experiments.<sup>3</sup>

Next, the key sources of LCC cost difference will be examined, and how successful the network carrier offshoots have been in narrowing that difference. Prices of key inputs and productivity are then examined from 1995 to 2002 for both a sample of network airlines that includes those that have and those that have not set up low cost offshoots. The aim here is to assess how far the offshoots have helped network carriers in eliminating such differences.

## **2. Attempts by US Network Carriers to form Low Cost Offshoots**

This section will examine previous examples of US scheduled ‘network’ airlines establishing new operations using a different business model to their existing services. The models will be compared according to various operational features to assess the degree to which increased productivity and lower input prices might have been achieved.

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<sup>3</sup> Most financial and some operational data is not made public since none of the offshoots are managed through separate subsidiaries companies. Analysis in these terms was thus not possible.

The new operations were all channelled through divisions of the company, rather than stand-alone subsidiaries. This was undoubtedly one of the biggest problems, and made it impossible to achieve low cost work practices and approaches to suppliers.<sup>4</sup> The other major obstacle was union resistance, and, in the case of United Shuttle and Metrojet, a cap on LCC type operations: the unions limited Metrojet to 25% of total US Airways' block hours, and United's Shuttle to 130 B737 sized aircraft (with hub to gateway routes off limits). This amounted to around 20% of United 1998 fleet.

-- TABLE 1 ABOUT HERE --

The LCC offshoots are described in Table 1, which gives some of their key features. CALite was discontinued by 1995, the start date of the above analysis, but is shown as a background to some of the progress on costs that Continental subsequently made. This LCC and the US Airways LCC brand, Metrojet, took a significant share of total capacity, and so would have been expected to make some impact.

Two major US airlines, Delta and United decided to re-enter the low cost market in 2003 and 2004 respectively. United were at the time under Chapter 11 protection. Since their last attempts, the original low cost model (founded by Southwest) had developed a number of variants. The first of these was JetBlue, which offered distinctly higher service levels. The second was AirTran that successfully combined low costs with a hub/interline strategy.

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<sup>4</sup> British Airways launched their LCC (go) as a separate subsidiary, and it often found that it obtained lower prices from suppliers if it argued that it got no support from its parent.

All the above cases were ‘airlines within airlines’, although they only accounted for a minority of each airline’s system. None of them was financially viable (except perhaps some Delta Express routes), and many of the routes operated were cash negative. Ironically, the earlier attempts were more successful on feeder than point-to-point routes (especially Continental). All tended to copy Southwest’s fare structure, and reduce costs by:

- Substantial reductions in in-flight catering
- Single aircraft type (Delta and US Airways)
- Higher aircraft and other asset utilisation
- Improved crew utilisation, and in some cases reduced salaries
- Reduced distribution costs (although they all continued selling through traditional channels)

Since they did not succeed in getting their unit costs down to Southwest levels, their breakeven load factors were much higher than Southwest (high 70s vs low 60s for Southwest).

If it is possible to differentiate the earlier attempts based on limited data, the single class (Delta) model was more successful than the CALite and Shuttle two class models, although the single class Metrojet model also failed (but against much stronger competition). Delta Express and Metrojet managed the brand confusion better than Shuttle and certainly better than CALite.

It appeared that Shuttle was not successful in competing with Southwest, since the market did not perceive it to be sufficiently different from United's mainline services. It almost certainly did not get its costs down to anything approaching Southwest (and neither did Metrojet), and its load factor did not increase to compensate for the lower yields. It appeared to have achieved increased aircraft utilisation in spite of keeping interline and transfers. The main difference to Delta Express was using larger aircraft over longer sectors: this achieves lower unit costs, but they need even lower fares to fill the aircraft in the face of LCC start-up competition.

