



*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*



**Proceedings of the 36th Annual Meeting  
Transportation Research Forum**

*Volumes  
1 and 2*

**November 3-5, 1994**

**Daytona Beach, Florida**

**Published and Distributed by:**

**Transportation Research Forum  
1730 North Lynn Street, Suite 502  
Arlington, VA 22209**

## Start-Up Airlines; A Counter-Cyclical Phenomenon

*Abe Harraf and Bijan Vasigh\**

With the emergence of new start-up airlines, industry analysts are wondering why, at the time that over capacity has nearly crippled the airline industry and U.S. carriers have lost over 7 billion<sup>1</sup> dollars, new airlines are emerging like mushrooms. It is even more appalling that these airlines are doing well and are causing a major headache to incumbents and hunting them in their home turfs<sup>2</sup>. Is this a healthy post-deregulation phenomenon or is it a random disturbance in the industry life cycle? Will these "Southwest" look alikes succeed in their battle to survive or will they join their ancestors of Peoples Express, Midway, etc.? This paper will examine the emergence of such airlines (Table 1). Furthermore, the study will propose an observation that we call "counter-cyclical phenomenon" that could explain the behavior of the start-up airlines in the industry. Our observation examines the post-deregulation era and analyzes the emergence of start-up airlines in that time frame. The study subsequently draws a conclusion on the reasons for the emergence and predicts the pattern on which the new airlines will follow.

The sunset of Civil Aeronautical Board subsequent to the deregulation act of 1978 fueled the emergence engine of the airline industry. As a result, an overwhelming number of start-up airlines, with an ambition to fill a niche in their respective marketplace, joined the list of providers of the air passenger service.

**TABLE 1**

### Emergence of New Start-Up Airlines

New Startup Airlines	Routes Served
Braniff Air	Dallas-Newark and Los Angeles. New York-Orlando and Fort Lauderdale.
Beltia Air	New York-Leningrad and Riga with connection to Minsk, Kiev, Tbilisi.
Reno Air	Reno, Nevada to various cities in California, and along East coast.
KC Air	Kansas City-Dallas, St. Louis, Minneapolis.
Kiwi Int'l Air Lines	Newark-Atlanta, Chicago Midway, Orlando, San Juan, Tampa, and West Palm Beach.

Source: Business Week, July, 1991.

The deregulation act's passage coincided with economic slowdown, high unemployment, and higher interest rates. The downward pressure on the fare structure, as a result of new entrants, induced additional demand for air travel. Ironically, at the same time, major airlines such as Braniff and United were confronted with labor disputes, downsizing, and financial difficulties. In the battle to keep their market shares, incumbent airlines had to match the lowest common denominator fare in every route.

The new pricing strategies led to an aggressive price war among the major airlines and between them and new entrants. The price sensitive passengers with bargaining power demanded and were provided a no-frill service with the minimum possible price. The cost of the most determining factor to survive, cost per available seat mile, for the new entrants were substantially lower as a result of depressed wages and the high unemployment rate. Therefore it was feasible for them to compete on the basis of price, not the service. The elastic demand segment of the market, now with less discretionary income due to slow economic growth of the economy, found a reasonable substitute at a much lower price.

Therefore, the substitution effect dominated the income effect at the time where the rate of growth of the economy was slow. During 1979-1983, the personal consumption expenditures, in 1982 dollars, continuously declined. Furthermore, during the same time, major airlines posted a continuous operating loss of half a billion dollars annually.

In subsequent years to 1983, the economy started rebounding. Interest rates were substantially lower, employment rate was increasing at a steady rate and the gross national product was expanding at a healthy rate. The airline passengers, now with improved disposable income, were looking for quality in their consumption of goods and services. To them, quality of service is on-time performance, technologically advanced aircraft, seamless service, baggage handling, frequency of flight, service on board, and a bargain fare. The years of 1984-1990 registered a steady growth in the economy and perhaps the longest recovery since the mid-60's.

