Chapter 1
The Fundamentals of Managerial Economics
Answers to Questions and Problems

1. This situation best represents producer-producer rivalry. Here, Southwest is a producer attempting to steal customers away from other producers in the form of lower prices.

2. The maximum you would be willing to pay for this asset is the present value, which is

$$PV = \frac{250{,}000}{(1+0.08)} + \frac{250{,}000}{(1+0.08)^2} + \frac{250{,}000}{(1+0.08)^3} + \frac{250{,}000}{(1+0.08)^4} + \frac{250{,}000}{(1+0.08)^5}$$
$$= \$998{,}177.51$$

3.
   a. Net benefits are $N(Q) = 20 + 24Q - 4Q^2$.
   b. Net benefits when $Q = 1$ are $N(1) = 20 + 24 - 4 = 40$ and when $Q = 5$ they are $N(5) = 20 + 24(5) - 4(5)^2 = 40$.
   c. Marginal net benefits are $MNB(Q) = 24 - 8Q$.
   d. Marginal net benefits when $Q = 1$ are $MNB(1) = 24 - 8(1) = 16$ and when $Q = 5$ they are $MNB(5) = 24 - 8(5) = -16$.
   e. Setting $MNB(Q) = 24 - 8Q = 0$ and solving for Q, we see that net benefits are maximized when $Q = 3$.
   f. When net benefits are maximized at $Q = 3$, marginal net benefits are zero. That is, $MNB(3) = 24 - 8(3) = 0$.

4.
   a. The value of the firm before it pays out current dividends is

$$PV_{firm} = \$400{,}000\left(\frac{1+0.06}{0.06-0.04}\right)$$
$$= \$21.2 \text{ million.}$$

   b. The value of the firm immediately after paying the dividend is

$$PV_{firm}^{Ex-Dividend} = \$400{,}000\left(\frac{1+0.04}{0.06-0.04}\right)$$
$$= \$20.8 \text{ million.}$$

5. The present value of the perpetual stream of cash flows. This is given by

$$PV_{Perpetuity} = \frac{CF}{i} = \frac{\$120}{0.03} = \$4{,}000$$

6. The completed table looks like this:

Control Variable Q	Total Benefits B(Q)	Total Cost C(Q)	Net Benefits N(Q)	Marginal Benefit MB(Q)	Marginal Cost MC(Q)	Marginal Net Benefit MNB(Q)
100	1200	950	250	210	60	150
101	1400	1020	380	200	70	130
102	1590	1100	490	190	80	110
103	1770	1190	580	180	90	90
104	1940	1290	650	170	100	70
105	2100	1400	700	160	110	50
106	2250	1520	730	150	120	30
107	2390	1650	740	140	130	10
108	2520	1790	730	130	140	-10
109	2640	1940	700	120	150	-30
110	2750	2100	650	110	160	-50

a. Net benefits are maximized at $Q = 107$.
b. Marginal cost is slightly smaller than marginal benefit ($MC = 130$ and $MB = 140$). This is due to the discrete nature of the control variable.

7.

a. The net present value of attending school is the present value of the benefits derived from attending school (including the stream of higher earnings and the value to you of the work environment and prestige that your education provides), minus the opportunity cost of attending school. As noted in the text, the opportunity cost of attending school is generally greater than the cost of books and tuition. It is rational for an individual to enroll in graduate school when his or her net present value is greater than zero.
b. Since this decreases the opportunity cost of getting an M.B.A., one would expect more students to apply for admission into M.B.A. Programs.

8.

a. Her accounting profits are $170,000. These are computed as the difference between revenues ($200,000) and explicit costs ($30,000).
b. By working as a painter, Jaynet gives up the $110,000 she could have earned under her next best alternative. This implicit cost of $110,000 is in addition to the $30,000 in explicit costs. Since her economic costs are $140,000, her economic profits are $200,000 - $140,000 = $60,000.

9.

a. Total benefit when $Q = 2$ is $B(2) = 20(2) - 2*2^2 = 32$. When $Q = 10$, $B(10) = 20(10) - 2*10^2 = 0$.

b. Marginal benefit when $Q = 2$ is MB(2) = 20 – 4(2) = 12. When $Q = 10$, it is MB(10) = 20 – 4(10) = -20.
c. The level of Q that maximizes total benefits satisfies MB(Q) = 20 – 4Q = 0, so Q = 5.
d. Total cost when $Q = 2$ is C(2) = 4 + 2*2^2 = 12. When $Q = 10$ C(Q) = 4 + 2*10^2 = 204.
e. Marginal cost when $Q = 2$ is MC(Q) = 4(2) = 8. When $Q = 10$ MC(Q) = 4(10) = 40.
f. The level of Q that minimizes total cost is MC(Q) = 4Q = 0, or $Q = 0$.
g. Net benefits are maximized when MNB(Q) = MB(Q) - MC(Q) = 0, or 20 – 4Q – 4Q = 0. Some algebra leads to Q = 20/8 = 2.5 as the level of output that maximizes net benefits.

10.

a. The present value of the stream of accounting profits is

$$PV = \frac{(150{,}000 - 50{,}000)}{1.07} + \frac{(150{,}000 - 50{,}000)}{(1.07)^2} + \frac{(150{,}000 - 50{,}000)}{(1.07)^3} = \$262{,}431.60$$

b. The present value of the stream of economic profits is

$$PV = \frac{(150{,}000 - 50{,}000 - 65{,}000)}{1.07} + \frac{(150{,}000 - 50{,}000 - 65{,}000)}{(1.07)^2} + \frac{(150{,}000 - 50{,}000 - 65{,}000)}{(1.07)^3} = \$91{,}851.06$$

11. First, recall the equation for the value of a firm: $PV_{firm} = \pi_0 \left(\frac{1+i}{i-g}\right)$. Next, solve this equation for g to obtain $g = i - \frac{(1+i)\pi_0}{PV_{firm}}$. Substituting in the known values implies a growth rate of: $g = 0.09 - \frac{(1+0.09)25{,}000}{500{,}000} = 0.0355$ or 3.55 percent. This would seem to be a reasonable rate of growth: 0.0355 < 0.09 ($g < i$).

12. Effectively, this question boils down to the question of whether it is a good investment to spend an extra $250 on a refrigerator that will save you $40 at the end of each year for five years. The net present value of this investment is

$$NPV = \frac{\$40}{1.06} + \frac{\$40}{(1.06)^2} + \frac{\$40}{(1.06)^3} + \frac{\$40}{(1.06)^4} + \frac{\$40}{(1.06)^5} - \$250$$

$$= \$168.49 - \$250$$

$$= -\$81.51.$$

You should buy the standard model, since doing so saves you $81.51 in present value terms.

13. Under a flat hourly wage, employees have little incentive to work hard as working hard will not directly benefit them. This adversely affects the firm, since its profits will be lower than the $25,000 per store that is obtainable each day when employees perform at their peak. Under the proposed pay structure, employees have a strong incentive to increase effort, and this will benefit the firm. In particular, under the fixed hourly wage, an employee receives $160 per day whether he or she works hard or not. Under the new pay structure, an employee receives $330 per day if the store achieves its maximum possible daily profit and only $80 if the store's daily profit is zero. This provides employees an incentive to work hard and to exert peer pressure on employees who might otherwise goof off. By providing employees an incentive to earn extra money by working hard, both the firm and the employees will benefit.

14.

a. Accounting costs equal $145,000 per year in overhead and operating expenses. Her implicit cost is the $75,000 salary that must be given up to start the new business. Her opportunity cost includes both implicit and explicit costs: $145,000 + $75,000 = $220,000.
b. To earn positive accounting profits, the revenues per year should greater than $145,000. To earn positive economic profits, the revenues per year must be greater than $220,000.

15. First, note that the $200 million spent to date is irrelevant. It is a sunk cost that will be lost regardless of the decision. The relevant question is whether the incremental benefits (the present value of the profits generated from the drug) exceed the incremental costs (the $60 million needed to keep the project alive). Since these costs and benefits span time, it is appropriate to compute the net present value. Here, the net present value of DAS's R&D initiative is

$$NPV = \frac{12{,}000{,}000}{(1+0.05)^5} + \frac{13{,}400{,}000}{(1+0.05)^6} + \frac{17{,}200{,}000}{(1+0.05)^7} + \frac{20{,}700{,}000}{(1+0.05)^8} + \frac{22{,}450{,}000}{(1+0.05)^9} - 60{,}000{,}00$$

$$= \$107{,}364.15$$

Since this is positive, DAS should spend the $60 million. Doing so adds over $100,000 to the firm's value.

16. Disagree. In particular, the optimal strategy is the high advertising strategy. To see this, note that the present value of the profits from each advertising strategy are as follows:

$$PV_{High} = \frac{\$20{,}000{,}000}{(1+0.09)} + \frac{\$80{,}000{,}000}{(1+0.09)^2} + \frac{\$300{,}000{,}000}{(1+0.09)^3} = \$317{,}338{,}067.33$$

$$PV_{Mod} = \frac{\$40{,}000{,}000}{(1+0.09)} + \frac{\$80{,}000{,}000}{(1+0.09)^2} + \frac{\$135{,}000{,}000}{(1+0.09)^3} = \$208{,}276{,}416.98$$

$$PV_{Low} = \frac{\$75{,}000{,}000}{(1+0.09)} + \frac{\$110{,}000{,}000}{(1+0.09)^2} + \frac{\$118{,}000{,}000}{(1+0.09)^3} = \$252{,}509{,}789.36$$

Since high advertising results in the profit stream with the greatest present value, it is the best option.

17.

a. Since the profits grow faster than the interest rate, the value of the firm would be infinite. This illustrates a limitation of using these simple formulas to estimate the value of a firm when the assumed growth rate is greater than the interest rate.
b. $PV_{firm} = \pi\left[\frac{1+i}{i-g}\right] = \$3.2\left[\frac{1.06}{0.04}\right] = \$84.8$ billion.
c. $PV_{firm} = \pi\left[\frac{1+i}{i-g}\right] = \$3.2\left[\frac{1.06}{0.06}\right] = \$56.5$ billion.
d. $PV_{firm} = \pi\left[\frac{1+i}{i-g}\right] = \$3.2\left[\frac{1.06}{0.10}\right] = \$33.9$ billion.

18. If she invests $2,500 in pre-tax money each year in a traditional IRA, at the end of 4 years the taxable value of her traditional IRA will be

$$\$2{,}500(1.07)^4 + \$2{,}500(1.07)^3 + \$2{,}500(1.07)^2 + \$2{,}500(1.07) = \$11{,}876.85$$

She gets to keep only 81 percent of this (her tax rate is 19 percent), so her spendable income when she withdraws her funds at the end of 4 years is (0.81)($11,876.85) = $9,620.25. In contrast, if she has $2,500 in pre-tax income to devote to investing in an IRA, she can only invest $2,025 in a Roth IRA each year (the remaining $475 must be paid to Uncle Sam). Since she doesn't have to pay taxes on her earnings, the value of her Roth IRA account at the end of 4 years represents her spendable income upon retirement if she uses a Roth IRA. This amount is

$$\$2{,}025(1.07)^4 + \$2{,}025(1.07)^3 + \$2{,}025(1.07)^2 + \$2{,}025(1.07) = \$9{,}620.25.$$

Notice that, ignoring set-up fees, the Roth and traditional IRAs result in exactly the same after-tax income at retirement. Therefore, she should adopt the plan with the lowest set-up fees. In this case, this means choosing the Roth IRA, thus avoiding the $50 set-up fee charged for the traditional IRA. In other words, the net present value of her after-tax retirement funds if she chooses a Roth IRA,

$$NPV_{Roth} = \frac{\$9{,}620.25}{(1.07)^4} - \$0 = \$7{,}339.24$$

is $50 higher than under a traditional IRA.