### **Song (Delta)**

Delta's re-launched low cost airline started in 2003, using larger B757 aircraft based at New York JFK airport. It continued to use Delta crews, and as before targeted leisure passengers using high-density seating (albeit less dense than their previous offshoot), but with leather seats, live TV and video games. In this respect, it closely copied JetBlue, and its base was selected to compete with that airline in many of its north-south markets. Song's average sector length was also very similar to JetBlue's, although the latter reported just over half of its total capacity on transcontinental routes in early 2004.

### **Ted (United)**

Ted was launched by United in early 2004, using two class, older, B737-300 aircraft from its Denver and later Chicago bases. Whereas Song most closely resembled JetBlue, Ted looked more like AirTran, with two classes and on-line connections both with its own flights and United's mainline services. Indeed, the flights were bookable through United's own reservations system (unlike the more distinct approach of

Song), showing some markets being served by both Ted and United's own flights. Since Ted flights were operated by United, this repeated the earlier mistake of brand confusion.

Both the more recent network carrier low cost offshoots have been designed to meet some of the new entrant LCC airlines head on in more key markets: Song against JetBlue, and Ted against Frontier (and America West). Neither of these offshoots targeted Southwest markets.<sup>5</sup> While their targets are different, they still need to reduce costs to JetBlue or Frontier levels, an impossible task given the way they have been structured and union restrictions. They seem to have failed so far, with indications that Song is performing 'very poorly in terms of load factor and fare levels on routes where it competed directly with JetBlue'.<sup>6</sup> Ted had been operating for too short a time for any assessment to be made.

The conclusion from the above is that LCC offshoots in the US are very difficult to operate successfully. They are unlikely to meet any of the three objectives put forward at the beginning of this paper. Graf (2004) identified the 'inconsistencies' in the way the LCC business model has been applied by network carriers, and suggested that correcting this might improve the chances of success, at least for EU LCC offshoots. This implies the establishment of entirely separate subsidiary companies that are totally insulated from parent labour practices. This may not be possible in the US.

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<sup>5</sup>Ted competes with Southwest in a few markets.

<sup>6</sup> James Parker of Raymond James quoted in Nuutinen (2004).

### **3. Sources of LCC cost advantage over network carriers**

The emergence of the low cost airline model and its success in terms of growth and profitability has led to an examination of how it differs from the network full service model. The network model has at the same time developed a number of weaknesses. This section will look at the key differences in operating costs between the two models and identify the sources of these. This in turn will point to the degree to which the LCC offshoots of the network carriers can close these gaps.

The two key aspects that differentiate the LCCs from the network carriers are point-to-point services and single class flights with few frills and some frills charged for separately. Many of the productivity advantages flow from these two characteristics. Their other advantages of lower input prices do not depend on these factors.

The analysis here will focus on Southwest, although other relatively new airlines offering models that differ from Southwest will also be examined. The US major that has a very similar short/medium haul sector operation is US Airways.<sup>7</sup> This airline will be used as reflecting typical legacy cost levels. Its entry into Chapter 11 in 2002 would have been expected to have exerted downward pressure on many of its cost items, but this did not seem have been the case following its emergence from administration (and it re-entered Chapter 11 in September 2004).

In order to see which cost categories are more crucial for success, the percentage breakdowns for Southwest and US Airways were compared in Table 2. Labour for Southwest was almost as important as for US Airways (but on a much lower base),

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<sup>7</sup>For calendar year 2002, the average sector was 1,158 km for Southwest compared to 1,102 km for US Airways.

but labour assumes a lower share for more recent LCCs such as JetBlue (31%) and AirTran (29%).

For US Airways, aircraft rentals and depreciation were in second place, followed closely by fuel. Fuel for Southwest took a larger share with aircraft costs third largest. The largest difference between the two airlines was for 'other' costs, which covered some marketing costs (eg GDS fees), outside services such as handling and overheads. The analysis in the remaining part of this section will thus be confined to labour, fuel, aircraft and 'other' costs, after first assessing unit cost differences.