During the same years, the airline industry was going through a major re-structuring. The shake-out of the industry, as a result of financially bankrupt incumbents and new entrant airlines, left industry watchers in doubt whether the airline industry will ever recover. At the time where the consumer demand for air travel was expanding at astronomical rates, airlines were crowding the bankruptcy courts seeking protection from their creditors. The quality conscious passengers were demanding services that only some selected incumbents such as American, United, Delta, Northwest could offer. The dominant effect in these years was a reversal of pre-1983 years. The income effect was clearly a dominant effect where passengers were substituting a superior service to an inferior one. Again, from their perspective, a superior service is a quality service at lower fare. The only survivor of the herd of new entrants was Southwest airline. The airline amazingly was able to weather the turbulence that occurred within the industry from 1982-86. Southwest's management was accurate in their estimation that a niche market with a focused strategy, coupled with a low cost structure, is a winning combination. Their estimate of the niche market and penetration to other selected niche markets proved to be fruitful and assisted the airline to continuously post profits for the years to come.

However, the disappearance of the new entrants was not predicted. The conventional wisdom of low cost, no frill, high load factor, and low fare was no longer a good immune from the competition. Reduction in demand for their services, clearly put start-up airlines in a position

where their load factor was fading and their cash flow was abrupt. As a result, many of them disappeared, were taken over, or merged with other relatively successful airlines.

Ever since 1990, it seems the experience of the 1980-83 era is being repeated. Major airlines are continuously posting net losses in excess of billions of dollars annually. The economy has been growing at a sluggish rate and the long term interest rate, the gauge for economic activity, was steadily declining. Again, a slue of new airlines are finding an opportunity to fill a niche and emerging like mushrooms all over the country. The entrepreneurs of the start-up airlines are accurate in their estimation of the market. From the supply side, the cost of capital is low and aircraft lessors are anxious to lease their aircraft at a reduced rate as opposed to the alternative of it being idle. Furthermore, the quantity of skilled and trained labor is in abundance. Laid-off workers of Eastern, Pan Am, and Midway airlines provide a great source of skilled labor with no need of training for start-ups like Reno Air, Kiwi, and Valuejet airlines.

From the demand side, again like the years of 1979-83, the substitution effect is a dominant effect. The sluggish economy, coupled with many layoffs, has altered the consumer behavior. Consumers, now with a pessimistic view of the economy and their future stream of income, are conscious of their spending and demand a bargain. As a result, they are willing to forgo some luxurious elements of the air service for a reduced fare. The price sensitive airline passengers are willing to substitute a no-frill service of say Kiwi to those of American or Delta airlines. In other words, the income elastic passengers consider the services of a major airline somewhat luxury. Consequently, the proportion of their income they are willing to spend on the "luxurious" air travel declines substantially during the time of economic slowdown. Clearly, the substitution effect is a dominant effect when the consumer is unsure of his income stream and the prospect of economic recovery is not in sight.

Ironically, at the same time that start-ups in pre-1983 years and 1990-94 years were expanding their market share and load factor at an increasing rate, the major airlines were facing a sharp decline in operating income and load factor. The major airlines, now with a "no frill" competition, are confronted with the economic realities of the time and are retrenching leaving more voids and niches to fill in the marketplace.<sup>3</sup>

It is our theory that while the behavior of the major airlines follows the business cycle of the time, the behavior, activity, and emergence of start-up airlines is somewhat counter-cyclical. The theory is being supported by both the supply side of their operations as well as the demand side. The behavior of both passengers and producers of the service (start-up airlines) is rational and expected.

To support the counter-cyclical emergence of the start-up airlines, it is necessary to understand their market, marketing strategies, financing of their operations, and their potential of success for the years to come. Reno Air and Kiwi airlines are perhaps most visible, talked about, and promising new start-up airlines. In the midst of the economic slowdown and financial troubles of the airline industry, these airlines are doing well and are making their presence known. To depict the behavior which stems from their accurate estimation of the niche markets, it is necessary to understand the newly emerged airlines, the market they are trying to serve, and their overall cost strategy. To illustrate, a theoretical basis for the "counter-cyclical" phenomenon, it is necessary to analyze the airlines from the supply side of their operation.

