The Pricing and Competitive Strategies of U.S Airlines

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Abstract

This paper argues that price competition is inevitable in the airline markets because passenger air service is a "search good." For the same reason, the optimal long run competitive strategy for the airlines is "cost leadership," although qualitative advantages should be exploited by a differentiation strategy in the short run. The airlines have devised a variety of creative pricing strategies which are analyzed for their economic content.

I. Introduction

Since deregulation, the major U.S. airlines have exhibited vigorous oligopolistic price competition and a variety of creative pricing strategies. In this paper I shall argue, first, that price competition is not only inevitable in airline markets, but that it is also the optimal forum for their competitive struggle. Simply put, price competition is a more effective means of increasing profitability than is the advertising and promotional competition that is prevalent, and optimal, in other service markets. Second, I shall argue that the nature of consumer information about the service means that airlines must pursue primarily the competitive strategy that Porter [1980] called cost-leadership. Finally, the various pricing schemes that the airlines have devised to avoid damaging price wars are examined for their economic underpinnings.

II. The Inevitability of Price Competition among Airlines

The assertion that price competition is the primary means of competition among domestic airlines is easily supported by casual empiricism. Although advertising stressing the punctuality of departures and arrivals, the quality of in flight service, and more convenient departure times, is indeed observed, such claims are typically made only when they are a distinguishing feature of the firm's product. More often, the airlines' products are seen as qualitatively similar across a range of the relevant quality attributes, which typically include the times of departure and arrival, the type of aircraft, the class of service, whether meals and movies are provided, whether the journey will be

non-stop, direct, or involve a change of planes, and so on.(1)

The airlines' overwhelming reliance on price competition occurs because airline travel is what Nelson [1970] called a "search" good: that is, consumers can largely determine the quality of the product by costless information search prior to purchase and consumption. Consumers may do this by asking a travel agent or calling the airline's toll-free telephone number. Data on punctuality, lost baggage, and consumer complaints is available and is typically reported in the press, particularly if there are any significant discrepancies across firms. Violations of safety regulations, near misses, and crashes, receive front-page press coverage. Thus information on most aspects of product quality is available to consumers either costlessly or at minimal cost.(2)

Since consumers have virtually costless access to full information concerning the quality of all competing flights on the route they wish to fly, we should expect the price elasticity of demand to be relatively high (given similar qualities) and similarly, the quality elasticity of demand to be relatively high (given similar prices.) Thus, a firm should expect an elastic demand increase to follow either a price reduction or a quality increase that remains unmatched by its rivals. Oppositely, firms should expect a significant loss of market share if a rival either reduces its price, or increases its quality, ceteris paribus.

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The availability of full information on the product's quality attributes thus places direct pressure on any firm whose product is apparently inferior in one or more of these quality dimensions. That firm is induced to raise quality to the prevailing standard in all dimensions where it is inferior. If this is impossible to accomplish immediately, a compensating price reduction is rendered imperative to avoid market share loss, as fully informed consumers would prefer the greater value implicit in equally-priced but higher-quality service available elsewhere. But since the profit-maximizing markup on unit costs is relatively low in markets that exhibit relatively high price elasticities of demand, (See, for example, Douglas [1987, pp. 413-17]) the scope for price reductions without subsequent losses is limited. Thus, the firm has a profit incentive to raise its quality attributes to the prevailing standard set by the other firms. It will typically do this by instituting quality control checks and management practices similar to those in effect at the other firms.

Conversely, if a firm has advantages in one or more quality dimensions, these will tend to be short-lived, as the other firms have a profit incentive to adopt the same quality improvements. Long run adjustments, such as the purchase of new aircraft, may be delayed, but in most cases we would expect that firms will strive immediately to emulate the new quality standards set by the quality innovator. Thus, non-price competition stressing superior quality of service should be seen only when the firm is exploiting what is essentially a temporary quality advantage.

Advertising campaigns conducted by the airlines are primarily informative, rather than persuasive, for the same reason. For the most part, persuasive quality claims can be verified by the consumer prior to purchase. Those that are true, and result in increased traffic, will be emulated quickly by the other firms. Those that are disputable will cast doubt on the credibility of the firm's other quality claims. As a consequence we see the preponderance of advertising that is primarily informative, stressing price and quality features like new routes, direct flights, more-convenient departure times, and the like.