-- TABLE 2 ABOUT HERE --

Appropriate measures of output were used to compare unit costs. For labour, passenger-kms flown takes into account both sector distances (almost the same for the two airlines), and passenger volumes. Southwest had a 46% advantage on this measure. There were similar differences in unit costs for both aircraft rentals and depreciation and total operating costs, both on the basis of seat-km output (Table 3). Southwest had an even greater advantage in sales commissions and other costs, the former per passenger and the latter per available seat-kms.

-- TABLE 3 ABOUT HERE --

On commissions, Southwest have avoided paying GDS fees and have channelled sales through their own call centres and web site. US Airways are moving towards more direct sales and cutting commissions but it will take time.

### *3.1. Labour costs*

Table 4 shows that the US legacy network carriers paid their staff significantly higher salaries compared with recent start-ups, with JetBlue somewhat more generous (partly due to the higher cost of living at its New York base). Southwest was between the two. The differential was larger for pilots, especially for US Airways and Delta.

If Delta had paid their pilots the same rate as JetBlue in 2002, they would have saved US\$1.0 billion, or 7%, in total operating costs. Table 4 is based on ICAO data, the latest available being for 2001. This covers take-home pay only and does not include pensions and additional costs that the airline incurs related to payroll, and which could add up to 30% to these costs.

-- TABLE 4 ABOUT HERE --

LCCs also achieve higher aircraft and crew productivity than the network carriers. This is possible in part because of a single type fleet, but also because of the shorter turnround times achieved through less catering, little or no cargo and no seat allocation. Pilot contracts encourage high productivity by reducing the fixed salary element of pay, and increasing the variable part related to flight hours (another feature increasingly copied by network carriers).

Table 4 also shows that the two LCCs in the sample produced much higher overall labour productivity than the majors and start-up network carriers. For Southwest, this meant that their higher than start-up wage rates could be justified by higher productivity. JetBlue had the double advantage of high productivity and lower wage

rates than network carriers. AirTran and Frontier both offer a network to connecting passengers, and this inevitably lowers the productivity that they can achieve.

### *3.2. Fuel costs*

Fuel was the second largest cost item for Southwest, and it is thus important to compare these costs for LCCs and network airlines. Volume is important in achieving lower prices, and economies of scale can be achieved on the transport and service elements of the overall price: large requirements at a hub airport will help reduce this. Hedging will also have a significant influence on the net price paid, after allowing for gains or losses on derivatives trading.

-- TABLE 5 ABOUT HERE --

Table 5 shows that the large hub airline, Delta, achieved the lowest price in 2002, followed closely by the large LCC Southwest. Hedging was clearly important in explaining the differences, and a previous study showed that Delta and Southwest hedged the largest part of their future requirements over the period 1994 to 2000 (Carter et al, 2003). Delta's unhedged cost of fuel would have been 72.3 cents per gallon in 2002, with 56% of fuel hedged in that year.<sup>8</sup> Southwest's average fuel price would have been 72.0 cents in 2002 without any hedging.<sup>9</sup> JetBlue's price should be inflated by around 8% to include taxes and charges, which would put it well above Southwest but below some of the smaller network start-ups. US Airways did hedge in 2002 (in spite of operating under Chapter 11 for part of the year), but its average price would only have been 2% higher without hedging.

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<sup>8</sup> Delta Air Lines, Annual Report on Form 10K for 2003, available from website.

<sup>9</sup> Southwest Airlines, Annual Report on Form 10K for 2003, available from website. Its 2003 fuel cost would have been 21% higher but for hedging.

An airline has more control over fuel efficiency, although for an established airline this can only be improved over the longer term. JetBlue stands out on fuel efficiency, with its fleet of very productive, new, A320s. It was helped by average sector of significantly longer length than others in the sample. Southwest was also efficient, given its shorter sector lengths than Delta or Frontier. The ranking remains the same once the data is adjusted for stage length, apart from Frontier. The latter operated a mixed fleet, including very fuel efficient A319s.

