



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

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

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

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

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

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



**Transportation Research Forum**

---

Baggage Fees and Airline Performance: A Case Study of Initial Investor Misperception

Author(s): Gerhard J. Barone, Kevin E. Henrickson, and Annie Voy

Source: *Journal of the Transportation Research Forum*, Vol. 51, No. 1 (Spring 2012),  
pp. 5-18

Published by: Transportation Research Forum

Stable URL: <http://www.trforum.org/journal>

---

The Transportation Research Forum, founded in 1958, is an independent, nonprofit organization of transportation professionals who conduct, use, and benefit from research. Its purpose is to provide an impartial meeting ground for carriers, shippers, government officials, consultants, university researchers, suppliers, and others seeking exchange of information and ideas related to both passenger and freight transportation. More information on the Transportation Research Forum can be found on the Web at [www.trforum.org](http://www.trforum.org).

# Baggage Fees and Airline Stock Performance: A Case of Initial Investor Misperception

by Gerhard J. Barone, Kevin E. Henrickson, and Annie Voy

*In response to increasing fuel costs, airlines began introducing baggage fees as a new source of revenue, fees which have since been increased. In this study, an event study methodology is used to examine the impact of these announcements on airline stock prices. The results indicate that the initial announcements led to negative abnormal returns for the announcing firm and other competing airlines, as they were interpreted as a sign of industry weakness. However, the results also show that subsequent increases in baggage fees, which had been shown to positively impact the airline's financial performance, are associated with positive abnormal returns.*

## INTRODUCTION

Rapidly rising oil prices over the past several years have had a dramatic and sustained impact on airline profitability. In response to declining profits, airlines have increased their dependence on revenue from service fees to counterbalance rising expenses.<sup>1</sup> In 2008, a number of airlines announced the introduction of baggage fees for passengers' first and second checked bags.<sup>2</sup> Ex ante, it is not immediately clear how introducing new baggage fees should affect the financial performance of an airline. On one hand, the new baggage fees could cause consumers to switch to competing airlines that don't require baggage fees, potentially causing a drop in the total revenues of the announcing airline. Alternatively, fees on checked baggage could be a means to increasing revenue, as passengers might not consider the additional cost associated with checking baggage at the time of their ticket purchase. Further, revenue generated from baggage fees might allow the airline to maintain competitive ticket pricing in spite of rising fuel costs. Indeed, Henrickson and Scott (2011) find that airlines implementing baggage fees often lower ticket prices to maintain competitiveness, with each \$1 increase in baggage fees causing firms to lower ticket prices by an average of \$0.24.

In this study, a traditional event study methodology is used to estimate the impact of these announcements of baggage fees on airlines' stock prices. Results suggest that announcements of the introduction of baggage fees on passengers' first checked bags are correlated with large negative and statistically significant abnormal returns for both the announcing airline and, to a lesser extent, competing airlines. These results are interpreted as investors viewing these additional baggage fees as a sign of competitive weakness for not only the announcing airline, but for the airline industry as a whole.

Despite these initial market reactions, however, it became apparent that baggage fees held significant revenue potential for cash-strapped airlines. In a July 2008 press release, United Airlines (2008) stated that "...a \$773 million or 54.1% increase in consolidated fuel expense caused the company's net, pre-tax and operating results to be significantly lower year-over-year." Just a month prior, United, following a precedent established by American Airlines, announced they would begin charging passengers for checked baggage, which they allude to as a way of establishing "new revenue streams by charging for a la carte service" (United Airlines 2008). By the end of 2008, the majority of the legacy air carriers in the U.S. had also announced new service fees charging passengers for checked baggage. These fees, according to the U.S. Department of Transportation, generated \$1.15 billion in revenue for U.S. airlines in what amounted to half of 2008 (Smith 2009).

By mid-2009, approximately one year after American Airlines became the first U.S. airline to charge passengers for their first checked bag, airlines began increasing fees over and above the initial fee for the first and second checked bags.

In light of these new announcements, the event study methodology was extended to estimate the effect of announcements increasing existing baggage fees on airlines' stock prices. Interestingly, the market responded differently to firms' announcements of fee increases, with subsequent baggage fee increases being associated with small, but statistically significant, positive abnormal returns for the announcing airline. This result stems from the fact that investors had several quarters of financial data from the airlines with which to learn about the revenue potential of these baggage fees, causing them to view these increases as positive events rather than a sign of weakness.

As such, these results illustrate one part of the response to airlines' changes in the components of their airfares, something that impacts the airlines, their potential use of similar ancillary fees, their ability to raise capital, and their passengers who pay these higher fees. In addition, the results are important for both stock analysts and individuals who hold the stock of airlines, as the abnormal returns associated with these announcements dramatically impact the market valuation of these stocks. Finally, the results of this analysis shed light on the way in which the market and investors perceive the level of competition between large legacy carriers and lower-cost carriers, as the initial announcements are perceived by the market as a signal of weakness by the announcing airlines, and to a lesser extent, the competing legacy carriers. Yet, the impact of these announcements does not negatively impact their lower cost counterparts.

This paper proceeds as follows. The second section presents a review of related literature. The third section presents the empirical methodology and describes the data used herein. The fourth section presents the findings and the last section concludes.