A corollary of the above is that airline advertising will be primarily oriented to the print media, rather than to television. The print media have the comparative advantage in transmitting large quantities

of specific information that can be referred to repetitively by the consumer, whereas television has the comparative advantage in transmitting persuasive messages that involve imagery, exotic scenes, and celebrity endorsements. Further, the marginal revenue productivity of repetitive informative messages is likely to decline sharply, as the message is redundant to those who already know, and it is increasingly difficult to reach people who have not yet heard it. Because television time is relatively expensive, and TV advertisements are relatively expensive to produce, and there is limited scope for economies of repeated use of the advertisement, we see airlines limiting their TV advertising to brand-name enhancement, claims for (temporary) quality advantages, and the announcement of major pricing adjustments that apply system wide. It follows that the advertising elasticity of demand for airline transportation, and for search goods in general, will tend to be relatively low.

Dorfman and Steiner [1954] show that the profit-maximizing rule for the simultaneous adjustment of prices and advertising requires that the proportion of sales revenue spent on advertising be equal to the advertising elasticity of demand divided by the price elasticity of demand. I have argued that the price elasticity of demand for airline transportation will tend to be relatively high, while the advertising elasticity of demand will be relatively low. Thus a relatively low budget for advertising (as a proportion of sales) is to be expected for the airline firms in particular and for firms selling search goods in general. Observation bears this out: the advertising/sales ratios of airlines are substantially lower than those in the brewing, and soft-drink industries, which deal in what Nelson [1970] calls experience or credence goods.(3)

Thus, a strong emphasis on price competition in the airline passenger market is the result of the relatively high price elasticity of demand for the product in conjunction with the relatively low advertising elasticity of demand. The relative magnitudes of these elasticities in turn derive from the consumer's ability to verify quality information prior to purchase. Although airline executives may wish to escape the unrelenting pressure of continuing price competition in their markets, they are continually drawn back to it as the most effective means of increasing their load factors, market shares, profitability, and indeed, their chances of

survival.

III. Competitive Strategies of the Airlines

Porter [1980] distinguished two main competitive strategies, which may be characterized here as cost-leadership and quality-leadership. By cost leadership we mean that the firm's primary means of widening its price cost margin, and hence, of increasing its profitability, is to seek reductions in the costs of producing and selling the product. Alternatively, a quality leader looks first at the possibility of differentiating the product such that the price can be raised by more than the increase in unit costs associated with the quality improvement. In both cases, the firm might be a cost-leader or quality leader on a broad front or might instead follow a "focus" strategy in particular market niches for particular products and in particular geographic markets. Although the word 'leader' implies singularity, most or even all of the firms in a particular market could be simultaneously cost leaders, or quality leaders, for example.

I have argued elsewhere (Douglas [1987b]) that firms in a market for search goods will gravitate towards cost leadership as the optimal competitive strategy, while firms in markets for experience and credence goods will find the quality leadership strategy likely to provide them with superior profits. This is due to the extent of consumer information about product quality. For search goods, the relatively high price elasticity of demand leads to relatively low profit-maximizing markups. Raising price independently would cause substantial loss of market share. Absent collusion, or a hospitable regulatory environment, firms wishing to widen their price-cost margins will tend to give greatest attention to their costs of production. For experience and credence goods, on the other hand, the inability of consumers to judge quality *a priori* allows firms to differentiate their products to better serve segments of the market, to raise price independently, and to extract more consumer surplus from what is necessarily a relatively inelastic market.