19. Yes. To see this, first note that your direct and indirect costs are the same regardless of whether you adopt the project and therefore are irrelevant to your decision. In contrast, note that your revenues increase by $13,369,300 if you adopt the project. This change in revenues stemming from the adoption from the ad campaign represents your incremental revenues. To earn these additional revenues, however, you must spend an additional $2,860,050 in TV airtime and $1,141,870 for additional ad development labor. The sum of these costs – $4,001,920 – represents the explicit incremental cost of the new advertising campaign. In addition to these explicit costs, we must add $8,000,000 in implicit costs – the profits lost from foreign operations. Thus, based on the economically correct measure of costs – opportunity costs – the incremental cost of the new campaign is $12,001,920. Since these incremental costs are less than the incremental revenues of $13,369,300, you should proceed with the new advertising campaign. Going forward with the plan would increase the firm's bottom line by $1,367,380. Expressed differently, the extra accounting profits earned in the U. S. would offset the accounting profits lost from foreign operations.

20. Under the projected 2% annual growth rate, analysts would view the acquisition unfavorably since $PV_{firm} = \$39.60\left(\frac{1+0.09}{0.09-0.02}\right) = \$616.63 < \$625.00$ (in millions). However, with an annual growth rate of 4% the acquisition is justified since $PV_{firm} = \$39.60\left(\frac{1+0.09}{0.09-0.04}\right) = \$863.28 > \$625.00$ (in millions).

21. Producer-producer rivalry exists between the European Steel Association and GOES producers from Russia, Japan, China, South Korea, and the United States. A consumer-producer rivalry exists between the European Steel Association and European transformer manufacturers. Sustainability of profits in the GOES market is questionable given the current circumstances. There are few low-cost alternatives to GOES, but the presence of at least five separate countries producing at a level generating significant exports indicates significant industry rivalry in the global market. One result is that the intense rivalry between exporting countries and the European Steel Association puts downward pressure on price. The GOES consumers, represented by transformer manufacturers, and GOES producers, represented by the European Steel Association and governments of the other five countries, are well organized. The sustainability of profits in the European GOES market will be determined by the relative success of buyers and sellers of GOES at convincing the EU governments of the merits for the minimum price restriction and the amount of time to keep it in place.

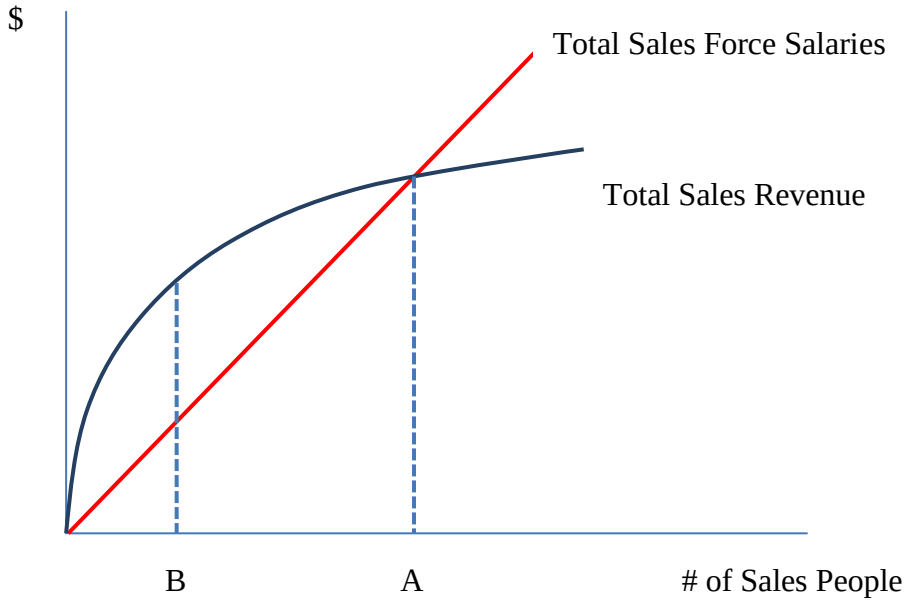
22. Online price comparison sites are generally markets of intense producer-producer rivalry. Using the five forces framework, one would expect that profits in this industry would be low. Given that there are many sellers, products are identical across sellers, and that the main basis for competition is price, the industry rivalry would be very high and prices would be expected to be close to cost. Furthermore, barriers to entry are low, so that any profits would be competed away by new firms entering the market. Also, consumers have a variety of substitutes available, both for the products and the retail outlets from which they purchase. For these reasons, economic profits would likely be close to zero for The Local Electronics Shop.

23. While the incentive plan has been effective in increasing the sales for the dealership, it has not increased profitability. This is because the manager, who must approve all sales, gets paid a commission regardless of whether the sale is profitable for the dealership or not; she has an incentive to increase sales, not profits. A better incentive system would pay the manager a commission based on the amount of the profit on each sale. Doing this would give the sales manager an incentive to sell more cars and maintain high profit margins. In this way, the incentives of the manager are better aligned with the incentives of the dealership's owners. Many car dealerships pay the manager 20-30% of the gross profit, the difference between the selling price and the cost to the dealership.

24. Marginal analysis can help us answer this question. Let's revisit the figure, reproduced below. Looking at Point A, it is clear that hiring this many sales people

ensures that benefits (revenues) equal costs (salaries), meaning net benefits are exactly zero! However, Ms. Stevens' objective is to maximize net benefits, and it is easy to see from the figure that she can achieve net benefits much higher than zero. We know that maximizing net benefits requires us to set marginal benefits equal to marginal costs, which occurs at Point B in the figure (where the slope of total revenue equals the slope of total salaries). At Point B, benefits are well above costs, so net benefits are well above zero. Consequently, it appears Ms. Stevens' sales division would have done much better with a smaller sales force, as the analysts argued.

Figure 1-4



25.

a. Cost = $0.74 + 0.10X^2$, where X is website analysis. The square of website analysis is statistically significant, since its t-statistic is above 2 in absolute value (12.96).
b. Revenue = $24.60 + 11.09X - 0.10X^2$. Both X and X^2 are statistically significant, since both have t-statistics above 2 in absolute value (8.38 and -2.27, respectively).
c. Set MB(X) = MC(X) to find the level that maximizes net benefits. This means we set $11.09 - 0.2X = 0.21X$. Solving for X yields X = 27.05.

26.

a. Revenue = $968.68 + 71.77*X - 0.12*X^2$, where X is focus group size. Both focus group size and the square of focus group size are significant, since both have t-statistics great than 2 in absolute value (32.42 and -4.58, respectively).

b. Costs = $510.70 + 49.17X + 0.11X^2$, where X is focus group size. Both focus group size and the square of focus group size are significant, since both have t-statistics great than 2 in absolute value (22.01 and 4.13, respectively).
c. Set MB(X) = MC(X) to find the level that maximizes net benefits. This means we set $71.77 – 0.24X = 49.17 + 0.22X$. Solving for X yields X = 49.

American Airlines' Actions Raise Predatory Pricing Concerns[1]

INTRODUCTION

Between 1995 and 1997 American Airlines competed against several low-cost carriers (LCC) on various airline routes centered on the Dallas-Fort Worth (DFW) Airport. During this period, these low- cost carriers created a new market dynamic charging markedly lower fares on certain routes. For a certain period (of differing length in each market) consumers of air travel on these routes enjoyed lower prices. The number of passengers also substantially increased. American responded to the low cost carriers by reducing some of its own fares, and increasing the number of flights serving the routes. In each instance, the low-cost carrier failed to establish itself as a durable market presence, and eventually moved its operations, or ceased its separate existence entirely. After the low-cost carrier ceased operations, American generally resumed its prior marketing strategy, and in certain markets reduced the number of flights and raised its prices, roughly to levels comparable to those prior to the period of low-fare competition.

American's pricing and capacity decisions on the routes in question could have resulted in pricing its product below cost, and American might have intended to subsequently recoup these costs by supra-competitive pricing by monopolizing or attempting to monopolize these routes. In addition to these routes, American might have monopolized or attempted to monopolize by means of the "reputation for predation" it possibly gained in its successful competition against low-cost carriers in the core markets.

American feels that its competition against the low-cost carriers was competition on the merits.

COMPETITION IN THE DALLAS - FORT WORTH AREA

The predominant form of organization among airlines is a hub and spoke system, where many passengers leave their origin city for an intermediate hub airport. At the hub, passengers switch to different planes that take them to their desired destination city. This system puts "local" passengers (who specifically desire to travel to or from the hub) on the same plane with connecting or "flow" passengers (who are only passing through the hub).

Economists have noted that passengers tend to pay higher fares on average on routes from concentrated hubs than on otherwise comparable routes that do not include a concentrated hub as an endpoint. This is called the hub premium. The hub premium exists in part because

1 Michael Baye and Patrick Scholten prepared this case to serve as the basis for classroom discussion rather than to represent economic or legal fact. The case is a condensed and slightly modified version of the public copy documents involving case No. 99-1180-JTM initially filed on May 13, 1999 in United States of America v. AMR Corporation, American Airlines, Inc., and AMR Eagle Holding Corporation. It has been updated and modified by Kyle Anderson, Michael Baye, and Jeffrey Prince.

the economies of scale enjoyed by the hubbing carrier drive marginal costs of service down, while the product differentiation advantages available to the hubbing carrier increase prices.

American's operation of its large Dallas/Fort Worth International Airport (DFW) hub provides significant economies of scope and scale on DFW routes. Operation of a hub, like American's at DFW, provides economies of traffic density that lowers the costs on a per-passenger basis and/or permits the hub operator to increase frequency.

Entrants considering entry into hub routes have to anticipate operating losses during initial periods of operation. None of the hubbing major airlines, other than Delta and American, provide non-stop service from DFW to any point that is not one of its own hubs.

DFW is located between the cities of Dallas and Fort Worth, Texas. American's total market share at DFW has decreased over the last three years due to a dramatic increase in low-cost carriers, DFW's success in attracting foreign flag airlines, and dramatic growth by other major airlines at DFW.

Delta Air Lines also maintains a hub operation at DFW, although its hub is smaller than American's. Delta reduced its flights during the mid-1990s at DFW, but in the last year has increased them again. As of the end of 2000, Delta (along with its affiliated carrier, Atlantic Southeast Airlines) offered scheduled nonstop service from DFW to 62 destinations with 209 daily flights. According to U.S. Department of Transportation T-100 data, Delta boarded more passengers at DFW in 1999 (4.6 million) than many hub airlines boarded at hubs where they were the primary hub airline (such as Northwest at Memphis or Continental at Cleveland). All major domestic airlines serve DFW, including Northwest Airlines, US Airways, Delta Air Lines, United Airlines, Continental Airlines, America West, and TWA.

New entrant airlines serving DFW as of mid-2000 include Frontier, AirTran, National, Vanguard, American Trans Air, Ozark, and Sun Country. DFW, with seven low-cost airlines, has more low-cost airlines than any other hub airport. Low-cost airlines serve at least 31 of DFW's top 50 destinations on either a nonstop or connecting basis.

A DFW official has stated that new entrant airlines "continue to thrive" at DFW, with a 25% year-over-year increase in passenger share in May 2000. The airport's Carrier Support program provides cooperative advertising funds to new entrants. Five new low-cost airlines have started service at DFW in the last three years (American Trans Air, Frontier, National, Sun Country, and Ozark). There are gates and other ground facilities available at DFW for entry by low-cost or other domestic airlines. Airport authorities control eight gates at DFW which are "common use" gates that DFW makes available to new entrants and other airlines.

As of the third quarter of 2000, American served 79 domestic U.S. destinations non-stop from DFW, with 467 daily flights. Delta served 40 destinations non-stop from DFW with 120 daily flights. American's commuter airline affiliate, American Eagle, served 40 destinations non-stop with 237 daily flights and Delta's commuter airline affiliate, Atlantic Southeast Airways, served 19 destinations with 72 daily flights.

Delta had attempted to enlarge its DFW hub in the early 1990s but was unsuccessful and instead decreased its DFW presence. American had responded vigorously to Delta's attempt

to grow at DFW. Delta suffered operating losses of approximately $560 million at DFW during the period from 1992-1994. From July 1993 to July 1996, Delta reduced its daily jet departures from DFW from 249 to 145 and its commuter affiliate reduced its turboprop departures from DFW from 97 to 88, while American increased its jet departures from 499 to 518 and increased its commuter affiliate turboprop departures from 169 to 257. In 1995, Delta's and its commuter affiliate, Atlantic Southwest Airways', total spokes decreased by 14 to 65, with 223 flights per day between the carriers.