### **LITERATURE REVIEW**

The existing stock market event study literature has made an important contribution to understanding how firms providing transportation-related services are impacted by various events. For example, Chance and Ferris (1987) examine the impact of air crashes on the return of the airline's stock, arguing that the best measure of the true impact of a catastrophic event is the airline's stock return, since the stock market will quickly incorporate this information into its assessment of a firm's valuation. Using data on air crashes between 1962 and 1985, it is shown that the impact of an air crash is immediately incorporated into the valuation of the airline's stock through a negative abnormal return on the date of the crash, with no subsequent impact on the days following the crash. In addition, Chance and Ferris (1987) find that crashes do not impact other airlines or aircraft manufacturers, a result related to the results presented in this paper, whereby the market reaction to an announced baggage fee or a baggage fee increase impacts low-cost carriers and large legacy carriers differently.

Similar to the findings of Chance and Ferris (1987), Davidson, Chandy, and Cross (1987) use stock market returns for airlines between 1965 and 1984 to examine the impact of air crashes. The results of this analysis show that on the day of a crash there is a large negative return for the airline, similar to the findings of Chance and Ferris (1987), but that these losses are recovered within five days of the crash. One reason provided for this result is that air crashes are not necessarily unexpected events in the airline industry, even if they are rare, and that the airlines carry insurance for such events, potentially limiting their liability.

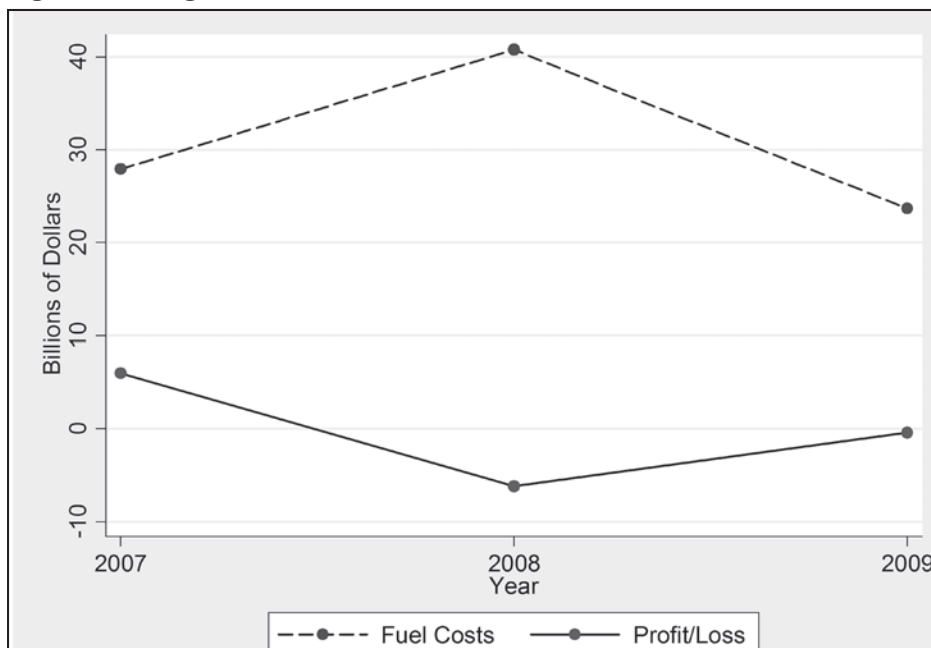
Walker, Pukthuanthong, and Barabanov (2006) follow the methodology set forth by the aforementioned studies examining the stock market reaction to air crashes, but instead focus on the reaction to railroad accidents. Analyzing the impact of accidents that occurred between 1993 and 2003, the results of this analysis show that the stock market reaction to such events may not be efficient. Indeed, the findings indicate that there was an initial negative return in the railroad stock

price, which was followed by negative returns over the days immediately following the accident, but that these negative returns are reversed within a short period of time. The Davidson, Chandy, and Cross (1987) and Walker, Pukthuanthong, and Barabanov (2006) results are of importance to this study, as both show that the market may initially respond to an event in one direction and then reverse course over time, a result consistent with the effect of initial baggage fee announcements having a different impact than subsequent baggage fee increases.

More recently, the impact of the 9/11 terrorist attacks, which used airplanes as weapons, has attracted a great deal of attention in the event study literature. Drakos (2004) focuses on the impact of 9/11 on both the systematic risk and idiosyncratic risk for airlines, finding a structural break in systematic risk for airline stocks and illustrating the importance of portfolio diversification for investors. Carter and Simkins (2004) focus instead on the potential for the market to differentiate between different firms, finding that the impact of 9/11 differed from airline to airline based on their cash reserves, a proxy for the firm's ability to survive the aftermath of 9/11. In addition, Carter and Simkins (2004) find that the market believed that the subsequent Air Transportation Safety and System Stabilization Act would benefit the major airlines over small airlines. Finally, Flouris and Walker (2005) look at the stock market returns of Southwest Airlines, Northwest Airlines, and Continental Airlines to differentiate the impact of 9/11 on legacy carriers versus low-cost carriers, concluding that the market had more faith in Southwest and low-cost carriers than in their legacy competitors, and that 9/11 had a smaller impact on these firms. The results of Carter and Simkins (2004) and Flouris and Walker (2005) are particularly important for this study, as they both illustrate the propensity for the market to react to information differently based on whether the air carrier is a low-cost carrier or a legacy carrier.

