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International Journal of Public Administration

Publication details, including instructions for
authors and subscription information:

<http://www.tandfonline.com/loi/lpad20>

Estimating the economic impacts of a hub airline serving a tourist destination: the case of america west airlines and las vegas, nevada

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Published online: 26 Jun 2007.

To cite this article: John H. Brown, Thomas M. Carroll, Dan S. Rickman
& R. Keith Schwer (1995) Estimating the economic impacts of a hub airline
serving a tourist destination: the case of america west airlines and las vegas,
nevada, International Journal of Public Administration, 18:1, 167-182, DOI:
[10.1080/01900699508525004](http://dx.doi.org/10.1080/01900699508525004)

To link to this article: <http://dx.doi.org/10.1080/01900699508525004>

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**ESTIMATING THE ECONOMIC IMPACTS OF A HUB
AIRLINE SERVING A TOURIST DESTINATION: THE CASE
OF AMERICA WEST AIRLINES AND LAS VEGAS, NEVADA**

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ABSTRACT

Airlines are an important component of regional economies. The economic impact of an airline goes beyond the usual impacts of their payroll and expenditures. Airlines also may affect business productivity and the critical economic base of a regional economy. This article estimates the economic impact of America West Airlines on Las Vegas, Nevada. Key aspects of the study were measurement of the direct impacts, estimation

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of the associated impact on tourism allowing for the possibility of competing travel alternatives, and the use of a regional economic impact model to derive the total economic impact.

INTRODUCTION

Facing increased competition and reduced profitability, airlines have begun in recent years, to seek financial incentives from state and local governments in areas they serve. Air carriers argue that air transportation is vital to the economic well-being of the communities they serve. Specifically, the economic impacts of airlines go beyond the effects of their payrolls and purchases.⁽¹⁾ Airline service also affects overall business productivity and the critical export base of a regional economy. Thus, measurement of these effects must be added to the usual direct and indirect impacts of the airline's payroll and purchases to estimate the full value of the economic benefits of an air carrier.

This article estimates the total economic impacts of the operation of America West Airlines on Las Vegas, Nevada. Though the airline continues service to Las Vegas, the deteriorating financial health of America West during 1991 led to speculation that it would cease operations, and eventually led to Chapter bankruptcy protection. Attention among local policy makers focused on the potential economic impact of the loss of the air carrier.

Both short- and long-run impacts were estimated. In the short run, there would be a significant loss of employment and income directly and indirectly related to America West's payroll and purchases. Also, a significant loss of tourist expenditures and their indirect impacts would occur. In the long run, other airlines would expand their operations and/or new entrants would arrive in the Las Vegas market in response to rising air

fares. The estimated increase in air fares and the supply responses by other airlines were determined by the magnitude of loss attributed to America West Airlines and the responsiveness of demand and supply to price changes. However, because America West has a hub in Las Vegas and other airlines serving the West are unlikely to create another hub, there would be a permanent loss of payroll and purchases associated with a hub and a permanent loss of visitor days associated with overnight stays by hub passengers.

The next section begins by discussing measurement of the direct impacts of America West. Then the short- and long-run impacts on tourism were estimated. Both the direct impacts and the impacts on tourism were then entered into the REMI model to estimate the total economic impact of the loss of the airline. The final section summarizes the results and discusses their general applicability.

METHODS

Overview

To estimate the economic impact of America West, we used a regional economic impact model produced by Regional Economic Models, Incorporated, (REMI).⁽²⁾ The specific model has five regions: Clark County (Las Vegas metropolitan area), Nye County, Lincoln County, Washoe County (Reno metropolitan area), and the remainder of Nevada.

The model was used to simulate a withdrawal of America West from Las Vegas beginning in 1992. We did not predict that America West would actually suspend operations. Rather we measured the contribution of America West Airlines to the Las Vegas economy. To do this, we simulated how the economy would function with and without America West.

We estimated the impact of America West's operations on the Nevada economy by contrasting two runs of the model. One run, which included America West's employment and expenditures, was the control forecast. The control forecast assumed that future air traffic into McCarran Airport paralleled national and state trends. The other run was the simulation in which America West's employment and expenditures were removed from the model. The difference between the control and simulation forecasts measured the economic contribution of America West. Since the REMI model is dynamic, the time path of impacts were estimated. By definition, static economic impact models do not contain time as a dimension. With a static model, two scenarios or more that correspond to short-run and long-run impacts have to be specified, and alternately simulated.

Direct Impacts

Table 1 presents America West's 1991 levels of employment and expenditures in Las Vegas. These were the direct impacts of the airline and were entered into the model through policy switches. That is, policy variables were programmed into the equations of the model by REMI that allow the user to enter desired changes in values of key economic variables.