The airline industry is a good example of the correspondence between search goods and the optimality of the cost-leadership strategy. In the intensely competitive environment since deregulation there has not been sufficient leeway for the quality-leader strategies seen pre-deregulation and still seen on international routes. Essentially, the

highly-competitive conditions of the U.S. market have forced the domestic airlines to adopt cost-leadership strategies in order to survive the "shake-out" period. As Robert Crandall, President of American Airlines, said in 1983, "... (with deregulation)... every airline must become a low-cost carrier. Every one." (4)

Notwithstanding this, and as noted earlier, the airlines will face a strong profit incentive to exploit any temporary quality advantages, and to introduce innovations in the various dimensions of quality. For example, American Airlines advertised that their on-time performance had led the industry for six consecutive months. (5) Other airlines were forced to raise their on-time performance to match American's, which some in fact did. At this point, the competitive thrust would return to the pricing arena unless American could then claim superiority in another quality dimension. Thus, while firms may follow differentiation strategies in the short run, in the long run they will return to the cost-leadership strategy as the most effective means of achieving superior profitability, assuming no collusion among firms.

Focused quality-leadership strategies are also observed. Eastern's "shuttle" service between east-coast cities appeals primarily to business travellers who value the attributes of the shuttle service. American Airlines focuses on vacation travellers to the Caribbean, while Trans World emphasizes its European flights. But underlying each of these superficial differentiation attempts is the necessity of keeping costs competitive in order to survive and prosper in this industry. In any of these market segments, qualitative emulation by a second firm requires that both firms concentrate their efforts on cost leadership.

IV. Pricing Strategies of the Airlines

Price leadership, and coordinated price discrimination among types of passenger, has long been practiced in airline markets. Given the economies of plant (including aircraft) size that are available, airline markets (routes between city pairs) in the U.S. are sometimes natural monopolies but are typically natural oligopolies. Since there is relatively easy entry into and exit from any particular market, these markets are "contestable" markets, and the incumbent firms are forced to set prices with a view to the potential entry of new competition. This implies a "limit

pricing" strategy, which in oligopolies is best achieved by some form of price leadership. Similarly, price discrimination among classes of passenger is best facilitated in oligopolies by some form of price leadership.(6)

Price Leadership. There has been a pattern of low-cost price-leadership in recent years by Continental Airlines, although American, Delta, and other major firms have also initiated a variety of price adjustments. Whoever initiates the change, the above firms tend to validate most significant adjustments in prices. Price adjustments should be seen as including changes in the conditions attached to the purchase of tickets between city pairs at any given fare, as well as changes in the fare given an existing set of purchase conditions.(7)

There are currently literally dozens of fares offered by each of the major airlines that serve any particular city-pair market. As well as first, business, and coach class, there are advance-purchase fares based on the proximity of the date of booking to the date of the flight, peak and off-peak fares that depend on the day of departure and return, and discount fares where the price is positively related to the degree of refundability and/or flexibility in the event of changes in the passenger's travel plans. In virtually every case, a new fare category initiated by one firm is matched quickly by its rivals. Perusal of the business press will document dozens of instances of price leadership and followership, including the introduction of APEX fares, of peak and off-peak fares, of non-refundable or partly-refundable fares, of fares with restrictions on prior booking and/or itinerary changes, of frequent-flier programs, of triple-mileage programs, and so on, not to mention myriad examples of joint price changes made with conditions of sale held constant. These typically involve price discrimination, to which we now turn.

Price Discrimination. To be effective, price discrimination requires differing price elasticities of demand among separable groups of consumers.(8) Separating airline passengers on the basis of their price elasticities is achieved by adding restrictive conditions to the purchase or use of particular fares. These restrictions include advance purchase requirements, round-trip travel requirements, minimum stays, maximum stays, indirect and one-stop direct routings, time of day and day

of week departure and return requirements, availability only to specific clients (such as the elderly, spouses, children, clergy, military personnel, government employees, and organized groups of some specified minimum size.) By and large, the more restrictive the conditions, the more elastic will be purchaser's demand, although less-elastic demanders will also choose these fares if the restrictions do not interfere with their preferred travel plans.

Thus, in general, groups of buyers are segmented on the basis of their personal characteristics or the purpose of the travel. Travel for business purposes is typically booked at shorter notice and used at peak travel times, and often requires "open jaw" or circuitous routings. Moreover, the relatively high opportunity cost of most business travellers, and the cost of accommodation, makes uneconomical most fares with minimum stay or "stay over saturday night" requirements. Similarly, non-refundable or partly refundable fares will not be attractive to business travellers if the expected value of the opportunity cost of an inflexible itinerary exceeds the potential savings. Finally, the principal-agent problem allows business flyers to be less sensitive to price when they are using corporate funds, as compared to when they use personal funds. All of these factors militate to cause business travellers to have relatively low price elasticities of demand, and thus they typically pay full coach fare, or business class fares, rather than a discounted fare.