Within a decade of 9/11, airlines were faced with another challenge in the form of dramatically increasing jet fuel costs. Figure 1 illustrates this impact by showing the spike in the average airline's jet fuel costs in 2008 along with the related decrease in firm profitability.<sup>3</sup> Carter, Rogers and Simkins (2006) show that the impact of fuel costs can be reduced through the use of jet fuel price hedging, and that the stock market values companies using such hedging strategies at a premium. However, as Figure 1 shows, this hedging strategy cannot fully protect airlines from increases in jet fuel costs.

**Figure 1: Average Airline Jet Fuel Costs and Profits/Losses Between 2007 and 2009**



In addition to increasing firm costs, these jet fuel price increases also exacerbate the competitive pressure low-cost airlines place on their full service counterparts. Indeed, Dresner, Lin and Windle (1996) find that the entrance of a low-cost carrier reduces prices on the route in which the competition increased as well as other competitive routes, implying a spillover competitive effect of the low cost carrier’s entry. Likewise, Goolsbee and Syverson (2008) find that the presence of a low cost carrier at two airports reduces the prices on flights between the two airports even if the airline doesn’t offer service between the two locations. Rather, the mere threat of competition from a low-cost carrier causes the existing carriers to strategically lower their prices. Whinston and Collins (1992) use an event study methodology similar to that employed in this study to examine the entrance of a low-cost carrier on the stock market returns of existing firms, finding that the increased competition has a negative impact on the incumbent’s returns. Similarly, Hergott (1997) uses an event study methodology to show that mergers in the airline industry leading to increased concentration result in increased market power within the industry. Finally, Windle and Dresner (1999) find that the entrance of low-cost carriers cause existing firms to lower their prices on competing routes, but that these firms do not raise their price on non-contested routes to make up for the revenue lost due to the increased competition.

This paper adds to the event study literature by examining the stock market’s response to the introduction of new revenue streams. In particular, following 9/11 and increases in fuel costs, airlines introduced baggage fees as a method of increasing their revenues. Table 1 shows the dates and amounts of these fees by airline, with most of the fees being introduced in 2008 at a level of \$15 for a first checked bag. These fees were subsequently increased in 2009 and 2010 as shown in Table 2. Also notice that, as shown in Table 2, many airlines first increased their baggage fees only for customers checking their baggage at the airport in an attempt to get more customers to check their baggage online, saving costs associated with the time needed to check customers in at the airport. The results of this analysis indicate that the stock market initially viewed these fees as a signal of weakness by the announcing firm and other legacy carriers, but not for low cost carriers. However, the results also indicate that the market learned of the revenue potential of these fees over the first year, and reacted differently to the announced increases in baggage fees, with the announcing firm’s stock receiving a positive abnormal return on the announcement date.

**Table 1: Chronology of Initial Baggage Fees, by Date of Announcement**

<b>Announcement Date</b>	<b>Airline</b>	<b>Effective Date</b>	<b>Initial 1st Bag Fee</b>
May 21, 2008	American	June 15, 2008	\$15
June 12, 2008	United	June 13, 2008	\$15
June 12, 2008	US Airways	July 9, 2008	\$15
July 9, 2008	Northwest	July 10, 2008	\$15
September 5, 2008	Continental	October 7, 2008	\$15
September 12, 2008	Frontier	September 13, 2008	\$15
November 5, 2008	Delta	November 5, 2008	\$15
November 12, 2008	AirTran	November 12, 2008	\$15
April 23, 2009	Alaska Air	May 1, 2009	\$15

Southwest Airlines and Jet Blue Airlines did not institute mandatory baggage fees.

**Table 2: Chronology of Subsequent Baggage Fee Increases, by Date of Announcement**

<b>Announcement Date</b>	<b>Airline</b>	<b>Effective Date</b>	<b>New 1st Bag Fee (online)</b>	<b>New 1st Bag Fee (airport)</b>
April 23, 2009	US Airways	April 23, 2009	\$15	\$20
May 13, 2009	United	May 14, 2009	\$15	\$20
July 15, 2009	Delta	July 16, 2009	\$15	\$20
July 21, 2009	Continental	July 21, 2009	\$15	\$20
July 24, 2009	American	August 15, 2009	\$20	\$20
August 26, 2009	US Airways	August 27, 2009	\$20	\$25
October 2, 2009	Continental	October 2, 2009	\$18	\$20
January 5, 2010	Delta	January 5, 2010	\$23	\$25
January 8, 2010	Continental	January 9, 2010	\$23	\$25
January 13, 2010	United	January 14, 2010	\$23	\$25
January 15, 2010	US Airways	January 18, 2010	\$23	\$25
January 19, 2010	American	February 1, 2010	\$25	\$25
April 22, 2010	Alaska Air	May 1, 2010	\$20	\$20
August 17, 2010	AirTran	September 1, 2010	\$20	\$20

Southwest Airlines and Jet Blue Airlines did not institute mandatory baggage fees.

## METHODOLOGY

The dates of the market's reaction to baggage fee announcements are identified by first searching on the websites of the major U.S. airlines for information about the baggage fees that they are currently charging, including the date these fees were put into effect.<sup>4</sup> This information is used to search backwards in time on Google News to identify the actual date and time of the press release associated with either the introduction of a baggage fee or the increase to an existing baggage fee. Finally, the press releases are used to choose the date on which to investigate the market's reaction to the announcement. In particular, if the press release indicated that a particular airline made a baggage fee announcement "in the morning" on a particular date, the actual announcement date was identified as the date on which to investigate the market's reaction to the announcement. Alternatively, if the press release indicated that a particular airline made a baggage fee announcement "in the afternoon" or "in the evening" on a particular date, then the day following the announcement date was used as the date on which to investigate the market's reaction to the announcement.