Delta's DFW market share, measured by passengers boarded, decreased over the period July 1993 to July 1996 from 28.4% to 19.2%, while American's increased over the same period from 64.7% to 71.8%. After its downsizing at DFW, Delta's primary remaining strength was in hub-to-hub routes (from DFW-ATL, DFW-CVG, and DFW-SLC (Salt Lake City)) and in Florida and leisure markets. In 1999, Delta's DFW hub ranked 21st of 23 in a ranking of the number of passengers boarded by major airlines at their domestic hubs. By comparison, American's DFW hub ranked third; American's Chicago hub ranked 10th, and American's Miami hub ranked 18th. In June 1996, American flew 67% of the total available seat miles ("ASMs") flown by airlines operating to and from DFW Airport and Dallas-Love Field Airport. From 1993 to 2000, American's share of DFW ASMs increased from 61.7% to 69.8%, while Delta's share of DFW ASMs decreased from 31.5% to 18.1%.

In 1998, Delta felt that there was limited potential for growth at DFW. However, it has recently increased its presence there. Avenues for Delta growth include regional jet use, Gulf Coast flying, and adding capacity in existing flow markets.

Love Field is an airport located within the Dallas city limits that is therefore closer geographically to the origin or destination point of many Dallas travelers than DFW. From the time the "Wright Amendment" was passed in 1979 until October 1997, jet operations at Love Field were legally restricted to service within Texas and between Texas and New Mexico, Oklahoma, Arkansas, and Louisiana. Beginning in October 1997, when the "Wright Amendment" was amended by the "Shelby Amendment," jet operations at Love Field were permitted within Texas and between Texas and New Mexico, Oklahoma, Arkansas, Kansas, Alabama, Mississippi, and Louisiana. Beginning in February 2000, legal challenges to Love Field service to any destination by aircraft (jet or propeller) configured to carry 56 passengers or less were set aside.

Since late 1997, federal law permits scheduled airline passenger service from Love Field as follows:

1. Non-stop scheduled passenger service using aircraft with a seating capacity of greater than 56 seats may only be provided within the Wright Amendment[2] Territory plus the states of Kansas, Alabama and Mississippi (the "Shelby Amendment Territory").

2 The Wright Amendment was a federal law passed in 1979 with the purpose of limiting travel at Love Field in order to increase usage of DFW. Since Love Field was located closer to downtown Dallas, airlines had an incentive to maintain flights there, even though DFW was newer and larger. To make DFW financially viable, competition from Love Field had to be limited. The Wright Amendment was partially repealed in 2006, and completely repealed in 2014.

2. Airlines operating from Love Field with aircraft having a seating capacity of greater than 56 seats are prohibited from holding out non-stop or connecting air transportation to points beyond the Shelby Amendment Territory.
3. Scheduled passenger service may be provided between Love Field and points beyond the Shelby Amendment Territory, but only so long as such service is provided on aircraft with fewer than 57 seats.

Love Field is a major base of operations for Southwest Airlines, which currently serves 13 nonstop destinations from that airport with 139 daily flights. Southwest is a large and successful low-cost carrier. Southwest is prohibited from expanding its service from Love Field to points beyond a limited geographical area, and there is no likelihood that Southwest will begin service from DFW Airport. Southwest does not operate any aircraft with fewer than 57 seats and has no plans to acquire any such aircraft.

On a number of nonstop routes from DFW, American had market shares ranging from 60% to 100%, based on shares of non-stop origin and destination ("O&D") revenue, for the period from 1990 to 1999. It had market shares ranging from 61% to 100% for these routes for the year 1999. On these non-stop routes, the Herfindahl-Hirschman Index[3] (HHI) ranged from 5150 to 9939, for the year 1999.

On other routes for all airline service, American had market shares ranging from 60% to 95%, based on share of O&D revenue, for the period from 1990 to 1999. In 1999, American's market share for these routes ranged from 61% to 92%. The HHI on these routes ranged from 4368 to 8539 for the year 1999.

According to data maintained by the DFW airport, American's share of passengers boarded at the DFW airport was 70.2% as of May 2000; while the LCC share as of the same date was 2.4%. American's prices in Southwest and LCC-competitive markets may be used as proxies for competitive prices that still permit American to earn a profit and maintain service on the routes.

American generally enjoys higher margins where it does not face low-cost competition. American's internal analyses recognize that fares and yields in Southwest and LCC-competitive markets are significantly lower than fares and yields where American does not compete with Southwest or other LCCs. Thus, American calculated that its revenue per available seat mile in DFW-ATL increased by 14% after the 1996 ValuJet crash caused that LCC to exit.

An American memo exists stating that, following Midway Airlines' departure from the DFW-MDW route, American should raise prices slowly to avoid "sticker shock," but did not worry about competitor reactions. In fact, the same document expresses concern about such a reaction, stating that "connect carriers continue to offer discounted fares, and our experience during the past year has demonstrated that these carriers possess strong potential to capture share in markets where large fare differentials exist."

[3]The Herfindahl-Hirschman Index (HHI) measures market concentration levels, and is calculated as the sum of the squared market share percentages for each market participant.

During 1996, flights to and from American's DFW hub for the previous 12 months made up 40% to 58% of American's total domestic capacity (ASMs), but accounted for 60% to 86% of its domestic fully allocated earnings.

As noted earlier, American's price-average variable cost margins are higher on its flights to and from DFW than on other flights in its system. The company's internal documents recognize that this higher market share correlates to higher local yields. Fares on routes where American competes with other hubbing major airlines are generally higher than on comparable routes where American competes with LCCs or Southwest.

Over the time period 1994-1999, American has maintained higher price-average variable cost margins for local passengers in routes that might have been monopolized than it has maintained in routes which are competitive with Southwest Airlines or LCCs.

Considering all non-stop routes from DFW in which it does not compete with Southwest Airlines or an LCC, American earned a price-cost margin of 44.3% in 1994, 46.6% in 1996, and 50.7% in 1998. In all non-stop routes from DFW in which American competes with Southwest Airlines or an LCC, American earned a price-cost margin of 9.7% in 1994, 19.1% in 1996, and 20.5% in 1998, calculated in the same manner as the price-cost margins.

There were 44 total episodes of entry by any airline into any route from DFW during the 10-year period from 1990 through 1999. That number of entry episodes translates into 4.7% of DFW routes being entered per year, on average.

Routes from major airline hub airports other than DFW were entered by any airline at a rate of 7.7% of the hub routes per year during the 10-year period from 1990 through 1999. DFW routes were entered by LCCs, from their own hubs, at a rate of 1.0% per year during the 10-year period from 1990 through 1999. Routes from major airline hub airports other than DFW were entered by an LCC from its hub at a rate of 2.2% of the hub routes per year during the 10-year period from 1990 through 1999. Such figures, however, tend to unfairly minimize the market presence of LCCs, since they focus only on nonstop service from DFW and fail to consider LCC connecting service.

New York, including LGA, JFK, and EWR, was served by nine LCCs with 9.7% market share, as of the third quarter of 2000. Chicago, including ORD and MDW, was served by six LCCs and Southwest, for a total LCC market share of 12.3%, as of the third quarter of 2000. Denver had an LCC market share of 15.3%; Atlanta had an LCC market share of 16.8%; and Detroit had an LCC market share of 9.19%, as of the third quarter of 2000. LCC's market share for all Dallas (both Dallas-Love Field and DFW Airport,) with service from all LCCs (including Southwest) was 26.4%.

In 1995, Midway Airlines exited DFW-MDW after a period of price cutting by American, and American's prices increased quickly. After the entry of American Trans Air in 1998, average fares on the route decreased by 20%.

On average, for local passengers on the DFW-ICT, DFW-LGB, and DFW-COS routes, American's price cost margins were 28%, 41%, and 36% respectively in 1999.

LCC COSTS

In 1994, American calculated ValuJet's stage length adjusted cost per ASM to be 4.32 cents, and American's cost per available seat mile to be 8.54 cents. American's Executive Vice President of Marketing and Planning, Michael Gunn, testified that Southwest's costs were 30% lower than American's.

An internal American document discussed the cost advantages of low-cost airlines, stating that one of the "fundamental problems in the [airline] industry" in 1994 was that "consumer values (price) and the high cost structures of incumbent airlines have encouraged new competitors," that in 1993 Southwest's labor costs/ASM were 45.8% lower than American's, and that "today's low-cost airlines have a cost advantage primarily because they are not burdened with inefficient work rules."

NEW ENTRANT AIRLINE COMPETITION

It is uncontroverted that new entrant airlines with low fare strategies, including Vanguard, Western Pacific, Frontier, National, and JetBlue, expect existing competitors to match those fares. Officers of these airlines do not believe matching another carrier's fare is anti-competitive conduct, so long as the pricing is not below cost. Further, an airline that does not match fares is likely to lose business to its lower-priced rivals.

AMERICAN'S COMPETITIVE EXPERIENCE WITH LCCs

In the early 1990s, several LCCs were affecting a significant portion of the ASMs of each of the seven major airlines (defined to be AA, CO, DL, NW, UA, US, and TWA). LCCs by definition charge lower airfares, in part because they may have low operating costs, and in some cases provided less than the full service quality offered by the major hub carriers.

As of May 1994, MarkAir flew 10 non-stop spokes out of United's Denver hub, affecting 35.9% of the Denver hub ASMs. American observed ValuJet establishing a successful hub in Atlanta. American specifically noted ValuJet's success, and used ValuJet as an example of a hubbing LCC that could do very well at DFW. In just over its first two years of operation, ValuJet had grown, by February 1996, to an operation with 41 aircraft, serving 28 cities, including a hub and spoke operation at Atlanta with 22 spokes. American observed that ValuJet expanded while Delta was pursuing a short term, non-aggressive pricing strategy.

In a March 3, 1995, document entitled "Financial Impact of Low-Cost Carriers," American made an assessment of the degree to which its routes, system-wide, were "at risk" to additional incursion by low-cost carriers, and concluded that LCC entry into American's DFW markets posed a serious threat to American's revenues. American studied the impact of ValuJet's Atlanta hub on Delta, stating that "[f]or the 2nd Q93, on a pure share basis, DL has lost $232M in annual revenue. Clearly we don't want this to happen to AA at DFW." In other words, American calculated that ValuJet's success in forming an ATL hub cost Delta $232 million per year in revenues.

American believed that Delta encouraged ValuJet's development of an ATL hub through its lack of response to ValuJet's entry. A second study conducted by American, entitled "DFW

Vulnerability to Low-Cost Carrier Competition" ("DFW Vulnerability Study"), considered the attractiveness of DFW markets to entry by a hubbing low-cost carrier and the negative effects on American's fares and traffic that would result if such entry occurred at DFW.

American believed that it had the ability to compete with LCC service from DFW by implementing strategies of capacity additions in select markets and strong matching on price and availability. In a document dated May 23, 1995, American discussed its strategy of matching price and availability against Midway Airlines in DFW-MDW, which enabled American to capture more than the share lost when Midway first entered the market. American observed that "it is very difficult to say exactly what strategy on AA's part translates into a new entrant's inability to achieve their QSI share - that strategy would definitely be very expensive in terms of AA's short term profitability." Delta and Southwest had both also lost share to Midway but did not regain their lost share by May of 1995.

As noted above, American thought that lack of responses by Delta was the reason for success of ValuJet, and that "ced[ing] parts of the market to [the LCC] . . . was not the proper way to respond." American also observed that when Delta did begin more aggressive matching of ValuJet in July 1995, erosion of Delta's market share stopped.

Shortly after the DFW Vulnerability Study was completed, in mid-1995, American formed a working group to develop a strategy for dealing with LCCs at DFW ("Strategy Working Group"). Barbara Caldas, at the time a senior analyst in American's Yield Management Department, was the coordinator of the Strategy Working Group. The DFW LCC Strategy Working Group involved representatives from American's Pricing and Yield Management Department, Capacity Planning Department, Sales Planning Department, Marketing Planning Department, Airline Profitability Analysis Department, and Eagle Pricing and Yield Management Department. In a document memorializing notes from a January 31, 1996, meeting, called the "DFW LCC Meeting," an American employee wrote that a strategic objective should be formed regarding an LCC response. The employee also wrote expressing the need to "[d]emonstrate that a failure to defend our business versus LCC could be very damaging."