### The Model and the Experimental Results:

Let us use the following notations

$\Psi$  = Operating Cost

$Y$  = Log of Gross Domestic Product

$\epsilon$  = Residual

$m$  = Major airlines

$r$  = Regional airlines

$C_i$  = Total long run cost

$Q_i$  = The quantity of air transportation provided by the airlines (Available Seat Miles)

$P_i$  = The price level (Passenger Revenue Miles)

A supply curve for a particular product and a particular producer can be defined as a locus of points, each of which shows the maximum quantity of the commodity that will be produced by the supplier per unit of time at a specific period. The model of this section examines the airlines' optimizing behavior, thereby deriving the supply functions for major and regional airlines. The airlines' implicit long run cost functions, ( $C_i$ ), during a given period depends on the quantity of air transportation provided by the airlines, ( $Q_i$ ), the Price level, ( $P_i$ ), and all other independent variables and their costs ( $\alpha$ 's)<sup>4</sup>.

$$C_i = f(Q_i, P_i, \alpha_1, \alpha_2, \dots, \alpha_n) \quad (1)$$

The supply function for an airline is obtained from its first order condition for profit maximization. The profit functions are

$$\Pi_i = P_{iQ_i} - C$$

$$\Pi_i = P_{iQ_i} - f(Q_i, P_i, \alpha_1, \alpha_2, \dots, \alpha_n) \quad (2)$$

Differentiating  $\Pi_i$  with respect to  $Q_i$  and set the partial derivative equal to zero  
Solving the above system of 2 equations for  $Q_i$ ,

$$\frac{\sigma \pi_i}{\sigma Q_i} = P_i + Q_i \frac{\sigma P_i}{\sigma Q_i} - \frac{\sigma f_i}{\sigma Q_i} = 0 \quad (3)$$

$$Q_m = \frac{\sigma f_m}{\sigma P_m} - P_m \frac{\sigma Q_m}{\sigma P_m}$$

$$Q_r = \frac{\sigma f_r}{\sigma P_r} - P_r \frac{\sigma Q_r}{\sigma P_r} \quad (4)$$

Each airline selects his production until marginal cost just equal to marginal revenue. To ensure profits are maximized, rather than minimized, second order condition requires that marginal cost intersects marginal revenue from below, i.e., that the second derivative is positive.

$$\frac{\sigma^2 \pi_i}{\sigma Q^2_i} > 0 \quad (5)$$

The system of supply functions selected for estimation are<sup>5</sup>:

$$\begin{aligned} Q_m &= \omega_m + \beta_m P_m + \gamma_m \Psi_m + \rho_m Y + \epsilon_m \\ Q_r &= \omega_r + \beta_r P_r + \gamma_r \Psi_r + \rho_r Y + \epsilon_r \end{aligned} \quad (6)$$

Because of the existence of an interrelationship between the supply of major and regional airlines, and a correlation between the residuals due to the interaction between supply forces in the market, we use Seemingly Unrelated regression Equation technique (SURE) to estimate the coefficients of the model. Estimated supply functions for airlines, using SURE:

	Constant	R	$\Psi$	Y	D-W	R <sup>2</sup>
$S_m$	-936872447 (-4.40)	7.04 (5.79)	-435021751 (-3.41)	12308706 (5.17)	1.03	.97
$S_r$	22021372 (2.11)	5.4 (3.43)	-16600268 (-6.04)	-2253955 (-1.80)	1.73	.57

The estimated coefficients conform closely to our expectation. The GDP coefficient for major airlines is positive and highly significant. This is to be expected, since the level of economic activity is the primary determinant of supply of air transportation. The GDP coefficient for regional carriers is negative and significant. The results support our "Counter-cyclical Hypothesis." The results indicate that startup carriers are emerging during economic downturn, while major carriers are downsizing their operations during the same period. Our model suggests that the supply for both groups of airlines are strongly effected in an adverse manner by the airline operating cost, but the results show that the effect of operating cost on major airlines is greater than the effect on regional airlines.

The estimated coefficients for, passenger revenue miles, are both positive and significant. The estimated equations simply indicate that major airlines are more sensitive to price and cost.

Thus, they are also expected to perform much better than regional airlines during economic expansion and much worse during economic contraction.

The scenario our paper attempts to illustrate is as follows: During an economic downturn, there is an expectation of reduction in disposable income. During such times, the rational consumer behavior predicts shying away from consumption of luxurious goods or services such as air travel provided by the incumbent large carriers. As a result, large incumbent airlines would face reduction in their passengers and therefore contracting their services by dropping routes and/or eliminating air services to some of their destinations. High unemployment of skilled labor, coupled with the downsizing of their fleet will result.