This process of identifying announcement dates yielded nine announcements introducing the initial implementation of baggage fees, and 14 announcements increasing existing baggage fees.<sup>5</sup> The first of these fees on checked bags was announced by American Airlines in May 2008, with most of the other major airlines following suit later that same year.<sup>6</sup> These fees were introduced at the level of \$15 for the first checked bag, which was then followed up by baggage fee increases beginning in mid-2009 and continuing through January 2010, when baggage fees were increased to \$20–\$25 for the first checked bag. While 23 baggage fee announcements over a three-year period is a significant amount of information dissemination, it is also noted that this results in a fairly small sample size, especially when treating initial announcements and subsequent announcements separately; however, this limitation is unavoidable given the small number of airlines and the short amount of time since the initial introduction of these fees. In addition, three of these announcements were excluded from the analysis. One of these, Frontier's September 12, 2008, announcement was excluded because the company's stock was delisted. Two other announcements needed to be excluded because the announcement was made at the same time as the company's quarterly report (U.S.



Airway's April 23, 2009, announcement and Continental Airline's July 21, 2009, announcement). Because of the simultaneous announcement of accounting information and the baggage fee increase, it is not possible to determine what portion of the stock's daily return is attributable to the baggage fee announcement rather than the quarterly report.<sup>7</sup>

### The Model

The market's perception of the valuation effects of both types of baggage fee announcements, initial and fee increase, are investigated by using traditional event study methodologies. Specifically, a modified market model is used to establish an estimate of what an airline's stock return would have been without considering the effects of the announcement related to baggage fees. In calculating this estimate, the market model is modified by including the change in the daily spot-price of jet fuel as an additional predictor, along with the return on the market portfolio, according to the Standard and Poors 500. Note that the change in jet fuel prices is included in the model because jet fuel is one of the largest costs for airlines, and therefore is highly correlated with firm value and the daily returns to airlines' stocks. The market model is estimated via ordinary least squares (OLS) as:

$$(1) \quad R_{it} = \alpha_i + \beta_{1i}R_{mt} + \beta_{2i}Jet\ Fuel_t + \varepsilon_{it}$$

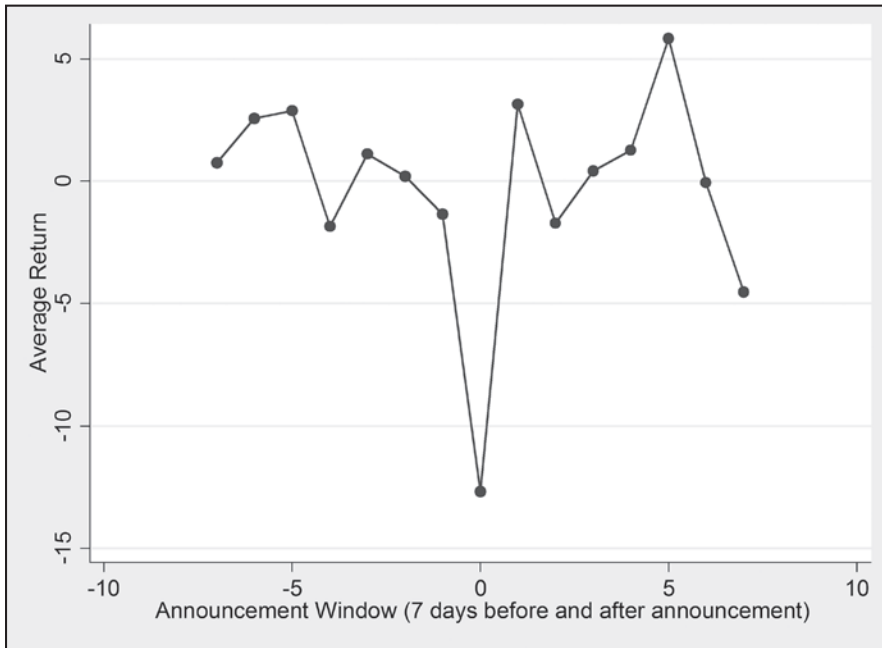
where  $R_{it}$  and  $R_{mt}$  are the period  $t$  returns for security  $i$  and the market portfolio,  $m$ ,  $Jet\ Fuel_t$  is the period  $t$  percentage change in jet fuel costs, and  $\varepsilon_{it}$  is the zero-mean error term.

In order to estimate equation (1) above, closing stock prices were collected from Yahoo! Finance for each of the airlines announcing baggage fees from July 2007 through December 2010. An airline's stock return,  $R_{it}$ , is then calculated as the percentage change in the closing price of the stock from one trading day to the next. As with the firm's return, the market return,  $R_{mt}$ , is calculated as the percentage change in the closing price of the Standard & Poor's 500 from one trading day to the next.<sup>8</sup> To estimate the percentage change in the daily price of jet fuel, the Daily U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price was collected as reported by the U.S. Energy Information Administration (1990–2011), and then the percentage change in these prices was calculated from one day to the next.