The higher first-class fares are explained by the even lower price elasticity of demand for these buyers. The higher mean incomes of first-class travellers, and/or their strong desire for particular qualitative attributes of first class service, such as a gourmet meal, a wider seat, and relative privacy, explain their relatively low price elasticity. In effect, for the first-class passenger, the marginal utility of money is relatively low and/or the marginal utility of the attributes supplied in the first-class cabin is relatively high.

Passengers paying full coach fare might typically include some travelling on urgent personal business. Like business fliers, such passengers typically have little flexibility and relatively short notice concerning the time of departure, and they are more likely to be averse to restrictions and penalty charges resulting from changes to the return itinerary. But they will typically have more

flexibility concerning minimum stays and staying over Saturday night. Consequently, their demand is likely to be more price elastic than that of the typical business traveller.

Vacation travellers are probably the most price-elastic passengers of all, in general. Vacations are typically planned and can be reserved well in advance, can accommodate restrictions on minimum and maximum stays, off-peak departures, indirect routings, and so on. Offering heavily restricted fares to this segment no doubt expands the market significantly, as low-priced air and hotel vacation packages have induced thousands to fly for the first time. Since some flights would fill with vacationers to the exclusion of more-lucrative passengers, airlines restrict the number of seats available to such advance-purchase excursion fares based on their expectation of (otherwise) empty seats.

We turn now to an examination of the creative pricing strategies that have arisen more recently within the established price leader-follower and price discrimination patterns.

Advance-Purchase Pricing. This involves a reduced price when the buyer is prepared to commit his or her funds to the purchase well in advance of delivery of the service. Even if the ticket is fully refundable and there are no restrictions on subsequent changes, such fares allow the supplier to better predict the volume of traffic on any given future date, and plan for aircraft size and other variables. Moreover, the supplier benefits from the use of the buyer's money prior to production of the service. In effect, the supplier shares at least some of the resultant savings with the buyer.

Peak-Load Pricing. Demand for air travel tends to have daily, weekly, and seasonal peaks and troughs. During peak-load periods, airports are congested and airline capacities are fully utilized. At other times, the airlines have excess capacity, both in the terminals and in the aircraft. To shift demand from peak to off-peak periods, airlines offer greater availability of discounted fares for flights in off-peak periods. This allows them to reduce costs during the peak periods and increase revenues during the off-peak periods for an overall profitability gain.

Excess-Capacity Pricing. This involves the

advance sale, at a relatively low price that nonetheless far exceeds marginal cost, of a limited number of seats that are predicted to remain empty given the other fares available. Since the marginal cost of an additional passenger is limited to a few gallons of fuel and some inexpensive food and beverages, these fares represent almost a pure contribution to the firm's overheads and profit, as long as they do not preclude the sale of a more remunerative fare. Clearly, forecasting the load factors (percentage of seats occupied) becomes a critical task to avoid such opportunity costs. Consequently, all major airlines revise on a daily basis their forecasts of the availability of (otherwise) empty seats, and hence, of this particular fare.

Delayed-Service Pricing. Given the tendency of business travellers and other full-fare passengers to make multiple reservations to accommodate contingency plans they might need, and the failure of others to arrive in time for their flight, the airlines routinely overbook their flights. Federal law now requires that if the number of persons holding reservations and ready to board the plane exceeds the number of seats available, the airline must ask for volunteers to take a later flight in return for a specified minimum payment. The actual payment, which may well exceed the specified minimum, amounts to a partial refund of the fare paid by the volunteer. The volunteers effectively constitute a segment of the market that apparently has relatively low opportunity costs and/or derives little or no marginal disutility from the delay. Bumping such a passenger to a subsequent flight that has empty seats, or even serial bumping for two or more successive flights, will be a profitable strategy as long as it results in some incremental contribution to the airline's overheads and profit. It should be expected, therefore, that airlines will overbook flights beyond the extent of expected no-shows if the flight is followed by a later flight, since some passengers will be willing to take the later flight given a compensatory payment.