American produced a document, entitled "DFW Low-Cost Carrier Strategy," ("LCC Strategy Package") which was presented to American's senior management at a February 27, 1996, meeting. At the February 27 meeting where the LCC Strategy Package was presented, Diana Block, at the time a manager of Domestic Yield Management at American, and a member of the Strategy Working Group, took notes on a copy of the document. Ms. Block recorded a statement made by American's then-CEO, Robert Crandall to the effect that: "If you are not going to get them out then no point to diminish profit." The presentation was met with approval by American's senior officers.

In developing recommendations for its DFW LCC Strategy, American considered the effect of the strategy on the profitability of both American and the LCCs. American's planners sought to use American's capacity planning models to "simulate effect of pricing/capacity actions to estimate impact on AA and LCC performance" and to research the financial condition, "balance sheets," break-even load factors, and "tolerance" of the LCCs.

In the LCC Strategy Package, the American analysts calculated the costs of two different strategy "scenarios" for responses to SunJet. American has generally studied competitors' break-even load factors and balance sheets. In implementing its plans with regard to LCCs, American reviewed LCC profitability, load factors, and market share.

American had meetings "approximately once per month" over the period of at least two years after the LCC Strategy Meeting, attended by representatives from American's Domestic Yield Management, Sales, Pricing, Capacity Planning, and Finance departments, to discuss markets with low-cost carrier competition. American also measured the effects of its responses on its competitor, including producing a report entitled "Impact of LCC Response on DFW Rev/ASM," which considered the year-over-year effect on American's RASM, Yield, and Load Factor, of American's implementation of its LCC Strategy.

The DFW LCC Strategy Working Group used American's experience competing against Midway Airlines in DFW-Midway as a case study for understanding the magnitude of the investment that would result from taking action against LCCs at DFW.

By late May 1994, American operated 21 daily flights between DFW and Chicago's O'Hare Airport. Midway Airlines, a low-cost carrier, operated only three daily flights between DFW and Chicago's Midway Airport. In late May 1994, American adopted an inventory parity strategy against Midway Airlines' service in DFW-Midway Airport. The strategy involved tracking the availability of Midway's fares on computer reservation systems and keeping the comparable American fares available for sale so long as Midway's fare remained available. In September 1994 American offered matching fares on more of its flights. Midway Airlines exited DFW-Chicago in March 1995.

American viewed its DFW LCC Strategy as an investment. In response to a December 1994 memorandum by Tom Bacon concerning responses to poor profitability in the ORD-SFO market and Bacon's comment that stronger American pricing action would not fix the problem caused by LCC competition from American Trans Air, American's then-CEO Robert Crandall responded to a comment that "more aggressive pricing [by American] probably would not fix [American's] profitability problem on the route [ORD-SFO]," by observing: "It will when [American Trans Air] is gone!" and that this was "a clear example of a place where we should match straight up to get them out."

American believes its long-term profit success depends on defending its DFW hub and defending its network out of DFW. Its concern that an LCC could hub successfully at DFW was plausible. AirTran in Atlanta and Frontier in Denver are successful in routes from their respective hubs that compare in the amount of traffic to many routes from DFW.

In other circumstances where American has considered aggressive responses to competitors that entered DFW routes, it has weighed the cost of short-term profit loss against "benefits" that include both reduction of competition from current competitors and discouragement of future entrants.

HOW AMERICAN COMPETED ON THE ROUTES AT ISSUE

DFW-MCI (KANSAS CITY)

Vanguard Airlines began flying in December of 1994. In choosing its routes, Vanguard chose to stay away from routes that Southwest was serving because in those markets fares were already low and another low-cost carrier would not have much to offer.

Vanguard initiated nonstop DFW-MCI jet service with three daily round trips on January 30, 1995. Vanguard reported in its business plan that entry with low fares and a simple fare structure increases demand dramatically on a route, even doubling or tripling it, and it assumed that it would typically fill its seats "primarily with travelers who cannot be accommodated on the traditional airline," particularly "business travelers [who] often plan their trips at the last minute."

After Vanguard filed fares in anticipation of its commencement of DFW-MCI service in January 1995, American matched Vanguard's regular low, unrestricted fares with fares at the same fare level but with a penalty for refunds. In keeping with its strategy to "capture the best revenue mix possible with limited capacity," American limited the number of low-fare tickets it made available on those flights. However, American's Domestic Yield Management Department studied ramp count data suggesting that Vanguard was "making headway" in DFW-MCI with load factors between 58% and 62%.

In the second quarter of 1995, as Vanguard was reducing its nonstop DFW-MCI schedule, it had approximately 27% of origin and destination passengers on the route. Meanwhile, American determined that it would have to choose between a "share" strategy versus a "revenue" strategy. For the revenue strategy, one (among several) of the listed "pros" was "short term revenue gain," with one con being "Share loss in a dominant market." American added four DFW-MCI daily nonstop flights each way in June of 1995 and two more on July 1, 1995, in order to "stand up against Vanguard's service in the market."

American realized that its June and July 1995 capacity additions in DFW-MCI could have a negative impact on profitability. In the fall of 1995, American's prediction that the capacity added in DFW-MCI in June and July might impact profitability proved to be correct.

American's 14 daily nonstop flights and Vanguard's one daily nonstop flight during the second half of 1995 were, at 15 daily flights, fewer than the 17 daily flights that had served DFW-MCI earlier in 1995.

Vanguard ceased nonstop DFW-MCI service in December 1995, but continued to serve the route with two one-stop flights daily through Wichita. In the fourth quarter of 1995, Vanguard carried approximately 16% of the origin and destination DFW-MCI passengers.

After Vanguard ceased its nonstop DFW-MCI service, American's service dropped to ten daily flights. During the first six months of 1996, Vanguard's share of origin and destination passengers on DFW-MCI was approximately 17%. By March 1996, American found that Vanguard's one-stop DFW-MCI service (via Wichita) was carrying significant traffic. At the

end of April 1996, American lowered some of its DFW-MCI fares to respond to Vanguard's one-stop fares.

In August, 1996, American decided to add two daily DFW-MCI round trips as of November 1996. Vanguard announced on September 9, 1996 that it was resuming nonstop DFW-MCI service as of October with two daily nonstop flights each way and "low fares."

American accelerated the two already planned additional DFW-MCI flights scheduled to begin in November so that they would start as of October 1, 1996. American was able to advance the commencement of these DFW-MCI flights in the fall of 1996 due to the availability of pilot hours.

American decided to add a third additional DFW-MCI round trip effective November 1, 1996. After Vanguard filed fares in anticipation of its re-commencing DFW-MCI nonstop service in October 1996, American went to a full availability yield management strategy and responded to Vanguard's fare levels on all American flights.

Vanguard increased its daily DFW-MCI flights from two to three in April 1997, and from three to four in September 1997. By the end of 2000, Vanguard served DFW-MCI with three nonstop flights daily; by the fourth quarter of 1999, it had approximately an 18% share of origin and destination passengers.

American at the end of 2000 offered 12 flights daily on DFW-MCI, one fewer than in November 1996.

DFW-ICT (WICHITA)

As of May 1993, American served the DFW-ICT route with five daily nonstop jet flights each way. American began converting its jet service to turboprop service on DFW-ICT during the 1992-94 period when, as part of its "transition plan" during financial difficulties, it was discontinuing service to many cities and substituting turboprop service for jet service in nearby cities.

When Delta removed the last of its DFW-ICT jet service in favor of turboprop aircraft service in September 1993, American did so as well, removing the final jet trip in June 1994. Prior to October 1996, American's Eagle subsidiary was serving DFW-ICT with nine daily nonstop turboprop flights each way.

On March 24, 1995, Vanguard announced it would initiate nonstop DFW-ICT service on April 11, 1995 with two nonstop jet flights each way. Vanguard converted two of its daily non-stop DFW-MCI flights into one-stops through Wichita, which it would be serving on a non-stop basis from DFW, giving it two non-stops DFW-MCI and two one-stops DFW-MCI over Wichita. When Vanguard began DFW-ICT service, it was the only airline offering nonstop jet service. At this time, Delta's commuter affiliate was offering six daily turboprop DFW-ICT flights each way. Vanguard's management felt that there was a "primary opportunity" to serve DFW-ICT because no other airline offered jet service.

When it began service, Vanguard's one-way DFW-ICT unrestricted fares (that is, without advance purchase, round trip purchase, or minimum stay) were $69 for peak period travel, and $39 off-peak.

Previously, after American had announced that it would be canceling jet service, the City of Wichita had approached American about continuing to fly jets on DFW-ICT. In February 1994, American had told the Wichita Airport Authority that it would provide three daily jet flights only if the Authority provided a minimum revenue guarantee to American of $13,500 per round-trip. The Minimum Revenue Guarantee is a contract by which American Airlines serves cities that are a profitability risk. Wichita rejected the minimum revenue guarantee program with American. In early 1995, the City of Wichita, the Wichita Airport Authority, and Wichita's business leaders had approached Vanguard to introduce jet service from Wichita to DFW in April 1995.

After Vanguard initiated DFW-ICT service in April 1995, American responded with one-way fares at a $20 premium over Vanguard's one-way fares, and round trip fares equal to twice Vanguard's one-way fares. American initially made no changes to its standard yield management response for DFW-ICT after Vanguard entered the route in the spring of 1995.

After Vanguard started serving DFW-Wichita, the number of people who flew that route nearly doubled, and the average price for the trip went from $105 in 1994 to $70 in 1995. By the second quarter of 1995, Vanguard had gone from a zero share to a 46% share of DFW-ICT origin and destination passengers. In contrast, American's share of origin and destination passengers on this route dropped from approximately 70% in the first quarter of 1995 to approximately 44% in the second quarter of 1995.

Vanguard announced in September 1995 that it was adding a third daily jet flight on DFW-ICT effective October 3, 1995.

After Vanguard's December 1995 exit from the DFW-MCI non-stop market, American began to reduce its service to ten flights per day. Local average fares on the route increased $75 to $100. The DFW-MCI market went from being one of American's worst-performing routes during the first predation period to the "best in the West" in early 1996, after Vanguard's exit from non-stop service in the market. By May 1996, American had eliminated the $20 premium on its one-way DFW-ICT fares.

Vanguard announced on July 16, 1996 that it was increasing its daily DFW-ICT jet service from three flights to four, effective August 9, 1996. In August, Vanguard's chief executive characterized Vanguard's DFW-ICT position as "dominant" because Vanguard "ha[d] the only jets."

By the fall of 1996, American's yield management strategy on DFW-ICT was to ensure that, in light of the low fare environment, its yield management computer system was not assuming more high fare demand than there was likely to be. Although Vanguard was no longer serving DFW-MCI on a non-stop basis, in the spring of 1996, American noticed that Vanguard was nevertheless carrying a significant share of DFW-MCI passengers on a connect basis over Wichita. American believed that the reason for Vanguard's significant

share, despite its "inferior service," was that American had raised fares, restricted lower bucket availability, and cut capacity.

At an earlier meeting of senior management, American staff cited the response to Vanguard in DFW-MCI as a model of a successful strategy against an LCC. Subsequently, American began to match Vanguard's fares on DFW-ICT flights with an "open availability" yield management strategy, which significantly expanded the number of low fare seats available. In May 1996, American began matching Vanguard's zero to seven-day advance purchase one-way fares on all of its DFW-MCI non-stop flights and matched Vanguard's fourteen-day advance purchase one-way fares on five of its ten non-stop flights. Over the next few months, American monitored the impact of this match to assess whether to step up its fare, capacity and availability responses on DFW-MCI as necessary. By August of 1996, American determined that it needed additional capacity in DFW-Kansas City to address what it termed "competitive issues," and decided to increase frequency from ten to twelve round-trips effective November 1996.