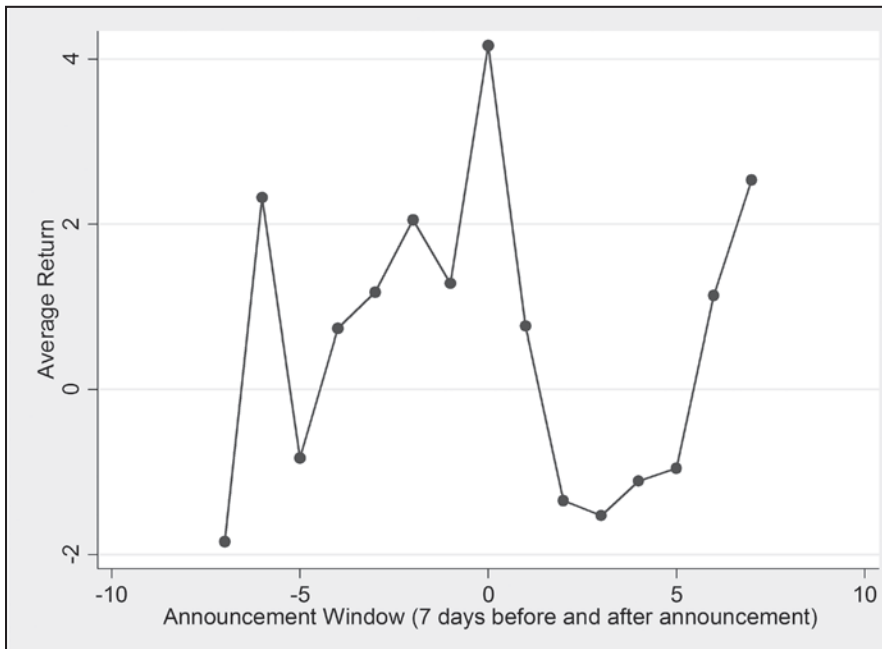
Event study methodology requires specifying the length of an event window. To determine the length of the event window, airline stock returns were examined on the seven trading days before and after a baggage fee announcement. Figure 2 shows the average daily returns surrounding the announcement for firms introducing a baggage fee on the first checked bag. This figure illustrates a large negative average return on the announcement day, day 0, with relatively smaller average returns on the seven days before and after the announcement. This indicates that, on average, these airlines saw dramatic changes in their valuations on the exact day that they made their initial baggage fee announcements (without, however, taking into account the overall return on the market or the change in the daily spot price of jet fuel on those days.) Similarly, Figure 3 shows the average daily returns for the seven days before and after announced increases to baggage fees. As was shown in Figure 2, Figure 3 indicates that when announcing increases to baggage fees, the announcing airline saw dramatic changes in their valuations on the exact day that they made their announcement. Based on these two figures, an event window of one day is specified, in particular, the exact day on which the baggage fee announcements were made. Additionally, Figures 2 and 3 highlight the aforementioned difference in the market's reaction to the different types of baggage fee announcements. As such, these announcements were treated as two separate events, first examining the impact of the initial announcements, and then later examining the impact of announced increases in baggage fees.



**Figure 2: Average Stock Returns of Announcing Companies One Week Before and One Week After Announcement of Initial Baggage Fees**



**Figure 3: Average Stock Returns of Announcing Companies One Week Before and One Week After Announcement of Baggage Fee Increases**



To quantify the impact of each baggage fee announcement, equation (1) is estimated for each announcing airline over the 120 trading days prior to the announcement date.<sup>9</sup> The firm's expected return on the date of the announcement was then calculated based on the estimated coefficients from equation (1), and the actual values of the market return,  $R_{mt}$ , and jet fuel,  $Jet\ Fuel_t$ , variables on the announcement date. Any difference between the airline's expected return and actual return on the announcement date is attributed to the information content delivered to the market in the baggage fee announcement, and is referred to as the airline's abnormal return:

$$(2) \quad Abnormal\ Return_{it} = R_{it} - (\alpha_i + \beta_{1i}R_{mt} + \beta_{2i}Jet\ Fuel_t)$$

This process is done separately for each type of baggage fee announcement (initial fee introduction and subsequent fee increase), and the abnormal returns are then tested for statistical significance to determine the impact of the type of announcement on the market price of the announcing airline's stock.

## RESULTS

The results are presented in three sections. The first section examines the impact of the announcements of initial baggage fees, which were shown in Figure 2, to cause a large negative return to the announcing firm. The impact of an announced increase in baggage fees is then analyzed as the market had time to absorb several quarters' worth of financial reports prior to these announcements, which gave investors more information regarding how to interpret baggage fees. Finally, it should be noted that these announcements may impact competing airlines, so in the third section the impact of announcements on the returns of non-announcing airlines is examined.

### Initial Announcements of Baggage Fees

Table 3 presents the results of estimating equation (1) via OLS for each of the announcing airlines. These results, while not the focus of this paper, show that the firms' stock returns are positively correlated with the market return, and negatively correlated with increases in jet fuel prices.

Using the estimates presented in Table 3 to calculate the expected return on the announcement date, along with the actual market return and the percentage change in jet fuel spot prices on the announcement dates for each airline, the abnormal return associated with each announcement of an initial baggage fee is calculated. The results, presented in Table 4, indicate that there is a -10.1% mean abnormal return associated with these announcements, which is statistically significant at 1%. Thus, in 2008, with oil prices at record highs, the announcements by these airlines of charges associated with a first checked bag were interpreted by the market as a signal of weakness, as these firms were searching for any additional source of revenue to survive, causing a -10.1% mean abnormal return to the announcing firms' stock prices.