Once the pool of skilled labor and operationally safe aircraft is abundant, the new airlines, with much reduced cost structure, will emerge. Their emergence is further fueled by passengers desire to switch to less expensive air travel service (substitution effect). The entrepreneurs of the new airlines are usually furloughed employees of the failed airlines who have the ambition and skill to manage a new airline.

During the economic upswing, the income effect will dominate and passengers will reduce their consumption of air service by the start-ups in favor of frill offerings and luxurious services of large carriers (income effect). As a result, during expansionary times, newly emerged start-up airlines will face a reduction in passenger and due to their highly leveraged and under capitalized financial position, will fold or be taken over.

Therefore, the emergence of start-up airlines during the economic downturn is not a random disturbance rather it is purely an economic phenomenon. Of course, their faith will be determined as we go through another economic recovery.

## REFERENCES

Button, Graham, "Kiwi Takes Off," Forbes, Oct. 25, 1993, p. 19.

Constance, Paul, "Kiwi Secures Loans, Plan Fleet Growth," Aviation Week & Space Technology, Oct. 4, 1993, p. 31.

Flint, Perry, "Flightless No More," Air Transport World, Nov., 1993, p. 107.

Flint, Perry, "Let's Start An Airline," Air Transport World, Oct., 1992, p. 50-54.

Harraf, Abe, and Cheek William, "Oligopoly To Oligopoly", The proceedings of Air Show Canada 1991.

Lavitt, Michael O., and Constance, Paul, "Kiwi Chief See Majors Quitting Short Routes," Aviation Week & Space Technology, Jan. 3, 1994, p. 37.

Linden, D. Wechsler, "Can This Kiwi Fly?" Forbes, Sept. 14, 1992, p.426-427.

Marcial, Gene G., "Reno Air: Up and Climbing," Business Week, Feb. 1, 1993, p. 66.



Oneal, Michael, "Why Startups Can't Wait to Fly the Risky Skies." Business Week, July 8, 1991, p. 35.

Ott, James and Velocci, Anthony L. Jr., "Massive Airline Loses Force Draconian Cuts." Aviation Week & Space Technology, Jan.11, 1993, p. 30-31.

Rothman, Andrea, "The Season of Upstart Startups." Business Week, Aug. 31, 1992, p. 68-69.

Savitz, Eric J., "Flying Off to Reno." Barron's, Apr. 26, 1993, p. 69-69

Seidenman, Paul and Spanovich, David J., "Reno Air's Market Cashes In On Fun & Leisure." Career Pilot, July, 1993, p. 19-27.

Ulmer, David F., "Airline Industry Over Capacity: A Consumer Viewpoint." Roberts & Associates, Inc., March 26, 1993, p. 1-7.

Unknown, "Reach More People. Save More Time. Spend Less Money." Managing Office Technology, Jan. 11, 1993, p. 30-31.

Velocci, Anthony L. Jr., "Kiwi Takes Special Steps to Survive Among 'Sharks'." Aviation Week & Space Technology, Oct. 5, 1992, p. 44-45.

Velocci, Anthony L. Jr., "Kiwi Employee Create 'Fair Fare Fund' to Counter Continental Pricing." Aviation Week & Space Technology, Jan. 11, 1993, p. 30-31.

## ENDNOTES

- \* The authors are Professor and Associate Professor of Business Administration at Embry Riddle Aeronautical University.
- 1. Flint, Perry, "Let's Start An Airline." Air Transport World, Oct., 1992, p. 50-54.
- 2. Atlanta based Delta Airlines is forced to match low fare offers by low cost startup airline, ValueJet. Delta has no choice but to hit ValueJet head on due to the threat of losing market share.
- 3. For example, American Airlines had recently pulled out from the service to Daytona Beach as a result of low load factor.
- 4. These factors may comprise the set of following attributes; cost of capital, availability and cost of human resources, ground cost, flight frequency, size of the aircraft, and cabin service.

5. **Data used in this study is a quarterly data and comprises of period from 1980.1 to 1992.4. Available seat miles and revenue passenger miles are obtained from the Air Carrier Traffic Statistics Monthly. Operating cost is obtained from Air Carrier Financial Statistics Quarterly.**