American had found in a previous (1993) experiment with low "Southwest-type fares" on this route had caused it to "lose money" with fares that were "below variable cost." In a letter dated March 16, 1993, American's CEO Robert Crandall had written to Congressman Dan Glickman, "We really do not want to deny our friends in Kansas low fares -- on the other hand, when we sell tickets at Southwest's prices, we lose lots of money." In a letter dated April 5, 1993, American's Senior Vice President for Marketing, Michael Gunn, had written to Congressman Dan Glickman and explained that American's 1992-1993 "low-fare pricing test in the Dallas/Fort Worth-Wichita market" caused "revenues in this market [then $93 or $94 per passenger] [to] drop below variable costs."

From October 1995 to September 1996, American Eagle's turboprop service in DFW-ICT had been performing positively. American's Managing Director of Capacity Planning could recall no other instance where American made a decision to add capacity as rapidly as it did in Wichita, Kansas City and Phoenix during this time period. American's re-introduction of five daily jet flights to the DFW-Wichita route expanded its seating capacity by 35%, in addition to making many more seats available at the lowest fares.

On September 11, 1996, American decided to respond to Vanguard's route restructure by accelerating the dates of its planned addition of capacity in DFW-Phoenix from November to October 1, 1996. In response to Vanguard entry into DFW-PHX, American matched Vanguard's fares on five of its DFW-PHX flights and opened up seat availability. Its average fare in DFW-PHX fell from $193.90 in September 1996 to $137.38 in November 1996.

In September 1996, Vanguard announced a route restructuring that would considerably expand its DFW service, including the reintroduction of DFW-Kansas City non-stop service, and the introduction of service from DFW to Phoenix and from DFW to Cincinnati. Vanguard's then-CEO, Robert McAdoo, modeled the route restructuring on a strategy that had been effective for Morris Air, a successful LCC that had operated out of Salt Lake City, which was to enter relatively large markets on a modest scale (one flight a day) so that the major airlines would not react in some extremely vigorous manner. On September 9, 1996, Vanguard announced that it would begin daily service between Kansas City and Cincinnati (CVG), with continuing service to DFW, among other destinations. Vanguard also

announced that it would be serving DFW-Phoenix (PHX) with one daily flight to commence on October 1, 1996.

On September 10, 1996, American began gathering data on Vanguard and the DFW-MCI market in order to determine "what we should do in response." The next day, it decided to move up to October its planned November addition of two round-trips and to add a third new frequency to begin in November for a total of 13 daily flights. It decided that it would substitute five jet trips daily for four of the existing DFW-ICT turboprop flights. The new jet service for DFW-ICT in the fall of 1996 was funded with aircraft sitting idle due to pilot actions. It also began matching Vanguard's fares on all of its ten daily DFW-MCI flights, and decided to return jets to Wichita.

On September 27, 1996, three days after American learned that Vanguard was planning to serve Cincinnati-DFW-Phoenix, American decided to re-initiate service on DFW-Cincinnati with three daily flights effective December 2. In 1994, American had abandoned the DFW-Cincinnati (CVG) market as unprofitable. And in August 1996, American had reviewed the DFW-CVG market and decided not to add service in that market at that time, delaying the decision until the spring of 1997. The desire to respond to Vanguard's entry was a major reason for American's entry into DFW-CVG. American's Decision FAUDNC – one of American's profitability measures – was negative in DFW-CVG for December 1996 through March 1997.

In September of 1996, American also began to compete in markets where Vanguard offered through or connect service against American's non-stop service, for example in DFW-CHI (Chicago), where American matched Vanguard on three flights with expanded availability, and DFW-DSM, where American matched Vanguard on two flight with full availability.

Thus, as of the fall of 1996, American's five DFW-ICT jet trips competed with Vanguard's four jet trips. Once American substituted five jet flights for four turboprop flights on DFW-ICT, its total nonstop daily service was ten flights.

American returned jets to Wichita to respond to Vanguard's announcement of its expansion. This return of jet service to Wichita in September of 1996 was not pursuant to a minimum revenue guarantee program with the City of Wichita. This increase of capacity from ten to twelve round-trips effective November 1996 required an override of its capacity planning model. American continued to match Vanguard's fares and maintained full availability with its restored jet service on DFW-ICT.

Vanguard's share of Dallas/Fort Worth-Wichita origin and destination passengers in the fourth quarter of 1996 was approximately 29%.

In the face of American's actions between DFW and both Wichita and Kansas City, Vanguard decided to retreat somewhat by pulling its new southbound Kansas City-DFW non-stop flight and one of its existing northbound DFW-Wichita non-stops, leaving its existing southbound one-stop flight (via Wichita) and two northbound non-stop flights between Kansas City and DFW.

Mr. McAdoo concluded that his limited entry strategy had not succeeded in the context of the competitive environment. Vanguard believed that it was virtually impossible to generate the loads and revenue required to achieve profitability on the DFW-ICT route in light of American's competition.

After asking Robert McAdoo to resign, Vanguard's board of directors hired a new CEO, John Tague, who took over on November 1, 1996. Tague assessed Vanguard's existing route structure, which included an evaluation of competitive conditions in each of the routes and of the potential reactions of those competitors. Tague observed that in many respects, Vanguard was "functioning pretty well." However, he also felt that Vanguard's route structure when he took over was "excessively dissipated," "lacked focus," and, given the size of its fleet, "needed to be in a more concentrated geographic area."

Tague restructured Vanguard's routes into a Kansas City hub and spoke system in November, 1996, and canceled Vanguard's service from Phoenix and Cincinnati that had been introduced as part of Mr. McAdoo's strategy (including the routes to DFW), along with the DFW-ICT route.

On November 8, 1996, Vanguard announced that it was leaving the DFW-CVG route after only eight trips. At the same time, it announced that it was leaving the DFW-PHX route altogether, and that it would be leaving the DFW-Wichita route altogether in December. Vanguard ceased DFW-ICT service in December 1996. By April 1997, Vanguard had eliminated all non-Kansas City hub service except for a profitable Midway-Minneapolis route. Vanguard continued to deploy its aircraft after April 1997 primarily on routes from Kansas City.

American's FAUDNC performance in DFW-PHX declined significantly in November 1996. However, as American notes, while FAUDNC *declined*, it nonetheless remained *positive*. Moreover, FAUDNC increased three-fold between October, 1996 and January, 1997, even after further increases in seat capacity.

In mid-December of 1996, Senator Brownback of Kansas complained to American's then-CEO, Robert Crandall about the recent fare increases on DFW-ICT. On January 2, 1997, Mr. Crandall drafted a response to Senator Brownback that included the point "[i]n recent weeks, fares between Wichita and DFW have been below cost." The letter American actually sent to Senator Brownback contained the following language: "fares were too low ... to allow us to earn a reasonable rate of return."

After Vanguard's November exit, American's fares increased, although they remained below the fare charged prior to Vanguard's market entry. American eliminated three turboprop flights in April of 1997, thereby bringing the monthly seat capacity back to American's September 1996 level. American as of the end of 2000 served DFW-ICT with five jet trips and four turboprop trips daily. Delta as of the end of 2000 was serving DFW-ICT with five daily turboprop non-stops.

After Vanguard's exit, fares on the DFW-Wichita rose from $70 to $117, higher than the period when Vanguard operated in Wichita, but lower than the period 1990 to 1992. The

number of passengers who traveled on the route rose from 60,000 in 1993, to 147,000 in 1996, and fell to approximately 76,000 in 1999.

Vanguard has maintained DFW service out of its Kansas City hub, and continues to serve the route to this day. Kansas City is Vanguard's only non-stop destination served from DFW. Eventually, fares of both American and Vanguard increased on the DFW-MCI route. In 1997 and 1998, American continued to monitor and take actions, such as fare matching on a flight specific basis or flight bracketing, of Vanguard's through or connect service, which included at various times DFW-Chicago, DFW-Minneapolis, DFW-Des Moines, DFW-Denver, DFW-New York (JFK) and DFW-San Francisco.

American's average fares throughout the period of Vanguard's nonstop DFW-ICT service were equal to or higher than Vanguard's average fares.

DFW-LGB (Long Beach)

In August 1993, SunJet International received DOT authorization to operate as a "supplemental" carrier. By October 1993, SunJet commenced operation with two MD-80 jets, one flying between Fort Lauderdale and Newark, one between Newark and St. Petersburg. SunJet intended to serve the Tampa Bay area by offering service out of the St. Petersburg/Clearwater International Airport (PIE). SunJet, by setting its prices lower than fares regularly offered by major carriers, attracted price-sensitive passengers who might otherwise have chosen not to fly.

Although SunJet was not a "scheduled carrier," as that term is used in the airline industry, SunJet offered regularly scheduled flights on the city-pairs it served. SunJet entered into agreements with contractors to provide certain services, including reservations and ticketing, marketing, aircraft maintenance, and baggage handling. SunJet also entered into an agreement with World Technology Systems (WTS) under which WTS provided financial backing and reservation and revenue accounting support for SunJet. WTS also selected routes for SunJet.

In June of 1994, American had "abandoned" its efforts to serve DFW-Long Beach due to lack of traffic. In the same month, SunJet entered DFW with limited service to Newark (EWR) and Long Beach (LGB), resulting in one-stop service between Newark and Long Beach. SunJet added non-stop service between DFW and St. Petersburg, and one-stop service between St. Petersburg and Long Beach in February of 1995. SunJet wanted to serve the Los Angeles market from its service cities (EWR and PIE) on the east coast. The company viewed the Long Beach airport as an ancillary or secondary airport serving the Los Angeles area, the use of which provided significant cost savings in landing fees compared to Los Angeles International (LAX). SunJet learned about American's withdrawal of DFW-LGB service after it had decided to start serving DFW-LGB.

No scheduled airline offered DFW-LGB nonstop service from June 1994 to January 1997. America West had offered connecting DFW-LGB service (through its Phoenix hub) since 1994.

SunJet offered a third DFW-LGB nonstop flight daily from September 26-December 6, 1996.

American referenced SunJet's DFW-EWR/LGB service in a June 1994 presentation entitled "Start-up/Low Cost Carriers." It also noted that SunJet's entry into the DFW-DWR market in June 1994 "resulted in $198 round-trip DFW-EWR fares and the first instance of a low-cost carrier connecting passengers in DFW." American reduced fares in the DFW-FPA market in December 1994.

By December of 1995, American recognized that SunJet's route structure presented opportunities for SunJet to create a DFW hub. American noted that SunJet enplaned more passengers per day than any other LCC at DFW in September of 1995, and was a major concern for American. SunJet's initiation of DFW-LGB service was one factor which led American to consider re-entering the DFW-LGB route as early as December of 1995. American anticipated capital start-up expenditures of from $100,000 to $120,000, with "worst-case" start-up costs of $171,000.

In February of 1996, American decided to continue its strategy of matching SunJet on a limited basis and not to pursue a stronger approach unless SunJet increased its frequency or added additional DFW routes. In late 1995 or early 1996, American expanded its limited match of SunJet fares to four flights into EWR and three flights into TPA. As of May 16, 1996, American matched SunJet's fares on six DFW-EWR flights, and three flights in PIE (TPA).

David Banmiller became CEO and President of SunJet in May of 1996. He was hired by John Mansour, who purchased SunJet from its original owner in September of 1995. SunJet's new management made plans to add an additional DFW-LGB flight in August of 1996. WTS and SunJet personnel advised SunJet management against adding the third DFW-LGB flight, recognizing that SunJet was currently flying below the "radar" and that adding capacity might lead to a strong response from American.

SunJet's former management had avoided flying more than two frequencies on any single route to assist in avoiding a response by major carriers. However, SunJet initiated a third DFW-LGB non-stop daily flight on September 26, 1996. In November, it began advertising plans to begin DFW-OAK service.

American responded to SunJet's announcements of new and expanded DFW service with a variety of actions. On November 25, 1996, American announced it would enter DFW-LGB and increase frequency in DFW-OAK. SunJet discontinued its third DFW-LGB flight in December of 1996.