### Subsequent Increases in Baggage Fees

Table 5 presents the OLS estimates of equation (1) for each airline's announcement of baggage fee increases. Comparing the results in Table 5 with those in Table 3, it is worth noting that the impact of jet fuel prices is much smaller and in many cases statistically insignificant in the second set of regressions. This is largely due to the decrease in jet fuel prices between 2008, when the baggage fees were introduced, and 2009, when most of these fees were increased, as shown in Figure 1. Table 6 shows that subsequent announcements of increases in an airline's baggage fee are associated with a statistically significant 2.5% mean abnormal return. This result shows that while the market initially interpreted these baggage fees as a signal of weakness on the part of the firm or industry, once it was

**Table 3: OLS Estimates of the Daily Stock Return for Announcing Firms 120 Days Prior to Announcement**

	AirTran Airways	Alaska Airlines	American Airlines	Continental Airlines	Delta Airlines	Northwest Airlines	United Airlines	U.S. Airways
S & P 500 Daily Return	1.369*** (0.248)	1.068*** (0.172)	1.999*** (0.282)	2.882*** (0.474)	1.577*** (0.254)	1.608*** (0.446)	2.231*** (0.418)	1.918*** (0.364)
Daily Change in Jet Fuel Prices	-0.366*** (0.133)	-0.126 (0.122)	-0.945*** (0.197)	-1.438*** (0.266)	-0.397*** (0.133)	-1.163*** (0.268)	-0.907*** (0.263)	-1.019*** (0.229)
Intercept	0.008 (0.007)	0.001 (0.005)	-0.003 (0.004)	0.003 (0.006)	0.009 (0.007)	0.008 (0.006)	-0.005 (0.006)	-0.005 (0.005)
R2	.21	.27	.40	.45	.25	.26	.28	.32
Observations	120	120	120	120	120	120	120	120

Standard errors in parentheses. \*\*\* significant at 1%.

**Table 4: Abnormal Performance of Airlines on Announcement of Initial Baggage Fees**

Abnormal Return on Day of Announcement	Two Tail t-Test of Abnormal Return = 0 (p-value)	One Tail t-Test of Abnormal Return < 0 (p-value)
-10.01%	0.009	0.004

**Table 5: Estimates of the Daily Stock Return for Announcing Firms 120 Days Prior to Announcement of Baggage Fee Increase**

<i>Initial Increase in Baggage Fees</i>							
	AirTran	Alaska	American	Delta	United		
S & P 500 Daily Return	1.217*** (0.196)	1.571*** (0.263)	1.936*** (0.274)	1.975*** (0.260)	2.083*** (0.244)		
Daily Change in Jet Fuel Prices	-0.109 (0.143)	-0.059 (0.135)	-0.147 (0.181)	-0.038 (0.170)	-0.234 (0.165)		
Intercept	-0.0001 (0.002)	0.002 (0.002)	-0.004 (0.005)	-0.004 (0.005)	-0.004 (0.006)		
R2	.34	.29	.36	.41	.40		
Observations	120	120	120	120	120		
<i>Subsequent Increases in Baggage Fees</i>							
	American	Continental (2 <sup>nd</sup> increase)	Continental (3 <sup>rd</sup> increase)	Delta (2 <sup>nd</sup> increase)	United	U.S. Airways (2 <sup>nd</sup> increase)	U.S. Airways (3 <sup>rd</sup> increase)
S & P 500 Daily Return	2.397*** (0.046)	2.192*** (0.360)	2.209*** (0.361)	1.875*** (0.304)	2.700*** (0.513)	2.947*** (0.348)	2.86*** (0.506)
Daily Change in Jet Fuel Prices	-0.380** (0.187)	-0.259 (0.199)	-0.494*** (0.168)	-0.310** (0.133)	-0.429* (0.239)	-0.513** (0.222)	-0.387* (0.231)
Intercept	0.003 (0.004)	-0.001 (0.004)	0.005 (0.003)	0.003 (0.003)	0.009 (0.005)	-0.001 (0.005)	0.005 (0.005)
R2	.23	.27	.24	.25	.19	.40	.15
Observations	120	120	120	120	120	120	120

Standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

learned that these fees produced large revenues for the firms, the increases were then interpreted as positive events. This is not to say that the market's initial reaction was wrong (particularly given that the introduction of these fees was likely a sign of weakness), but rather that the market's view of these fees evolved as it learned, through company financial statements, that these fees were generating new revenues for the firms. Evidence of this learning can also be anecdotally seen in looking at the size of the abnormal returns over time, where the first several announcements of the introduction of baggage fees were received with negative abnormal returns greater than 10%, while firms announcing the introduction of baggage fees later tended to have smaller abnormal returns. For example, American Airlines, the first airline to announce baggage fees on the first checked bag, had an estimated -16.6% abnormal return, while Delta, one of the later legacy carriers to announce baggage fees on the first checked bag, had only a -0.4% abnormal return.