### *3.3. Aircraft capital operating costs*

LCCs also achieve much lower aircraft capital operating costs than the majors (Table 6). This includes depreciation and rentals for both owned and leased aircraft. The small new entrant, Frontier, did not achieve the same scale economies as the other new entrants, partly due to the operation of smaller aircraft and partly due to their hub strategy and low number of departure per day.

Interestingly, JetBlue (and to a lesser extent Southwest) recorded far higher seat-kms per aircraft with their essentially smaller shorter haul aircraft than Delta and American did with their mixed fleet that included quite a number of much larger capacity and longer range aircraft.

-- TABLE 6 ABOUT HERE --

The larger aircraft that the majors operate would be expected to give lower unit costs through economies of scale. However, some of this advantage is offset by aircraft

manufacturers marking up the price of larger aircraft (which they can do as there tends to be less competition between suppliers of larger aircraft). LCCs also go for more standard versions, with less expensive buyer furnished equipment (BFE). Furthermore, they often time their purchases to coincide with the low parts of the industry cycle, and thus get very attractive prices. Southwest was the launch customer for Boeing's B737-700 aircraft, at a time (1994) when aircraft prices were still relatively depressed. Many LCCs made new orders for aircraft post-9/11 when new prices were substantially reduced.

#### *3.4. Other costs*

The cost items compared above accounted for 63% of US Airways' 2002 operating costs (with interest expenses). In-flight food accounted for a further \$128 million of US Airways' costs, and can also slow turnarounds through the need to clean the cabin and load supplies. However, US Airways has significantly reduced this cost from US\$2.90 per passenger in 2001 to only 9 cents in 2003, well below Southwest's 22 cents per passenger. Other majors have done the same on their shorter sectors. It is doubtful whether cabin staff have at the same time also been reduced to the minimum safety complement, with US Airways' passenger-kms carried per cabin staff member increasing by only 13% between 2001 and 2003.

Network airlines and LCCs face similar input prices for outsourced maintenance and handling, and ATC charges. LCC costs for maintenance are generally artificially low in cases where a large part of their fleet is very new and they still benefit from manufacturer warranties. Landing charges are significantly lower at underused airports used by some LCCs. LCCs can be more aggressive in negotiating with

suppliers, building in bonus and penalty payments. LCCs do not incur some costs such as in-flight catering, airport lounges and drinks and meals for delayed passengers.

Finally, a large but declining LCC cost advantage is distribution costs. Their simplified product and pricing is ideally suited to internet purchase, with credit card fees passed on as a separate charge to the passenger. Advertising costs may, at least initially, be higher, but huge savings were achieved compared to travel agent and GDS booking and sales.

### *3.5 How far can the cost gap be narrowed through offshoots*

The largest area of difference lies in staff costs, driven by the LCC higher productivity and lower wage and salary rates. The offshoots give little help with the latter, and higher productivity levels that can be achieved are difficult to replicate system-wide, both due to the business model and union agreements.

The second largest difference is in selling costs, and here again the offshoots are neither necessary nor helpful. Progress can be made towards internet sales and e-ticketing (or ticketless sales) regardless of whether an offshoot has been formed. GDS presence is still required by network carriers, but there is potential here for further cost reductions or a change in the method of charging.

Another large gap is in aircraft capital costs, where network carriers need to move towards greater standardisation and higher utilisation to achieve savings: in both cases their business model will prevent them going the whole way.

Other cost differences, such as those for in-flight food, can be replicated by network carriers across their shorter haul sectors without first experimenting with LCC offshoots. It thus has to be concluded that the offshoots do little to help network carriers reduce system wide unit costs, and at best are an attempt at fighting LCC competition on selected routes.