SunJet canceled plans to enter DFW-OAK. There is a fact dispute as to the reason for the cancellation. WTS felt that it was due to insufficient customer response. There is other evidence that the cancellation occurred because SunJet failed to secure the necessary aircraft.

On January 3, 1997, American announced that it was resuming nonstop DFW-LGB service effective January 31, 1997 with three daily round trips. American began DFW-LGB service in January 1997 with fares of an equal value to what it believed were SunJet's lowest fares, but with greater restrictions than SunJet's, specifically a 3-day advance purchase requirement and round trip ticketing only.

SunJet had financial difficulties for at least nine months prior to March 1997. WTS, which provided marketing services to SunJet, assumed control of all financial risk related to passenger sales and SunJet's sales and route selection functions in March 1997. Prior to this, SunJet decided where and when it would fly, and WTS provided reservation and revenue accounting support. After "reviewing conditions within [its] industry, including competitive factors and [its] internal challenges, SunJet agreed to turn over all scheduling, pricing and marketing functions to WTS." SunJet retained financial responsibility for aircraft, crew, maintenance and insurance, and WTS assumed financial responsibility for and direct supervision of other aspects of flight operations. WTS discontinued its PIE-DFW service and reduced DFW-LGB service to one flight in March 1997 in order to use the second airplane on another route. SunJet suspended all flight operations on June 17, 1997 and filed for bankruptcy protection the next day, telling its shareholders that this failure was due to "significant aircraft down time as a result of non-routine maintenance issues."

After SunJet's bankruptcy, WTS contracted with other carriers to continue operating SunJet's routes (doing business as SunJet). WTS added a second DFW-LGB round trip from July to September 1997. WTS' profits on its DFW-LGB route went from $175,040 in July 1997 to $41,284 in September 1997, after American added a fourth DFW-LGB flight in August 1997. Overall, during the period that WTS operated the DFW-LGB route, it earned more than $1 million in profits on it.

American added a fourth DFW-LGB flight in August 1997. WTS discontinued SunJet's DFW-LGB service in January 1998, stating that it was having difficulty obtaining a long term commitment for aircraft which would meet LGB's noise ordinances, and it was unable to secure replacement lift services. WTS personnel have subsequently also attributed this decision to other reasons, including competition by American. WTS ceased operations in June 1999.

After SunJet exited DFW-EWR, American withdrew capacity.

As of the end of 2000, American was continuing to offer four DFW-LGB nonstop flights daily. United was offering nonstop DFW-LAX service as well as of the end of 2000. Delta as of the end of 2000 offered nonstop DFW-LAX service, as well as nonstop service between DFW and Orange County (SNA) and Ontario (ONT) airports in the Los Angeles Basin. According to DOT data, Southwest as of the end of 2000 carried connect traffic between Dallas Love Field and the Los Angeles Basin. Other airlines, including Frontier and National, offered service between Dallas/Fort Worth and the Los Angeles Basin on a connecting basis as of the end of 2000.

American frequently experiences negative results for the first few months of service on a new route.

DFW-TPA (Tampa)

American may have engaged in predatory conduct on DFW-TPA against SunJet by becoming more aggressive against SunJet in November 1996 by removing restrictions from its "matching" fares.

SunJet began DFW-PIE (St. Petersburg) service in early 1995 with low, unrestricted (no advanced purchase or round trip required) fares.

American has never served PIE, but served (and still serves) Tampa International Airport, 15 miles from PIE. In January 1995, American responded to (but did not undercut) what it believed to be SunJet's lowest DFW-PIE fares on DFW-TPA on a round-trip basis, and with a 7-day advance purchase requirement that SunJet did not impose, and only on a limited number of its DFW-TPA flights.

In November 1996, American reduced the advance purchase requirement on its responding DFW-TPA fares to three days and removed a Saturday night stay requirement but continued to maintain the round-trip restriction, and to offer these fares on only some of its DFW-TPA flights. In March, 1997, SunJet assigned route decisions to WTS, which decided to exit this route. In sworn responses to a Department of Justice Civil Investigative Demand dated April 23, 1998, WTS attributed its decision to stop DFW-PIE service to "lack of passenger demand and aircraft unavailability," and did not mention any American conduct.

American (six daily flights) and Delta (three daily flights) offered nonstop DFW-TPA service as of the end of 2000; connecting service was provided by AirTran and others.

DFW-OAK (Oakland)

American might have engaged in predatory conduct in DFW-OAK by "substantially matching" SunJet's DFW-OAK fares.

Sun Jet announced in November 1996 that it would initiate DFW-OAK service in December with low, unrestricted (no advance purchase or round trip purchase required) fares. When SunJet made this announcement in November 1996, American and Delta were already offering nonstop DFW-OAK service.

American filed DFW-OAK fares in November 1996 effective on SunJet's starting date responding to (but not undercutting) SunJet's fare levels, but with a round trip and three-day advance purchase requirement that SunJet did not impose.

SunJet did not begin DFW-OAK, in part because it was unable to secure the additional aircraft necessary to operate the route. As of the end of 2000, American (four daily flights) and Delta (three daily flights) served DFW-OAK nonstop, while other airlines offered service between Dallas/Fort Worth and Oakland, San Francisco, and San Jose on a nonstop or connecting basis.

DFW-PHX (Phoenix)

American may have engaged in below-cost pricing from October 1996 through November 1996. Vanguard announced on September 9, 1996 that it would introduce DFW-PHX service on October 1, 1996 at "low fares." On September 24 and October 9, 1996, Vanguard announced service between Phoenix and Cincinnati, Denver, Wichita, and Minneapolis beginning in October or November.

At the time Vanguard announced DFW-PHX service, DFW-PHX was already served by Delta, American and America West on a nonstop basis. Phoenix is a hub for America West airlines and has been since 1994. Vanguard began one daily round trip DFW-PHX service in October 1996.

Prior to Vanguard announcing its DFW-PHX service, American had published its plan to add four DFW-PHX flights (in addition to American's then nine daily round trips) over the September-December 1996 period.

After Vanguard's announcement of DFW-PHX service, American accelerated the start dates on some of its four additional flights. American matched Vanguard's fare level and offered the matching fares on five of American's DFW-PHX flights.

After Vanguard hired a new CEO, Vanguard announced on November 8, 1996 that it was canceling DFW-PHX (and other PHX) service, eliminating PHX entirely from its route structure. Vanguard's DFW-PHX service operated only from October to November 1996.

At the end of 2000, American continued to serve DFW-PHX (with 11 daily nonstop flights constituting more service than it offered during 1996), as did America West (five daily flights) and Delta (three daily flights) on a nonstop basis. Moreover, according to DOT data, as of the end of 2000, Southwest carried connect traffic between Dallas Love Field and Phoenix.

LCCs AND PRICE COMPETITION

During the twelve months preceding Vanguard's April 1995 entry into the DFW-ICT market (April 1994-March 1995), American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$99 – $108	3,932 – 5,557	21,314 – 32,109

During the four quarters preceding Vanguard's April 1995 entry into the DFW - ICT market (2Q 1994 - 1Q 1995), the total number of local passengers traveling in that market each quarter ranged from 16,420 to 19,390. The average market fare ranged from $105 to $115 during that period.

During the period from June 1995 through September 1996, while Vanguard served the DFW - ICT market but before American’s questionable acts in that market, American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$52 - $75	5,166 - 7,578	30,528 - 34,664

During that same period, the total number of local passengers traveling in that market ranged from 35,140 to 37,460 per quarter. The average market fare ranged from $60 to $68.

During the period from October 1996 through December 1996, when American may have engaged in predatory acts in the DFW-ICT market, American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$58 - $61	10,076 - 11,041	44,798 – 47,588

During that same October 1996 through December 1996 period, the total number of local passengers traveling in that market 38,650 for the quarter. The average market fare was $55.

During the twelve - month period beginning six months after Vanguard's exit (July 1997 - June 1998) from the DFW-ICT market, American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$88 - $102	7,019 - 8,373	29,939 - 33,790

During the same twelve-month period, the total number of local passengers traveling in that market ranged from 20,840 to 24,590 per quarter. The average market fare ranged from $94 to $99.

During the second twelve-month period beginning six months after Vanguard's exit (July 1998-June 1999) from the DFW-ICT market, American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$100 - $123	5,744 - 8,257	25,891 - 33,651

During the same twelve-month period, the total number of local passengers traveling in that market ranged from 19,610 to 23,200 per quarter. The average market fare ranged from $105 to $120.

During the period from January 1994 to December 1994, before Vanguard entered the DFW-MCI market, American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$107 - $117	14,831 - 19,306	61,489 - 69,092

During the same period, the total number of local passengers traveling in that market ranged from 66,190 to 71,860 per quarter. The average market fare ranged from $108 to $115.

During the period from February 1995 through December 1995, while Vanguard served the DFW-MCI market on a non-stop basis, American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$77 - $98	19,269 - 34,528	58,903 - 106,996

During the same February 1995 through December 1995 time period, the total number of local passengers traveling in that market ranged from 94,520 to 103,610 per quarter. The average market fare ranged from $79 to $88.

During the period from January 1996 to September 1996, when Vanguard did not serve the DFW-MCI market on a non-stop basis, American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$108 - $147	24,435 - 31,568	74,404 - 92,534

During the same January 1996 to September 1996 period, the total number of local passengers traveling in that market ranged from 83,740 to 98,900 per quarter. The average market fare ranged from $110 to $128.

During the period from October 1996 to May 1998, while Vanguard served the DFW-MCI market and American might have engaged in predation in that market, American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$76 - $102	29,312 - 43,303	85,890 - 106,992

During that same October 1996 to May 1998 time period, the total number of local passengers traveling in that market ranged from 104,870 to 128,850 per quarter. The average market fare ranged from $74 to $96.

After the end of the period when American might have engaged in predation in DFW-MCI, from June 1998 through September 1999, American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$93 - $126	27,222 - 40,026	72,644 – 100,503

After the end of the same period, the total number of local passengers traveling in that market ranged from 110,690 to 126,430 per quarter. The average market fare ranged from $96 to $113.

During the period from February 1997 through January 1998, while both American and SunJet served the DFW-LGB market, American's average fare, local passengers carried and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$83 - $118	6,615 - 24,997	21,128 - 34,472

During the same February 1997 through January 1998 period, the total number of local passengers traveling in that market ranged from 59,210-75,000 per quarter, excluding passengers carried by SunJet. The average market fare ranged from $94 to $107.

During the twelve-month period beginning six months after SunJet's exit (July 1998 through June 1999), American's average fare, local passengers carried, and total seats, on a monthly basis, were within the following ranges:

American Average Fare	American Local Passengers	American Seats
$142 - $177	13,513 - 25,309	21,866 - 33,739

During the same twelve-month period, the total number of local passengers traveling in that market ranged from 60,200-77,360 per quarter. The average market fare ranged from $141 to $164.

The following table shows the monthly ranges for American's monthly average fare, the local passengers carried, and the total number of seats allocated to various routes. In addition, the table shows the total number of passengers in the market (shown per quarter rather than by month) and the average fare during the period. The first section, dealing with the Dallas - Wichita route, uses five time periods: the 12 months preceding Vanguard's market entry, the period after entry but before any possible "predation," the period of the potential predation, and the two successive 12-month periods following Vanguard's departure from the market. The second Dallas - Kansas City, uses periods representing the period prior to Vanguard's entry, the period of Vanguard's non-stop service, the period of Vanguard's connect-only service, the period of the suspected predation, and the subsequent 16 months. The third section, Dallas - Colorado Springs, shows three periods: the year prior to Western Pacific's entry in the market, the period Western Pacific operated in the market, and the twelve month period commencing six months after Western Pacific's departure from the market. The final section, Dallas - Long Beach, has two periods: that during which American and SunJet were both in the market, and the twelve-month period commencing six months after SunJet's exit.