Expenditure items were assigned according to available model expenditure categories. For example, lost airline employees reduced employment in the air transportation sector of the model for Clark County. Rental and landing fees were subtracted from the government enterprise sector. Fuel, property and other taxes were subtracted from state and local government services. Traffic commissions were subtracted from the other transportation sector. Injury loss damage was subtracted from the demand for medical services. The remaining purchases were subtracted from the demands for the corresponding sectors.

TABLE 1

Direct Impact of America West on Las Vegas

Personnel	1,144
Payroll	\$15,925,407
Rentals and Landing Fees	\$21,464,496
Fuel Tax	\$422,701
Property Tax	\$148,477
Other Tax	\$8,740
Traffic Commissions	\$3,381,200
Communications	\$15,420
Utilities	\$132,173
Services	\$1,204,034
Shop Supplies	\$1,923
Office Supplies	\$115,347
Passenger Food	\$623,328
Injury Loss Damage	\$106,854
Advertising	\$114,432
Memberships	\$7,837
Maintenance Materials	\$48,464
Other Expenses	\$147,562
Facility Expenses	\$753,400

Source: America West Airlines

In estimating the impacts two additional adjustments were made. First, an additional policy switch was used in the REMI model to override REMI's average wage rate for the air transportation sector. This was done because total reported payroll loss was known (as shown in Table 1). That is, the difference between the reported reduction in payroll by America West and the total estimated payroll loss by the model was subtracted from total wage and salary disbursements in the air transportation sector. Second, because the model automatically calculates the expenditure loss associated with the employment loss, this calculation was suppressed to avoid double counting. That is, we knew America West's expenditures (shown in Table 1) and we subtracted them directly rather than using estimates generated by the model.

Estimating Short- and Long-Run Impacts on Tourism

America West enplanements in Las Vegas were more than 3.1 million in 1990. As a price-competitive air carrier, America West attracts tourists to Las Vegas who are less affluent and more price conscious. If America West ceased to serve Las Vegas, McCarran would lose Las Vegas-bound passengers. To be sure, other airlines would seek to fill the void, but they would only do so gradually. Yet, it is unlikely that another airline would locate a hubbing operation in Las Vegas. It is estimated that America West's hubbing operation brought a 30 percent increase of cross-hub traffic in addition to the tourist activity typically associated with a recreation destination.⁽³⁾ Thus, cross-hub traffic is expected to be a permanent loss if America West quit its Las Vegas hub.

America West's cross-hub traffic is unique. Airlines typically prefer to locate hubs in non-tourist destinations where they can capture a share of the high-fare business market.⁽⁴⁾ Currently, only American, Delta, and United Airlines are financially able to open a new hub. Each of these airlines

already has a western U.S. hub (San Jose, Salt Lake City, and Denver, respectively). Other airlines are unlikely to replace America West's Las Vegas hub. Airline analysts believe that the number of U.S. airline hubs has peaked. In the current environment, airlines are focusing on efforts to maximize their profits at existing hubs, not in creating more. Consequently, McCarran is expected to permanently lose 30 percent of America West's traffic (12 percent of total McCarran traffic) that is generated by cross-hub travelers.

The expected decline in tourist activity can be explained using simple demand and supply analysis. In Figure 1, the line labeled D represents the hypothetical demand for air transportation into Las Vegas. This line is drawn relatively flat because the tourist demand for air transportation is price responsive.⁽⁵⁾ In other words, price increases will generate a relatively larger reduction in quantity.

If quantity demanded exceeds the quantity supplied, fares increase. The magnitude of the fare increase and tourist reduction depends on both the demand and supply responses. Demand for airline travel to Las Vegas is particularly responsive to fare increases because the demand for tourist travel is more price responsive than business or other types of travel.⁽⁶⁾ Also, we assumed gradual supply responses. To be sure, airlines can substitute larger planes for smaller ones on scheduled flights or increase capacity utilization through overbooking and matching "no shows" and "standby" passengers in the short run. Nonetheless, the difficulty of committing a measurable number of additional flights to Las Vegas limits supply responses.⁽⁷⁾ Yet, other airlines in the long run can increase the number of scheduled flights, thus flattening the supply curve.