**Table 6: Abnormal Performance of Airlines on Announcement of Baggage Fee Increases**

Abnormal Return on Day of Announcement	Two Tail t-Test of Abnormal Return = 0 (p-value)	One Tail t-Test of Abnormal Return > 0 (p-value)
2.5%	0.074	0.037

### Impact of Announcements on Non-Announcing Firms

In addition to the impact on the announcing firm, it is possible that an announcement of an initial baggage fee and/or increase in baggage fees could impact the return of competing airlines. Further, the literature indicates that within the airline industry, low-cost carriers and large, legacy carriers are often differentiated by the market (e.g., Carter and Simkins [2004] and Flouris and Walker [2005]).<sup>10</sup> As such, the abnormal returns were calculated for all non-announcing airlines as shown in equation (2) above, and then these abnormal returns were separated by carrier type: low-cost carrier or legacy carrier.<sup>11</sup> These returns are shown in Table 7 by type of airline and type of announcement (initial or subsequent increase in baggage fees).

The results presented in Table 7 show that an announcement of changes in baggage fees, of any type, caused a marginally significant -1.1% mean abnormal return for legacy carriers, and had no statistically significant impact on the average return of low-cost carriers. However, it's been established that the market learned about the positive revenue impact of these baggage fees between the initial announcements and the subsequent announcements of increases; therefore, there is no reason to focus specifically on the impact of an announcement without differentiating between the type of announcement.

Indeed, if the market viewed the initial announcements as a signal of weakness, it is likely that all similar stocks would be viewed by the market as weak. Thus, the second set of results in Table 7 presents the impact of the initial announcements of baggage fees on the stocks of competing legacy carriers and low-cost carriers. The results indicate that competing legacy carriers had a -3.4% mean abnormal return when baggage fees were announced by their competitors since they would also be perceived to be vulnerable. However, the low-cost carriers experienced a marginally significant 0.9% mean abnormal return as the market would have viewed these firms as being in stronger positions than their legacy carrier competitors.

Finally, as noted in Table 7, subsequent announcements of baggage fee increases had no statistically significant impact on the stock prices of competing airlines. This result makes intuitive sense since the market had learned that baggage fees actually serve as a new revenue stream for the announcing firm, which will not impact the revenues of competitors, hence their stocks experienced no impact from such an announcement.

**Table 7: Abnormal Performance of Competing Airlines**

	Abnormal Return on Day of Announcement	Two Tail t-Test of Abnormal Return = 0 (p-value)	One Tail t-Test of Abnormal Return > or < 0 (p-value)
<i>On Announcement of Baggage Fee Changes (Initial or Increase)</i>			
Legacy Carriers	-1.1%	0.053	0.027
Low Cost Carriers	-0.5%	0.242	0.121
<i>On Announcement of Initial Baggage Fees</i>			
Legacy Carriers	-3.4%	0.003	0.002
Low Cost Carriers	0.9%	0.172	0.086
<i>On Announcement of Baggage Fee Increases</i>			
Legacy Carriers	-0.2%	0.691	0.345
Low Cost Carriers	-1.0%	0.232	0.116

## CONCLUSION

Using traditional event study methodologies, this paper analyzes the impact of airlines' baggage fee announcements on firms' stock market returns. There is evidence of large negative abnormal returns on the date on which the airline announced an initial baggage fee on passengers' first checked bag. It was also found that these announcements impacted competing airlines' stock prices, but that, as previous literature has shown, the market differentiated between large legacy, carriers and low-cost carriers in its reaction. The results further show that investors learned of the revenue generation caused by these baggage fees, and reacted differently to announced increases in baggage fees. Specifically, subsequent announcements of baggage fee increases are correlated with positive abnormal returns on the announcing airline's stock price, with no impact on competing airlines' stock prices. As such, this research highlights both the effects that these types of announcements had on airline's stock prices, as well as the learning curve faced by market participants when presented with these types of announcements.

## Endnotes

1. In 2010, U.S. airlines collected roughly \$5.7 billion in service fees charged to passengers for checked baggage and reservation change fees (U.S. Department of Transportation 2011).
2. Prior to the implementation of these new fees, virtually all airlines charged fees for passengers checking more than two bags. Thus baggage fees weren't new, in and of themselves, but the practice of charging customers for a first checked bag was a new strategy.
3. Jet fuel costs and carrier profitability were obtained from the U.S. Department of Transportation's Form 41 Financial Data (2008 – 2010).
4. Airlines included are: AirTran Airways, Alaska Airlines, American Airlines, Continental Airlines, Delta Air Lines, JetBlue Airways, Northwest Airlines, Southwest Airlines, United Airlines, and US Airways.

5. The term ‘initial baggage fees’ refers to airlines implementing fees on each passenger’s first checked bag. Oftentimes these airlines had fees on second and subsequent checked bags prior to the dates examined here, but the focus of this analysis is on the impact of implementing fees on first checked bags as this, potentially, has a greater impact on travelers.
6. All of the “legacy” carriers introduced baggage fees by spring 2009, but several “low cost carriers” have differentiated themselves by not charging for baggage.
7. However, inclusion of these two observations does not qualitatively change our results.
8. Other measures of the market return were examined, and the estimates presented here are robust to these different measures.
9. Note that various window sizes were examined, and the results presented here do not qualitatively differ from those associated with these different window sizes.
10. Low-cost carriers included in this analysis include Southwest Airlines, JetBlue Airlines and AirTran Airways.
11. Note that the most prominent low cost carrier, Southwest Airlines, focused their advertising campaign on “Bags Fly Free” following the introduction of baggage fees by the legacy carriers.