	American			Market	
	Average Fare	Local Passengers	Total Seats	Average Fare	Passengers/Quarter
DFW - ICT					
06/1994 - 05/1995	$ 99 - 108	3932 - 5557	21,314 - 32,109	$ 105-115	16,420 - 19,390
06/1995 - 09/1996	52 - 75	5166 - 7578	30,528 - 34,664	60 - 68	35,140 - 37,460
10/1996 - 12/1996	58 - 61	10,076 - 11,041	44,798 - 47,588	55	38,650
07/1997 - 06/1998	88 - 102	7019 - 8373	29,939 - 33,790	94 - 99	20,840 - 24,590
07/1998 - 06/1999	100 - 123	5744 - 8257	25,891 - 33,651	105 - 120	19,610 - 23,200
DFW - MCI					
01/1994 - 12/1994	107 - 117	14,831-19,306	61,489 - 69,092	108 - 115	66,190 - 71,860
02/1995 - 12/1995	77 - 98	19,269-34,528	58,903 - 106,996	79 - 88	94,520 - 103,610
01/1996 - 09/1996	108 - 147	24,435 - 31,568	74,404 - 92,534	110 - 128	83,740 - 98,900
10/1996 - 05/1998	76 - 102	29,312 - 43,303	85,890-106,992	74 - 96	104,870 - 128,580
06/1998 - 09/1999	93 - 126	27,222 - 40,026	72,644 - 100,503	96 - 113	110,690 - 126,430
DFW - LGB					
02/1997 - 01/1998	83 - 118	6,615 - 24,997	21,128 - 34,472	94 - 107	59,210 - 75,000
07/1998 - 06/1999	142 - 177	13,513 - 25,309	21,866 - 33,739	141 - 164	60,200 - 77,360

POTENTIAL PREDATORY PRICING

Marginal cost is the incremental cost of a very small change in output. Marginal cost is difficult to measure directly. Incremental cost is the amount by which costs change when output changes. Incremental cost is an extension of the concept of marginal cost.

American has developed a number of internal measures that address, among other things, route performance. Some of these measures are referred to as "decision measures" because they are used for decision making rather than financial reporting. Certain of American's decision measures, such as Decision FAUDNC, primarily measure the relative performance of routes. The company employs two basic categories of flight and route performance measures: fully allocated earnings measures (including the Decision FAUDNC and Decision FAUDNS measures) and variable earnings measures (including the Decision VAUDNC and Decision VAUDNS measures).

American's fully-allocated earnings measures, such as Decision FAUDNC, reflect revenues minus all categories of costs within American's decision accounting system, including variable expenses, aircraft ownership, fixed overhead, interest, equity and income taxes.

American's variable earnings measures of flight and route performance, such as Decision VAUDNC, reflect revenues minus the variable expense categories of costs within American's decision accounting system. The company's variable earnings measures of flight and route performance are known as "Decision VAUDNC" and "Decision VAUDNS." VAUDNC refers to variable earnings plus upline/downline contribution Net of Costs. Decision VAUDNC attempts to capture the net upline/downline revenues generated from connecting passengers and then subtracts the variable costs associated with those passengers as well as an estimated incremental flight cost assigned to every connecting passenger.

VAUDNS refers to variable earnings plus upline/downline contribution Net of Spill. Decision VAUDNS attempts to capture the upline/downline revenues from connecting passengers net of spill. "Spill" reflects the likelihood that accommodating an additional passenger on an upline/downline flight would result in the loss of some other passenger that was "spilled" to a competitor's flight.

VAUDNC and VAUDNS are calculated using costs categorized as variable over an 18-month planning horizon. The costs included in the VAUDNC/VAUDNS measures represent more than 72% of the total costs included in American's decision accounting system for the DFW-MCI, DFW-ICT, DFW-COS, and DFW-LGB routes over the relevant time periods. VAUDNC reflects onboard revenues minus the categories of expense labeled by American as "decision variable expense" and adds the incremental contribution of upline/downline passengers. VAUDNC and VAUDNS are measures of variable earnings of a route within American's 18-month planning horizon.

The government has proposed its own measure of American's variable earnings (which it has labeled "VAUDNC-AC"). The cost component of VAUDNC-AC includes American's VAUDNC costs plus costs of aircraft ownership. Thus, VAUDNC-AC treats aircraft ownership costs as a variable expense, thereby reducing the apparent performance of the route. VAUDNC-AC includes over 79% of the total costs included in American's decision accounting system for the DFW-MCI, DFW-ICT, DFW-COS, and DFW-LGB routes over the relevant time periods.

Aircraft ownership costs are properly considered fixed costs in the industry, and are not an avoidable cost of changing capacity in a route.

Under each of the VAUDNC, VAUDNS, and VAUDNC-AC measures, over the possible predation periods, American's revenues exceeded its average variable costs at the route level on the following routes: DFW-MCI (Kansas City), DFW-ICT (Wichita), DFW-COS (Colorado Springs), and DFW-LGB (Long Beach). With respect to the DFW-PHX (Phoenix), DFW-EWR (Newark), DFW-TPA (Tampa), and DFW-OAK (Oakland) routes, American's revenues did not appear to be below any measure of costs.

As noted above, American's decision accounting system has a measure termed FAUDNC. This was a part of a number of profitability measures intended to reflect the economic value

of operating a flight, a segment, a hub or the entire system. The company expended a substantial amount of time and money investigating its accounting systems, and in developing decision FAUDNC. Since its development of FAUDNC in 1995, American has continued to modify its methodology to improve route profitability reporting.

Decision FAUDNC stands for fully-allocated earnings plus upline/downline contribution net of costs. Decision FAUDNC is a fully allocated earnings measure. American developed FAUDNC to compare the performance of its various routes against each other using a benchmark that reflected its fully allocated earnings (and thus its fully allocated costs of operation).

Decision FAUDNC attempts to capture the upline/downline revenues generated from connecting passengers and then subtracts the costs associated with those passengers as well as an estimated incremental flight cost assigned to every connecting passenger. Beyond the upline/downline revenues generated from connecting passengers, FAUDNC does not capture the system benefits to American of operating particular routes and flights. Such benefits arise from the fact that serving certain routes can provide enhanced regional presence or origin point presence to American's route network, thereby making its entire system more attractive to travelers. But these system benefits are not captured in the performance measures for individual routes and flights because the benefits accrue on other routes and flights.

Although the percentage can change slightly from year to year, FAUDNC captures approximately 97-99% of American's total costs. The only costs excluded from FAUDNC are certain corporate general and administrative expenses, such as legal expenses and certain corporate officer salaries, long term leases for space that cannot be subleased, and certain fixed maintenance expenses. And, again although the percentage can vary slightly from year to year, expenses excluded from FAUDNC represent approximately 1-3% of American's total operating costs.

In generating FAUDNC, American allocates or assigns all of the operating expenses within its decision accounting system down to the level of individual nonstop flights. American's methodology for calculating route expenses is simply to aggregate the expenses that were allocated to each flight operated on that route. While there are certain types of expenses in FAUDNC, such as fuel or landing fees, that are directly caused by a particular flight or route, there are many other costs in FAUDNC that constitute the overhead or general operating expenses incurred in running an airline, particularly one with a complex hub-and-spoke network, that are not driven (or may not be driven depending on the specific circumstances presented) by operating or not operating a particular flight or route. Examples of such expenses at American include dispatch, city ticket offices, certain station expenses, a portion of pilot pay and other labor costs, certain maintenance expenses, American's flight academy, flight simulator maintenance, investments in yield management and other computerized systems, and sales and advertising. FAUDNC includes certain costs that would not be entirely avoided if American were to abandon service on a particular DFW route, but rather all or a portion of which would be reallocated to other routes.

In generating FAUDNC, American allocates certain general operating expenses among its various flights and routes on an arbitrary basis, such as takeoffs and landings, flight hours, or

passenger enplanements. The cost accounts incorporated in FAUDNC include such fixed overhead expenses as aircraft-related overhead and system-related overhead.

American's aircraft-related overhead expenses consist mainly of fixed expenses for American's maintenance facilities in Tulsa and Fort Worth, including rent (covering the retirement of long-term facility bonds), computer systems, communications and utilities. These fixed maintenance expenses are allocated to American's aircraft on the basis of either departures or flight-hours. Also included in aircraft-related overhead is the exterior cleaning of airplanes (as distinguished from the interior cabin cleaning done after each flight). Each airplane exterior is cleaned on a periodic basis and the overall expense of this activity is allocated across the fleet based on departures. American's system-related overhead expenses consist of a wide range of activities required to operate a large hub-and-spoke airline. These include management, supervision and administrative expenses associated with aircraft load and clearance (the weight and balance of aircraft), as well as flight attendant staffing. In addition, this category includes functions such as headquarters marketing and sales, capacity planning, corporate communications, pricing and yield management, flight operations and safety, cabin design and crew scheduling. Passenger advertising is also part of this category, including media advertising (newspapers, magazines, radio and television) and timetable production costs.

While American's aircraft-related and system-related overhead expenses are not driven by the operation of any particular route or flight, in order to generate FAUDNC, these expenses are allocated arbitrarily over American's entire fleet. FAUDNC includes a target return on American's capital, including imputed interest and returns to equity for flight assets, station assets and system assets. FAUDNC includes an assumed income tax on profits for both the route at issue and for all upline/downline revenues.

While American tries to include in Decision FAUDNC all cost categories that could be impacted or affected by anticipated changes in overall system capacity or traffic over an 18-month planning horizon, this means if American anticipated a downturn in its business 18 months hence and decided to scale down its operations in response, it could reduce some of the costs in its "fixed" categories over an 18-month period. Not all costs in FAUDNC could be eliminated over 18 months, or scaled down proportionately with a planned reduction in activity levels.

During any given month, American has many domestic routes that generate negative FAUDNC results. According to some calculations, 16 Americans routes (3% of all its routes) had negative FAUDNC for 12 consecutive months. There are numerous routes in American's domestic system that generate persistently negative FAUDNC results.

FAUDNC, therefore, is a fully allocated earnings measure, not a measure of the variable costs of serving a route. It includes those costs which could be affected by anticipated changes in system capacity or traffic over an 18-month planning horizon. It reflects revenues minus all categories of costs within American's decision accounting system, including decision passenger variable expense, decision direct capacity expense, cargo variable expense, variable overhead, decision fixed overhead expense, decision interest expense, decision equity expense, and decision income tax expense. FAUDNC excludes only 1 to 3 % of all of American's costs. As noted earlier, FAUDNC includes at least 97% of American's

total operating costs and approaches 99% of all costs. FAUDNC includes fixed costs; it includes $600 million in fixed overhead expenses. Only 16.5% of the fixed overhead within FAUDNC are direct costs which are proportional to activity level. Many costs in FAUDNC involve step functions, and any particular expense category in FAUDNC may be overstated or understated by the average cost used in FAUDNC. Thus, not every cost in FAUDNC would be eliminated or scaled down proportionately with any particular planned reduction in activity.

FAUDNC is used as a measure to evaluate route performance. VAUDNC and VAUDNS are used to measure flight and route performance. FAUDNC establishes a long term benchmark marking at the break-even level. A negative FAUDNC reflects that, for some perhaps temporary period, American was failing to generate revenue to meet all operating costs plus a target return on capital.

FAUDNC is designed to capture the upline/downline revenues generated from connecting passengers and then subtract the costs associated with those passengers, which includes the incremental capacity cost of carrying a connecting passenger on the upline/downline flight.

A long term negative FAUDNC indicates a potential for a problem. However, a negative FAUDNC over a shorter period of time does not indicate that action on a route is necessary. American has endured long periods — sometimes over 18 months — when its system-wide average FAUDNC was negative. In June 1994, 55% of American’s routes were FAUDNC negative.

American's senior management met monthly to review routes and system profitability. A regular feature of such meetings was the review of the worst performing routes, as measured by FAUDNC. FAUDNC is one of the factors American uses when evaluating whether to exit a route.

American has found it too difficult to allocate system benefits to individual routes through FAUDNC. The negative FAUDNC month followed a capacity expansion is significant, as well as the fact that such an effect on profitability from capacity additions is atypical.

Again, VAUDNS, VAUDNC and VAUDNC-AC are measures of average avoidable cost of a route. However, VAUDNC-AC overstates short run average variable cost ("SRAVC") because it includes fixed aircraft ownership costs. VAUDNS, VAUDNC and VAUDNC-AC capture between 72% and 79% of all American's costs.