The initial reduction in passengers is shown in Figure 1 as a backward shift in supply from S_0 to S_1 . The volume of

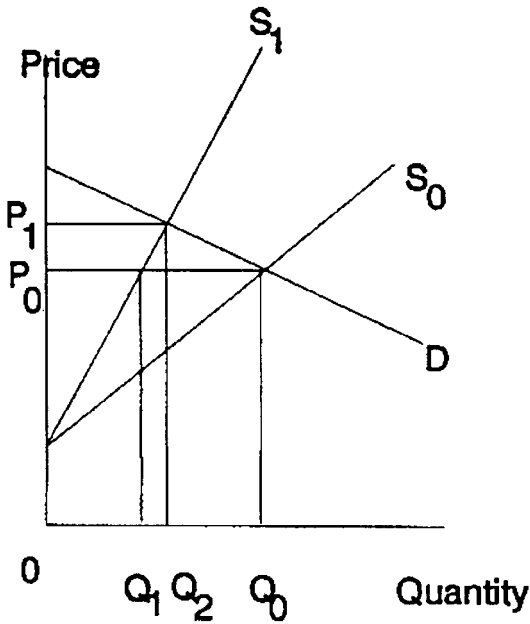


FIGURE 1

Illustration of Demand and Supply Effects

passengers declines from Q_0 to Q_1 at the original equilibrium price of P_0 . As a consequence, a shortage increases the price to P_1 , causing the quantity supplied to increase from Q_1 to Q_2 .

Given the relatively flat demand curve, two scenarios of supply responses were assumed: (1) complete replacement of final destination tourists in two years and (2) complete replacement of final destination tourists in four years. Table 2 reports the number of tourist days lost using a two-year and four-year replacement rate of initial loss of tourist days.

TABLE 2

Tourist Days Lost To Las Vegas

	Four-Year Replacement	Two-Year Replacement
1992	4,762,910	4,105,128
1993	3,431,514	1,442,288
1994	2,100,118	47,550
1995	768,723	47,550
1996 - 2000	47,550	47,550

America West transported 3,163,990 of the total 9,333,942 passenger enplanements in 1990 at McCarran Airport via regularly scheduled flights. But not all passengers were tourists. As a result, further analysis is necessary. In this case we used simple ratios. Anecdotal information suggests that 90 percent of these passengers were tourists or non-resident business travelers, and that the remaining 10 percent were returning Las Vegas residents. Since America West gives connecting passengers the option of an extended layover in Las Vegas at a nominal charge, it was further assumed that 70 percent of the America West passengers were terminating their flights in Las Vegas. This implies that 30 percent were making connections with other planes in Las Vegas. Finally, we assumed that one-third of the displaced America West passengers either drive to Las Vegas (substituting an alternative form of travel) or find seats on other airlines. Using these assumptions we were able

to estimate the impacts of changing tourist expenditures as a result of changing transportation conditions.

Using the above information, the absence of supply responses reduces Las Vegas tourism by 1,328,876 a year. But, as previously suggested, supply adjustments occur. Moreover, these adjustments accumulate with time. Assuming a constant replacement of 4,623 passengers per month by other airlines for two years implies 1,026,282 fewer passengers the first year and 360,572 the second year. Since the typical tourist spends four days in Las Vegas,⁽⁸⁾ the loss of passengers would result in a loss of 4,105,128 and 1,442,288 tourist days the first and second years.

Ultimately, tourist losses would consist only of the loss of lay-over passengers that would have made connections through the Las Vegas hub. America West estimated that approximately one percent of passengers connecting through Las Vegas take advantage of the stop-over privilege, a percentage that translates into an estimated 47,550 tourist days per year.

A four-year replacement scenario predicted that Las Vegas would lose 4,762,910 tourist days the first year; 3,431,514 tourist days the second year; 2,100,118 tourist days the third year; and 768,723 tourist days the fourth year. Again, in the long run annual tourist days lost equal 47,550 due to the loss of the hub.

Having estimated the direct loss of tourists, we next translated impacts into expenditures per day by industry within the model. The model contains a breakdown of tourist dollars spent per day for a typical tourist staying in a hotel or motel. Most expenditures then were assumed to be in the hotel sector with nearly an equal amount in eating and drinking establishments.

RESULTS

To measure the impact of America West's operations on the Las Vegas economy, we removed the employment and expenditures detailed in Table 1 and the tourist effects shown in Table 2. Two scenarios, corresponding to the two-year and four-year replacement of lost tourist days, were estimated using the REMI model. Tables 3 and 4 present the percent changes in total employment, the significant employment losses by major sector, population, and disposable personal income.

As shown in Table 3, in the two-year replacement scenario there was a 3 percent loss of total employment (12,798 jobs) and a 2 percent loss of disposable personal income (254 million dollars) in the first year. The losses reflect both estimated direct and indirect expenditures associated with America West, its employees, and tourists. Indirect effects were estimated to occur because of the respending of the initial expenditures.

The simulations predicted that the greatest losses would occur in transportation, public utilities and retail trade. The losses in retail trade and services reflect both the loss of purchases by America West's employees and the loss of tourist expenditures. The model did predict an increase in transfer payments for unemployed workers, mitigating the income loss. State and local government was predicted to lose employees because of the loss of rental and landing fees to the airport. Because predicted population responded with a lag, the loss of population was proportionately less than the loss of employment.