## References

- Carter, D.A. and B.J. Simkins. “The Market’s Reaction to Unexpected, Catastrophic Events: The Case of Airline Stock Returns and the September 11<sup>th</sup> Attacks.” *The Quarterly Review of Economics and Finance* 44, (2004): 539-558.
- Carter, D.A., D.A. Rogers, and B.J. Simkins. “Does Hedging Affect Firm Value? Evidence from the US Airline Industry.” *Financial Management* 35 (1), (2006): 53-86.
- Chance, D. and S. Ferris. “The Effect of Aviation Disasters on the Air Transport Industry: A Financial Market Perspective.” *Journal of Transport Economics and Policy* 21, (1987): 151-165.
- Davidson, W., P. Chandy, and M. Cross. “Large Losses, Risk Management and Stock Returns in the Airline Industry.” *Journal of Risk and Insurance* 54, (1987): 162-172.
- Drakos, K. “Terrorism-Induced Structural Shifts in Financial Risk: Airline Stocks in the Aftermath of September 11<sup>th</sup>.” *European Journal of Political Economy* 20, (2004): 435-446.
- Dresner, M., J.-S. C. Lin, and R. Windle. “The Impact of Low Cost Carriers on Airport and Route Competition.” *Journal of Transport Economics and Policy* 30, (1996): 309–328.
- Flouris, T. and T. Walker. “The Financial Performance of Low Cost and Full-Service Airlines in Times of Crisis.” *Canadian Journal of Administrative Sciences* 22 (1), (2005): 3-20.
- Goolsbee, A. and C. Syverson. “How Do Incumbents Respond to the Threat of Entry? Evidence From the Major Airlines.” *The Quarterly Journal of Economics* 123, (2008): 1611–1633.
- Henrickson, K. and J. Scott. “Baggage Fees and Changes in Airline Ticket Prices.” James Peoples ed. *Advances in Airline Economics, Volume 3: Pricing Behavior and Non-Price Characteristics in the Airline Industry*. Bingley, UK: Emerald Group Publishing Limited (2011): 177-192.



Hergott, M. "Airport Concentration and Market Power: An Event Study Approach." *Review of Industrial Organization* 12, (1997): 793-800.

Smith, A. "A Billion Reasons to Charge for Luggage: The Money-Losing Airline Industry Reaped More Than \$1 Billion Last Year From Excess Baggage Fees, DOT Says." *CNNMoney*, May 12, 2009. Retrieved from [http://money.cnn.com/2009/05/12/news/companies/airline\\_baggage\\_fees/](http://money.cnn.com/2009/05/12/news/companies/airline_baggage_fees/)

U.S. Department of Transportation. *Airlines Collected Almost \$5.7 Billion from Fees in 2010* [Press Release], June 13, 2011. Retrieved from [http://www.bts.gov/press\\_releases/2011/bts030\\_11/html/bts030\\_11.html](http://www.bts.gov/press_releases/2011/bts030_11/html/bts030_11.html)

U.S. Department of Transportation. "Air Carrier Financial Reports (Form 41 Financial Data)." U.S. Department of Transportation, (2008 – 2010). Retrieved from [http://www.transtats.bts.gov/Databases.asp?Mode\\_ID=1&Mode\\_Desc=Aviation&Subject\\_ID2=0](http://www.transtats.bts.gov/Databases.asp?Mode_ID=1&Mode_Desc=Aviation&Subject_ID2=0) (accessed July 9, 2011).

U.S. Energy Information Administration. "Daily U.S. Gulf Coast Kerosene – Type Jet Fuel Spot Price FOB." United States Department of Energy, (1990-2011). Retrieved from [http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=eer\\_epjk\\_pf4\\_rgc\\_dpg&f=d](http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=eer_epjk_pf4_rgc_dpg&f=d) (accessed July 9, 2011).

United Airlines. *UAL Corporation Reports Second Quarter 2008 Results - Taking Action To Offset Record Fuel Costs, and Position Company to Compete* [Press Release], June 22, 2008. Retrieved from <http://www.united.com/press/detail/0,6862,59665-1,00.html>

Walker, T.J., K. Pukthuanthong, and S.S. Barabanov. "On the Stock Market's Reaction to Major Railroad Accidents." *Journal of the Transportation Research Forum* 45 (1), (2006): 23-39.

Whinston, M. D. and S.C. Collins. "Entry and Competitive Structure in Deregulated Airline Markets: An Event Study Analysis of People Express." *RAND Journal of Economics* 23, (1992): 445–462.

Windle, R. and M. Dresner. "Competitive Responses to Low Cost Carrier Entry." *Transportation Research Part E: Logistics and Transportation Review* 35, (1999): 59–75.

**Gerhard J. Barone** is an assistant professor of accounting at Gonzaga University. Previously he taught accounting at the University of Wisconsin-Madison and at the University of Texas at Austin. His research interests include market efficiency, earnings quality, and the pricing of earnings components. He received his B.A. in economics from Haverford College, his B.B.A. in accounting from the University of Alaska-Anchorage, and his Ph.D. in business from the University of Wisconsin-Madison.

**Kevin E. Henrickson** is an associate professor of economics at Gonzaga University. His research interests include spatial pricing and transportation's responses to changes in costs. He received his B.A. in economics from Pacific Lutheran University, his M.S. in economics from the University of Oregon, and his Ph.D. in economics from the University of Oregon.

**Annie Voy** is an assistant professor of economics at Gonzaga University. Her research interests include international economics, international trade and economic development. She received her B.S. in economics and business administration from Saint Mary's College of California, her M.A. in economics from Tufts University and her Ph.D. in economics from the University of Oregon.