On the DFW-LGB route, American's VAUDNC and VAUDNS were negative for the first month or two. It is uncontroverted that airlines typically incurred losses during the start up of a new route. Throughout the entire period of possible predation, American's VAUDNC and VAUDNS were positive.

On the DFW - Wichita route, American's VAUDNC and VAUDNS were never negative. They "approach[ed] zero" for one month (October, 1996), but then rebounded. Taken over the entire period of possible predation, American's revenues on the route, as measured by VAUDNC and VAUDNS, covered its costs.

American does not ordinarily perform special analyses of costs; rather it relies on the costs reported in its decision accounting system to understand the impact of its route decisions on costs. In addition to its decision measures, American maintains financial accounting measures of profitability. American maintains a measure of route profitability in its financial accounting system, which it refers to as "Accounting Pre-Tax Earnings." American's financial accounting route profitability measure reflects the fully allocated costs that tie to reported Airline Group financial results. American Eagle calculates fuel cost for a route by pooling station fuel expenses and then allocating them to flights based on generic burn rates for particular aircraft types.

Only 3% of American's domestic routes had a period of negative FAUDNC for 12 months and only 1.2% for a period of 18 months. However, with a shorter period of reference, it is uncontroverted that many American routes have consistently negative FAUDNC.

American's capacity additions lowered American's load factors and increased its costs per passenger for some periods on some routes. For example, American's entry in DFW-LGB lowered its load factors in other DFW-LAX Basin routes. American's capacity additions could have the effect of lowering the entrant's load factor and therefore decreasing profitability.

The "capacity planning model" is a profit forecasting model used to assess how to deploy American's fleet. The logic of the capacity planning model seeks to maximize system profitability subject to fleet and operating constraints. American uses the capacity planning model as an indicator of the most profitable allocations of its fleet.

In the summer of 1997, American undertook an investigation of the incremental profitability of the additional capacity at DFW in response to LCCs. Based on data from DFW-Kansas City and DFW-Colorado Springs, American found that there was "market stimulation as AA responds with increased capacity and pricing reductions. Traffic generation, however, generally does not compensate for the loss in price premium and profitability is significantly impacted."

COMPETITIVE PRACTICES

In response to ValuJet entry, American employed a strategy that sought to maximize revenue and profit in DFW-Atlanta in competition with ValuJet from approximately 1994 to summer 1995 — a strategy that involved a conservative pricing strategy, matching fares only on a flight specific basis and employing a yield management strategy to limit availability of matching fares.

American altered its strategy against ValuJet, adding significant capacity in September and December 1995. The effect of these actions resulted in American incurring significantly reduced profitability in DFW-ATL from September 1995 to May 1996. In October, 1995, American's Vice-President of Capacity Planning stated that if American had adopted an aggressive response when ValuJet first entered DFW, it might "have left DFW with memories of a poor result."

Southwest has competed with American in the Dallas/Ft.Worth area for over 20 years. Southwest has had operating costs that were significantly lower than American's on a stage length adjusted basis. American reduced its jet capacity in DFW routes competitive with Southwest by 25.7% between May 1995 and May 1996. As a result, American's seat availability for Southwest-type traffic declined. American's capacity planning and revenue management strategies in Dallas/Ft. Worth Southwest-competitive routes had "truncated" passenger demand for its services. During the relevant time period, American "accepted a limited amount of traffic at Southwest's walk-up fares while generally rejecting their advance-purchase, very low fares." As a result of its capacity and yield management strategies in Southwest-competitive routes, American relied more on flow traffic than on local traffic to provide profitability in those routes. A regression analysis comparing American's responses to LCCs at DFW with its responses to Southwest Airlines at DFW found that capacity changes in Southwest competitive markets are generally associated with increases in profitability, in sharp contrast to the negative effect on profitability from American's changes in capacity in DFW LCC markets.

American normally uses its profit forecasting and fleet assignment model to develop its operating plan. American overrode its capacity planning model by keeping the eighth frequency in DFW-COS to "address competitive issues." American overrode its capacity planning model by increasing frequency in DFW-MCI from ten to twelve round-trips, also to "address competitive issues." American normally restricts its availability of fares in the lower buckets on popular flights and flights where there is a demand for higher fares.

American stationed personnel at the gates of the LCCs at DFW in order to count the number of passengers boarding the LCC's flights (which American referred to as "ramp counts.") American used these ramp counts so that it could more quickly react to competitors, including low cost carriers. Ramp counts are common in the airline industry. Monthly ramp counts were distributed to people high-up at American who were intimately involved with American's DFW LCC Strategy. Ramp counts are expensive: American spent "nearly half a million dollars on ramp counts of approximately 20 routes" in 1998.

The airline industry is one in which the profitability of an airline's pricing, yield management or capacity initiatives often depends heavily on the anticipated response of other airlines. Analysis that tracks economic theories known as "game theory" is used in the airline industry to predict actions by competitors and gauge competitors' reactions. As part of its planning process, American regularly constructs scenarios regarding possible competitive actions and reactions by other airlines and takes actions based on those predictions.

As part of its consulting project for American, Sabre considered possible decision-making processes for American that entailed analyzing competitors' data, including costs, scheduling practices and projected schedules, share, load factor, and profit impacts.

American believes that LCCs engage in "game-theory" analyses when determining whether to enter, expand in, or remain in, a market in competition with an incumbent. American believes that if it permits an LCC to fly one flight in a market, that LCC will increase its frequencies and become a powerful competitor, and believes that it is valuable for competitors taking note of American's actions.

A November 4, 1996 memorandum and study on Caribbean Strategy Issues notes that "American's ultimate strategy . . ., particularly with regard to capacity levels, is likely to send a message to our competitors about our willingness to defend our market position. . . . Any strategy decision should be made with this in mind."

Access Air, a Des Moines, Iowa-based LCC, sought to avoid a competitive response from the major airlines by following these rules: "stay off of elephant paths..., don't eat the elephant's food..., and keep the elephants more worried about each other than they are about you." The fundamental criterion of the Access Air business plan was to serve very large attractive destinations that no one else had turned into a hub. Such routes were not as well-served as hub routes. Access Air sought to avoid a competitive response from major airlines generally; it did not consider American's reputation as a factor in deciding not to enter DFW. Also, Access Air intentionally designed its fare levels to be above the average variable costs of the major airlines so they would not consider Access Air a threat.

REPUTATION ISSUES

American, through its questionable conduct on the routes, has possibly earned a reputation for predation that deters competition on other DFW routes, allowing it to recoup the possible predatory investment it made in the Competitive Response Routes at issue by charging supra-competitive prices on those other DFW routes.

American's potential predatory conduct and reputation could have been a contributing factor to the abandonment of nonstop service in DFW-ICT and DFW-PHX by Vanguard; the abandonment of nonstop service in DFW-LGB, DFW-EWR, and DFW-PIE by SunJet [WTS]; the abandonment of expansion plans for DFW-COS service from between June 1995 and January 1997 by Western Pacific, and that company's ultimate abandonment of nonstop service in DFW-COS.

NEW ENTRY AT DFW

Despite the possible reputation American has for responding aggressively to low fare competition, six low-cost carriers have entered DFW since 1995. American Trans Air initiated DFW-MDW (Midway, Chicago) service in May, 1998. The company AirTran (re)initiated DFW-ATL (Atlanta) service in April 1997, and began DFW-GPT (Gulfport) service in March 1999. Big Sky Airlines began nonstop service to five destinations from DFW in 1999. Ozark Airlines began nonstop DFW-Columbia, MO service in March 2000. Frontier initiated DFW-DEN (Denver) service in December 1998. National initiated DFW-LAS (Las Vegas) service on September 30, 1999. Sun Country initiated nonstop DFW-LAS (Las Vegas) and DFW-MSP (Minneapolis) service in 1999, and announced additional DFW service to several locations in Mexico in March 2000.

FACTS RELEVANT TO MEETING COMPETITION

American has not undercut the published fare of an LCC with a published American fare during the relevant time period. Airline products can vary in many dimensions. American's product was superior to an LCC's product because American offered higher frequencies, and

(in some instances) a frequent flier program and advance seat selection. American considers its frequent flyer program the best in the industry.

It is uncontroverted that fare matching was part of American's LCC strategy, but American did not actually undercut LCC fares on any of the relevant routes.

CONCLUSIONS

The routes in question, and the associated alleged relevant markets, fall into four categories. First, there are possibilities of predatory conduct with respect to seven "core" routes (flights between DFW airport and airports in Kansas City, Wichita, Colorado Springs, Long Beach, Phoenix, Tampa, and Oakland). In addition to these core routes, American's actions potentially affected approximately 40 "reputation" routes, in which American might have monopolized or attempted to monopolize the routes by acquiring a "reputation for predation" in the core routes. In addition, there are some five routes in which American possibly committed predatory conduct, but did not monopolize or attempt to monopolize the routes, and five routes in which American did not monopolize, attempted to monopolize, or engage in predatory conduct, but in which the effects of the possible predation elsewhere might have been "felt."

In each case, the possibility of American's actions is substantially similar: that American, when faced with low cost carrier competition on various routes, might have instituted an aggressive policy of price matching and capacity increases which might have unfairly "stole" customers from the low cost carrier, which was eventually forced to cease competition on the route. After the departure of the low cost carrier, American might have increased its prices and reduced the number of flights serving the route.

ELEMENTS OF LIABILITY

Potential monopolization against American requires proof: (1) that American has monopoly power in a properly defined relevant market; and (2) that it willfully acquired or maintained this power by means of anti-competitive conduct, as distinguished from growth or development as a consequence of a superior product, business acumen, luck or historical accident. Potential attempted monopolization requires proof of: (1) a relevant geographic and product market; (2) American's specific intent to monopolize the market; (3) anti-competitive conduct by American in furtherance of this attempt; and (4) the dangerous probability that American will succeed in this attempt.

Business activity is not "anti-competitive" so long as there is "a legitimate business justification for the conduct." *Multistate Legal Studies*, 63 F.3d at 1550. Specifically, the Act in question does not "prohibit the adoption of legal and ordinary marketing methods already used by others in the market."

The potential anti-competitive conduct in the present action is predatory pricing: that American, in the face of low fare carrier competition, shifted from its traditional strategy and adopted competitive tools which combined price reductions and capacity increases, and that the cost of these tools was greater than the revenue obtained. American possibly endured these losses only because it knew, once the low fare carriers were driven out of the core

markets; it could reduce service, increase prices, and recoup the losses by supra-competitive pricing.

In reality, American's fare prices and its production level — whether characterized as 'output' or 'productive capacity' are two sides of the same coin. According to American, they typically preferred to operate by selling (relatively) fewer seats at higher prices. When it was faced with new entrant, low-cost carrier competitors, American supposedly chose to match the fares of its competitors rather than lose substantial market share to them. The introduction of low fare travel can stimulate passenger demand by a factor of two or three.

Productive capacity in the present action cannot be considered in isolation. American's changes in capacity should not be deemed anti-competitive. To be considered anti-competitive, American must have priced its product below an appropriate measure of cost, and enjoyed a realistic prospect of recouping its losses by supra-competitive pricing.

This table subtracts the former ("predatory losses") from the latter ("recoupment"). If the result is positive, this is taken as evidence of recoupment.

Benchmark:	FAUDNC Margin during Base Period			FAUDNC in Southwest Markets		
	Predatory Loss	Recoupment	Net Sacrifice	Predatory Loss	Recoupment	Net Sacrifice
MCI I	- 4,811,722	135,744	- 4,675,979	- 4,821,829	- 340,077	- 5,161,906
MCI II	NA	NA	NA	- 14,126,870	- 928,580	- 15,055,451
ICT (Berry)	- 800,231	1,392,797	592,566	- 926,754	- 637,201	- 1,563,955
ICT (Full Base)	- 1,616,172	- 7,325,019	- 8,941,191	- 926,754	- 637,201	- 1,563,955
COS	- 5,343,445	3,266,439	- 2,077,006	- 7,007,899	1,746,760	- 5,261,138
LGB	NA	NA	NA	- 3,524,496	5,865,870	2,341,374