#### **4. Have Network Carriers been Successful in Reducing Costs?**

Given the large difference between LCCs and network carriers, this section will discuss the extent that the latter have managed to close the overall cost gap over the past five years. This can occur through their own efforts to reduce costs, LCC cost increases, or a combination of the two. Cost reductions may stem from reductions in input prices, especially labour, and productivity improvements. Those network carriers that have established LCC divisions will be compared with those that have not, in order to see what impact they have had on cost reduction.

##### *4.1. Unit cost developments for selected US carriers*

Table 7 examines unit cost developments<sup>10</sup> for a selection of US network airlines: two of these did not attempt to set up LCC offshoots (American and Northwest), while the others did at various times. Continental's CALite had already been closed down by 1995, United's Shuttle operated from its first full year 1995 until 2001, while Delta's Express had its first full year in 1996 and operated until it was much reduced following 9/11.

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<sup>10</sup> US Airways has been excluded because of the sale of its Shuttle and discontinuity in its data.

Between 1995 and 2002, American and United's cost position versus Southwest deteriorated significantly. However, all the other three majors' positions also worsened. Continental had already done most to reduce the gap over the two years after closing CALite. Unit costs for the majors increased sharply following 9/11 due to capacity cut backs. However, the picture was much the same up to 2000, with only Delta making some impact on their relative costs.

-- TABLE 7 ABOUT HERE --

It should be noted that Southwest's costs have been helped by an average annual increase of 4.7% a year in length of haul over the seven years. It was estimated that this overall 38% increase would have reduced Southwest's unit costs by 20%, other things being equal (Unisys, 2003). Between 1995 and 2002, the increase would have amounted to just under 20%, such that, if Southwest had not increased its stage length, its unit costs in 2002 would have been 8.8 cents rather than the recorded 7.4 cents. Making similar stage length adjustments to the other airlines, would have also raised their unit costs for 2002 (with the exception of American, which did not increase stage length over the period). Since they already operate over relatively long sectors, the adjustments are smaller. **The new relativities for 2002 are shown in Table 8.**

The adjustments narrow the gap in all cases. In American's case this was just due to Southwest's longer sectors; but for the others, the improvement from Southwest's longer sectors was reduced by the effect of their own increases in average stage

length. There was no indication that those network carriers with offshoots had made more progress on narrowing the cost gap than the others.

-- TABLE 8 ABOUT HERE --

#### *4.2. Labour cost developments for selected US carriers*

Employee productivity was measured in seat-kms offered divided by the average staff available. Table 9 shows that Southwest performs better than the selected majors, in spite of its shorter average sectors. Furthermore, only Continental improved its position relative to Southwest between 1995 and 2002, and only Delta over 1995 to 2000.

For comparison, US Airways achieved only 2,722,000 seat-kms per employee in 2002. Southwest, which operates over somewhat lower average sector distances, was thus 25% higher on this productivity measure. Surprisingly, JetBlue's 2002 staff productivity was very similar to that of US Airways (2,775,000), in spite of operating over 70% higher average sector distances. This should have given it a marked advantage since longer sectors enable ground and airport based staff to generate more seat-km output.

-- TABLE 9 ABOUT HERE --

Average wages and salaries have generally been growing faster than the US inflation rate. Table 10 shows that average rates grew faster than that of Southwest for Delta, Northwest and Continental. Continental at least secured productivity gains, but

American were less successful in this. Thus, in 2002, the average Southwest rate of pay still trailed the larger majors by a clear margin.

United have reduced their average headcount by around 10% between 2000 and 2002, the onus falling more on lower paid staff.<sup>11</sup> Thus their average rate of pay has increased sharply over this period. Delta has also less staff, but has moderated pay increases, although it remains the highest wage airline in the US. On the other hand, American has not laid off staff and their average pay continued to climb.

-- TABLE 10 ABOUT HERE --

#### *4.3. Capital cost developments for selected US carriers*

Aircraft ownership costs for the US majors and nationals increased by 24% between 1995 and 2002 (ATA, 2003). Increasing aircraft utilisation allows the same schedule to be flown with fewer aircraft, and thus mitigates the impact of such increases. The large hubs used by the network majors are geared to connections and do not aim to maximise aircraft productivity. LCCs on the other hand try to achieve high aircraft utilisation and a large number of daily rotations.