The loss of tourist days would be completely replaced by 1994. As other airlines increased the number of their flights both America West's employment losses and final destination tourist days would be replaced. By the year 2000--reflecting only the loss of hub travellers--total employment was predicted

TABLE 3
Las Vegas: Percent Changes Due to America West
(Two-Year Replacement)

Year	Transportation & Public Utilities	Retail Trade	Services	State & Local Govern- ment	Total Employ- ment	Population	Dispos- able Personal Income
1992	-6.92%	-5.91%	-2.61%	-1.47%	-2.99%	-0.40%	-1.98%
1993	-2.66%	-2.15%	-0.93%	-1.07%	-1.13%	-0.67%	-1.05%
1994	-1.78%	-0.20%	-0.05%	-0.93%	-0.24%	-0.61%	-0.48%
1995	-1.76%	-0.17%	-0.05%	-0.84%	-0.22%	-0.53%	-0.39%
1996	-1.73%	-0.15%	-0.04%	-0.78%	-0.20%	-0.47%	-0.32%
1997	-1.71%	-0.13%	-0.03%	-0.71%	-0.18%	-0.41%	-0.27%
1998	-1.69%	-0.12%	-0.03%	-0.65%	-0.17%	-0.36%	-0.23%
1999	-1.67%	-0.11%	-0.03%	-0.60%	-0.16%	-0.31%	-0.20%
2000	-1.65%	-0.11%	-0.03%	-0.55%	-0.16%	-0.27%	-0.18%

TABLE 4
Las Vegas: Percent Differences Due to
America West Withdrawal
(Four-Year Replacement)

Year	Transportation & Public Utilities	Retail Trade	Services	State & Local Govern- ment	Total Employ- ment	Population	Dispos- able Personal Income
1992	-7.12%	-6.83%	-3.01%	-1.53%	-3.39%	-0.46%	-1.90%
1993	-5.71%	-4.94%	-2.16%	-1.79%	-2.53%	-0.93%	-1.57%
1994	-4.31%	-3.08%	-1.32%	-1.76%	-1.66%	-1.10%	-1.19%
1995	-2.93%	-1.28%	-0.52%	-1.56%	-0.80%	-1.08%	-0.75%
1996	-1.75%	-0.28%	-0.07%	-1.26%	-0.28%	-0.96%	-0.46%
1997	-1.72%	-0.25%	-0.07%	-1.12%	-0.25%	-0.82%	-0.39%
1998	-1.70%	-0.22%	-0.06%	-1.00%	-0.23%	-0.71%	-0.34%
1999	-1.68%	-0.20%	-0.06%	-0.89%	-0.21%	-0.60%	-0.30%
2000	-1.66%	-0.19%	-0.05%	-0.79%	-0.20%	-0.51%	-0.27%

to be .16 percent less and disposable personal income .18 percent less.

Table 4 shows that the economic losses would initially be slightly greater and longer lasting, in the four-year replacement scenario. Because the tourist losses would be sustained for a longer time, a greater loss of population would occur. Disposable personal income would decline more because of the greater loss of population and associated non-wage income.

DISCUSSION

With the airline industry facing increased financial competition, America West filed for reorganization under Chapter 11 bankruptcy in 1991. This resulted in reduced daily flights through its Las Vegas hub from 138 in 1991 to only 77 in September, 1992. Although some of the flights have been picked up by competitors, principally Southwest, the prospect of American West's reduced flights has forced McCarran airport officials to present bond companies with two impact scenarios--one with America West and one without. A regional economic model proved useful in measuring the full impacts (both direct and indirect) over time of alternative transportation scenarios.

The impact of America West on the Las Vegas economy is significant in the short run. However, only the direct and indirect economic activity associated with the America West hub is lost in the long run. Nevertheless, some reservations should be noted regarding the general applicability of these conclusions.

First, it was assumed that one-third of the passengers arriving in Las Vegas on America West would either adopt an alternative mode of transportation or fly on an alternative

carrier. This was a conservative estimate. As a result, the tourism impact may be understated.

Second, the Las Vegas market for airline travel has some unique features which tend to limit the general applicability of these results. In particular, Las Vegas is widely considered in the airline industry as a low-fare market. This status results from its popularity as a tourist destination. Tourists constitute the more price-sensitive segment of the air travel market. The average fare in Las Vegas is 76.1 percent of the industry average.⁽⁹⁾ Since the Las Vegas tourist- and service- oriented economy is sensitive to changes in the cost of travel, other airlines may not completely replace the loss because of lower profitability. In this case economic losses may be understated.

ACKNOWLEDGMENTS

The study was funded by America West Airlines, Inc. through the University of Nevada, Las Vegas, Center for Business and Economic Research.

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