Cumulative-Volume Pricing. American Airlines introduced its "AAdvantage" Frequent Flier Plan (FFP) in 1981, whereby customers are granted free flights and partially-discounted fares on future flights on the basis of their accumulated mileage flown on that carrier. The effect of this pricing strategy is to encourage repeat business and consumer loyalty. The other major domestic

carriers were quick to respond and soon all had their own FFP's in operation. At the time FFP's were introduced, the airlines were under severe competitive pressure and had already seen substantial reductions in fares in most major markets. FFP's offered a pricing strategy that increased current period demand and bought time to reduce costs before the future discounts become operable. It also served to shift the competitive focus from discounting current prices to discounting future prices.

A recent and dramatic extension of this pricing strategy was Delta's November 1987 announcement of "triple mileage" for all 1988 flights that were charged to the customer's American Express Card. This initiated a new round of price competition. In January 1988, American Airlines announced triple mileage for all FFP-members on all flights in 1988 if the member flew one round trip or two one-way flights on American during the first quarter of 1988. Trans World Airlines followed suit almost immediately with a scheme involving triple mileage plus a free companion ticket. Most of the other major airlines then followed suit and introduced their own triple-mileage schemes. In effect, this has tripled the price discount these airlines were offering on future flights for its members, to a figure estimated at 7.5% of future revenues.(9)

To explain what might seem to be a questionable gambit with immense future opportunity costs, the triple-mileage strategy might be seen as a ploy designed to avoid the traditional winter price war and to instead draw rivals into the less-damaging arena of future price competition. Rivals were forced either to respond with similar triple-mileage plans, or to offer compensating price differentials on current flights with immediate adverse impact on their profitability, and most of the majors opted for the triple-mileage strategy. In my view, Delta (or American) has demonstrated effective price-leadership here; it has led the major airlines away from a potentially bloody winter price war and has instead induced them to compete in a more-hospitable forum.

As a matter of fact, airline profits and stock prices rose significantly during the first quarter of 1988, boosted by unusually heavy traffic during the winter months and four separate instances of joint price increases by most of the major airlines during that quarter.(10) This is in stark contrast

to the typical winter experience in this industry, in which seasonally-low load factors tend to induce substantial joint price reductions in virtually all markets as a backdrop to highly-visible price wars in selected markets. Other data of relevance is the estimate that every 1 cent per gallon reduction in fuel prices adds 23 cents to the value of each unit of American Airlines stock and 25 cents to each share of Delta.(11) No doubt the airlines were encouraged by the downward trend of fuel prices, and the absence of substantial evidence that this trend might be reversed in the near to medium term, when undertaking the triple-mileage strategy.

Risk-Sharing Pricing. The advent of non-refundable and partially refundable fares, whereby a change in travel plans will cause the buyer to forfeit at least some of the ticket price, or to pay extra for changes to the itinerary, is a strategy designed to reduce a moral hazard problem and appeal to buyers with relatively low degrees of risk aversion. In general, and except for the principal-agent problem and the extremely wealthy, one would expect buyers to be averse to any cost associated with changed travel plans. Similarly, the supplier will be averse to the risk of foregone revenue associated with a buyer's changed travel plans. These (lower) fares effectively induce the risk-averse buyer to bear all or part of the risk of changed travel plans. In some markets airlines simultaneously offer fares that are 100%, 75%, and 50% refundable in the event of cancellation or itinerary changes, with the discount from full fare increasing as the proportion refundable declines.-(12)

Bundle Pricing. First class and business class fares exceed full coach fare by substantial margins. To purchase these fares in preference to a coach fare, the rational buyer must feel that the monetary value of the incremental benefits exceeds the incremental price charged. The incremental benefits presumably include priority baggage handling and boarding, wider seats, more legroom, better food and service, free beverages, and perhaps the company of those with similar tastes. The Veblen effect may also be operational for some buyers. In effect, the airline has bundled some additional goods and services in with the basic service and charged a premium for it.