It can be seen from Table 11 that none of the majors have experienced much change in average hours per aircraft per day between 1995 and 2000. Over the past two years, capacity and schedules have been cut back, such that efficiency could not be raised.

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<sup>11</sup> Job cuts at airlines tend to fall on lower paid employees (see Costa et al, 2002)

Only Continental achieved some improvement, as well as American who have moved close to the leader on this measure (as a result of the changes to a rolling hub first at Chicago and then Dallas/Fort Worth).

-- TABLE 11 ABOUT HERE --

Northwest and Delta both lost ground in the period to 2000, with both Delta and United both achieving well below LCCs such as JetBlue and Southwest. Interestingly, these two airlines are the only ones to continue with their own LCC offshoot. Southwest consistently achieved just over 11 hours per aircraft per day between 1995 and 2002, operating over relatively short sectors of just about one hour. Song were estimated to get around 12 hours a day from their longer sector LCC B757s, but this has yet to have any spin-offs for the mainline operations. It is difficult to know how many aircraft are dedicated to the Ted flights.

#### *4.4 Little progress on cost reduction*

The above analysis leads to the conclusion that the US legacy carriers have done little over the past seven years to reduce the gap in unit costs with Southwest. Average salaries remain much higher and productivity has hardly improved. At the same time, while Southwest has allowed pay to grow somewhat faster than the rate of inflation, it has achieved productivity gains. These have widened the productivity gap with the legacy airlines, although some of this has been achieved by operating over longer sectors and is thus apparent rather than real.

There was no evidence that the network carriers that had operated their own LCCs between 1995 and 2003 had achieved more success in closing the cost/productivity gap with the LCCs than those that did not: of the majors that had considerable involvement in LCC offshoots, Delta deteriorated against Southwest, while United improved. Of those that did not set up offshoots, American improved slightly and Northwest lost ground against Southwest. Apart from aircraft utilisation, there was also little sign that having an LCC offshoot made it harder to achieve savings in mainline operations.

## **5. Overall Conclusions**

There has been considerable research interest in both LCCs and the future of the network carriers, but very little on LCC offshoots formed by network carriers. It was shown that few of these offshoots in the US conformed strictly to the Southwest model, and those that did suffered from brand confusion and union restrictions on their operations. None were ring fenced in separate subsidiary companies with their own accounts and financial and operating autonomy. It was thus not surprising that their cost levels remained above the true LCC levels. The LCCs have been able to offer such low fares that they have created new markets that the network carriers could never capture (US DOT, 1996), but as they grew significantly in size (and entered trans-continental markets) some response was seen necessary by the majors.

The conclusion from this is that these offshoots were principally a means of targeting LCC competition in key markets, and could never be spun off as profitable businesses. The question remained as to whether they might be instrumental in lowering costs system-wide.

It was seen that LCCs have very significant cost advantages system-wide over the network airlines, especially in labour and capital. Some also had an initial lead in distribution, but the gap in this cost is narrowing fast. It was further demonstrated that the gap in both labour and other costs does not appear to have narrowed much relative to the now established Southwest (even after allowing for Southwest's move to longer sectors). LCC start-ups display even larger differences. The unit cost gap with Southwest has only narrowed very slightly between 1995 and 2002 for Northwest, Continental and Delta, but for United and American it has widened somewhat (after allowing for sector length changes). It thus appears that having an LCC offshoot did not improve the chances of unit cost reductions in the major's mainline operations (and neither was the converse true).

Head to head competition with LCCs is not advisable, since the cost gap will never be closed, and using an offshoot to perform this is unlikely to be very effective. It is also not necessary, since the total market is large enough for both models to co-exist (with fewer players in each, especially for the network model). Perhaps the best yardstick for the network carriers is not LCCs, but the recent network start-ups like AirTran and Frontier. These compete more directly for the flows of traffic, often from small cities, over the networks.

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Table 1

## US Network Airlines LCC Offshoots: Key Data

	Song	Ted	CALite	Shuttle	Delta Express	Metrojet US
Airline 'parent'	Delta	United	Continental	United	Delta	Airways
Start of operations	2003	2004	1993	1994	1996	1998
End of operations			1995	2002	2003	2002
Aircraft type	B757-200	A320	DC9/B737-	B737-	B737-200	B737-
No. dedicated aircraft	36	n/a	N/a	45	25	54
Seat pitch (inches)	33	31/36	32/36	32/36	32	32
Number of seat classes	1	2	2	2	1	1
Estimated aircraft utilisation/day	12.1	n/a	higher	12.0	12.2	12.0
Percent 'parent' frequencies/hours	11.1	7.8	38.0	10.2	5.8	19.0

Table 2

## Operating cost breakdown for SW and US (FY2002)

<i>Percent</i>	<i>Southwest</i>	<i>US Airways</i>	<i>% point difference</i>
Staff costs	39.0	40.8	- 1.8
Fuel	14.9	9.8	+ 5.1
Maintenance	7.6	5.1	+2.5
Sales commissions	1.1	1.6	- 0.5
Landing/rents	6.8	5.4	+1.4
Aircraft rent/depreciation	10.6	10.3	+ 0.3
Other	19.9	27.0	- 7.1
Total	100.0	100.0	

Source: Airline annual reports

Table 3

## Unit Cost Comparison: Southwest vs US Airways (FY2002)

<i>US cents</i>	<i>Southwest</i>	<i>US Airways</i>	<i>SW advantage</i>
Staff costs/RPK	2.73	5.06	- 46%
Fuel cost/ASK	0.69	0.86	- 20%
Maintenance/ASK	0.35	0.45	- 21%
Sales commissions /pax	86.71	271.45	- 68%
Landing/rents per ASK	0.31	0.47	- 34%
Aircraft rent/depreciation/ASK	0.49	0.90	- 46%
Other/ASK	0.92	2.37	- 61%
<b>Total operating costs/ASK</b>	<b>4.61</b>	<b>8.79</b>	<b>- 48%</b>

Source: Airline annual reports

Table 4

## Remuneration of Crews and other Staff for Selected US Airlines (FY2001)

	<i>Average pay per employee</i>	<i>per employee</i>	<i>Average seat-kms per employee</i>	<i>per employee</i>
<i>2001</i>	<i>US\$</i>	<i>Index</i>	<i>(000)</i>	<i>Index</i>
<b>Frontier</b>	<b>30,384</b>	<b>100</b>	<b>2,733</b>	<b>100</b>
AirTran	30,838	101	2,311	85
JetBlue	35,598	117	3,825	140
Southwest	42,643	140	3,417	125
American	49,485	163	2,404	88
Delta	54,761	180	2,740	100
US Airways	56,360	185	2,286	84

Source: ICAO

Table 5

*Fuel Price and Efficiency for Selected US Airlines (FY2002)*

	<i>Seat-kms/gallon</i>	<i>Adj. Seat-kms/gallon**</i>	<i>US\$/gallon</i>
JetBlue*	125.7	109.3	72.3
Southwest	98.9	99.7	68.0
US Airways	93.3	92.5	74.4
Delta	83.8	86.4	66.9
Frontier	82.8	101.9	96.3
AirTran	77.7	72.4	90.4

Source: Airline annual reports

\* price excludes taxes \*\* using stage kms vs efficiency regression equation results