The major airlines also bundle their services into packages that include hotel accommodation, car rental, and even complete holiday packages. In

most cases, the extra services can be obtained more cheaply if purchased with the airfare. In effect, the airline gains incremental net revenue by this strategy by inducing additional sales to travelers whose reservation price for the additional service is less than the incremental price being asked. Similarly, additional flight segments may be bundled into slightly higher fares to attract those passengers who would take the additional segments (and fill otherwise empty seats) if the incremental fare was considered reasonable.

V. Summary and Conclusion

This paper has linked the predilection for price competition in the airline markets with the state of information concerning quality of the service offered. Since the major quality attributes of air-

line service are discernable a priori, the airlines find price competition to be the most effective means of competing for market share, profitability, and even survival. Accordingly, the basic competitive strategy they must all follow in a harsh competitive environment is the cost-leadership strategy, although quality leadership strategies are evident as temporary quality advantages are exploited. The pricing strategies of the airlines were discussed under headings of price leadership, price discrimination, advance-purchase pricing, peak-load pricing, excess-capacity pricing, delayed-service pricing, cumulative-volume pricing, risk-sharing pricing, and bundle pricing.

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Footnotes

- 1 Safety might be considered the most important quality attribute, but since safety remains closely regulated, and the airlines have a strong profit incentive to have impeccable safety records, the risk of crashing is in fact very low and similar across all airlines. Thus, although consumers consider safety records in their choice of airline, in general they probably place more weight on a variety of other quality attributes.
- 2 Some attributes are not discernable a priori, such as the actual quality of meals and service, and the actual departure and arrival times of the flight, but most consumers probably expect these to follow previous patterns which they are able to observe.
- 3 In 1987, Delta Airlines' \$88m spent on advertising was only 1.38% of their sales of \$6,351m. Anheuser-Busch spent \$604m, or 7.31% of sales, while Coca-Cola spent \$1,075m, or 32.31% of sales.
- 4 See "Airlines in Turmoil," *Business Week*, October 10, 1983, pp.98-102.
- 5 See advertisements in the *Wall Street Journal*, May 12, 18, and 24, 1988.
- 6 Price leadership can be interpreted to include conscious parallelism or any other independent price adjustment where the firm expects that the other firms will adjust price similarly.
- 7 Non-union Continental's labor cost as a fraction of operating costs is a low 22%, compared with an industry standard around 35%. See Kenneth Labich, "The Showdown at Eastern Airlines," *Fortune*, April 11, 1988, pp.65-67. See also Frances C. Brown, III, "Most Major Airlines to Extend to 7 Days Purchase Requirement on MaxSaver Fares," *Wall Street Journal*, March 15, 1988.
- 8 Price discrimination also requires the absence of price competition among firms (for given qualitative attributes,) and the absence of arbitrage opportunities for consumers. Price leadership, and requiring that passengers fly using a ticket issued in their own name, ensure these pre-conditions are met.
- 9 Donald S. Garvett, Vice-President, Revenue Management, Pan American World Airways, stated at the First Annual Pricing Conference of the Pricing Institute, New York, December 1-2, 1987, that the basic FFP costs the airlines about 2.5% of revenues. Robert L. Rose and Francis L. Brown III, in "Costly Freebies: Frequent-Flier Plans Create a Major Mess for Airlines, Travelers," *Wall Street Journal*, February 17, 1988, estimate that the eight major airlines will forego almost a billion dollars in revenues during 1988 as a result of FFP-members' claims for free flights.
- 10 K. Salwen, "Airline Stock Prices Should Keep Climbing After Recent Takeoff, Some Analysts Say" *Wall Street Journal*, Mar-88.
- 11 See Salwen, "Airline Stock Prices..." op. cit.
- 12 For example, in July 1987, three major airlines serving the Seattle-Dallas route each offered the following fares, all requiring 7-day advance purchase, travel between noon Monday and noon Thursday, and a Saturday night stay-over: \$504 with no penalty for cancellation or change; \$452 with 25% penalty; \$312 with 50% penalty; and \$272 with 100% penalty. See "Air Travellers Grapple with Penalties, Rebates," *Seattle Times*, July 12, 1987.

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