Table 6

*Aircraft Cost and Productivity for Selected US Airlines (FY2002)*

	<i>Aircraft cost/seat-km (cents)</i>			
	<i>Excluding interest</i>	<i>Including interest</i>	<i>Seat-kms per aircraft (m)</i>	<i>Departures per day per aircraft</i>
Southwest	0.49	0.59	303.7	7.1
JetBlue	0.51	0.67	491.0	4.5
AirTran	0.68	0.90	214.3	5.8
American	0.76	1.00	339.7	3.2
Delta	0.88	1.19	362.9	3.6
US Airways	0.90	1.26	291.6	4.7
Northwest	0.91	1.19	346.7	3.6
Frontier	1.04	1.08	218.6	3.4

Source: Airline annual reports

Table 7

*Index of Selected US Airline Cost per Seat-km vs Southwest (1995-2002)*

	1995	1996	1997	1998	1999	2000	2001	2002	Av.% 95-02	Av.% 95-00
American	121.2	118.8	125.3	126.4	125.5	134.3	150.0	150.3	3.1	2.1
Delta	129.6	120.0	119.2	120.2	123.3	126.1	138.9	139.1	1.0	-0.5
Northwest	122.5	117.1	116.6	125.8	116.7	122.3	132.0	134.4	1.3	0.0
Continental	118.2	116.9	122.0	122.8	121.3	125.2	122.3	128.6	1.2	1.2
United	125.5	124.4	128.8	126.2	125.7	137.1	159.2	153.8	3.0	1.8
Southwest	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0

Source: Airline annual reports

Table 8

*Cost per Seat-km Improvement vs Southwest,**Adjusted for Stage Length Changes (1995 to 2002)*

	Recorded % pa improvement	Adjusted % pa improvement	Gap narrowed by
United	+ 3.0	+ 0.7	2.3% pts
American	+ 3.1	+ 0.7	2.4% pts
Northwest	+ 1.3	- 0.8	2.1% pts
Delta	+ 1.0	- 0.7	1.7% pts
Continental	+ 1.2	- 0.4	1.6% pts
Southwest	+ 0.0	+ 0.0	0

+ve = worse vs Southwest, -ve = better

Table 9

*Seat-kms per Employee for Selected US Airlines (1995-2002)*

<i>(000)</i>	<i>1995</i>	<i>2000</i>	<i>2002</i>	<i>Av.% 95-02</i>	<i>Av.% 95-00</i>
American	2,946	2,835	2,896	-0.2	-0.8
United	3,239	2,440	2,915	-1.5	-5.5
Continental	2,727	2,859	2,961	1.2	0.9
Delta	3,153	3,446	3,204	0.2	1.8
Northwest	3,125	3,111	3,303	0.8	-0.1
Southwest	3,168	3,387	3,396	1.0	1.3

Source: Airline annual reports

Table 10

*Average Cost per Employee for Selected US Airlines (1995-2002)*

<i>US\$</i>	<i>1995</i>	<i>2000</i>	<i>2002</i>	<i>Av.% 95-02</i>	<i>Av.% 95-00</i>
Delta	64,435	82,514	93,775	5.5	5.1
American	59,891	74,212	87,727	5.6	4.4
United	63,984	68,180	85,574	4.2	1.3
Northwest	53,548	67,524	85,225	6.9	4.7
Continental	43,379	60,392	71,096	7.3	6.8
Southwest	47,236	59,153	61,040	3.7	4.6

Source: Airline annual reports

Table 11

*Short/medium Haul Aircraft\* Utilisation: Selected US Airlines*

<i>Hours/day</i>	<i>2002</i>	<i>Av.% 95-02</i>	<i>Av.% 95-00</i>
JetBlue	12.9	n/a	n/a
Northwest	9.4	-2.1	-0.3
American	9.3	-0.9	0.4
Continental	9.0	-1.3	1.3
US Airways	8.8	-1.1	0.0
Delta	7.7	-2.2	-1.0
United	7.5	-4.0	0.1
Southwest	11.2	0.2	0.4

\* B737-300/A320

Source: Airline annual reports

# Airlines within airlines: an analysis of US network airline responses to low cost carriers.

Morrell, Peter

2005-09

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