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# Equity Returns: Low-cost vs. Full-service Airline Carriers

Austin Murphy
*Colby College*

Mitchell Maffeo
*Colby College*

William Kunin
*Colby College*

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Will Kunin, Mitchell Maffeo, Austin Murphy

Department of Economics, Colby College, Waterville, ME

## Introduction

Airlines are one of the primary components of the travel and leisure industry in the United States. Changes in crude oil prices, positively correlated with changes in gasoline prices, have an evident impact for consumers. As with gasoline prices, jet fuel prices are significantly correlated with changes in oil futures prices. How are these fluctuations in the price of crude oil futures relevant when looking at the airline industry? Consumer confidence should be positively correlated with airline equity as higher consumption will lead to an increase in travel and investments. Aluminum, the primary component in airplanes, also plays a role. Finally, travel fluctuates due to seasonal changes- traditionally in the summer and December the frequency of travel increases- we examine the impact of seasonal changes as well.

The purpose of this study is to examine how fluctuations in the price of NYMEX WTI light-sweet crude oil futures, the Consumer Confidence Index, and the S&P GSCI Aluminum TR index, as well as changes in the seasons, predict variation in airline carrier equity and airfare prices. We will run six regressions in order to distinguish the different effects of these explanatory variable on low-cost and full-service airline equity. Serving as a proxy for low-cost airlines, we use the three largest carriers in the United States: Southwest Airlines, JetBlue Airways, and Spirit Airlines. We then compare these results to those analyzing the three largest domestic, full-service airline carriers: American Airlines, Delta Air Lines, and Spirit Airlines. Through these regressions, we will determine if business model plays a significant role in how airline equity is predicted by changes in the aforementioned factors. Utilizing the same model, we will then run a regression of the aggregate airfare prices as a response variable. Through this final regression analysis we will able to determine the impact of each explanatory factors on consumers or investors of airline carriers.

## Data and Methods

Our data focuses on various factors that potentially affect the daily equity prices of major airline companies. We will run six separate regressions in order to isolate the relationships of our explanatory variables between low-cost and full-service airline carriers. The dependent variables in these regressions represent the change in daily equity prices for each of the airline carriers: dAmerican, dDelta, dUnited, dSouthwest, dJetBlue, and dSpirit. The timeframe we measure extends from January 3rd, 2012 to March 2, 2014, and was retrieved from Yahoo Finance's historical equity price index.

## Key Takeaways

Looking at our regression results, we see a few interesting discoveries. Primarily, change in crude oil future prices (dOilPrices) have a statistically significant impact on predicted changes in all Airline Equity Prices, except for the Spirit Airline regression. As oil prices decrease, the majority of our models predict that airline equity prices will increase, holding all other explanatory variables in the model constant.

For example, in our Delta Airlines regression, our dOilPrice coefficient indicates that a 1-unit increase in dOilPrice relates to a predicted decrease of $0.214 in Delta Airline's equity price, holding other explanatory variables in the model constant

Changes in consumer confident (dConsumConf) had a statistically significant impact on the Equity Prices for America, Delta, and Southwest. As consumer confidence increased, our models predicted that both airline equities and airline price tickets decrease, holding all other explanatory variables in the model constant.

A few of our regressions yielded statistically significant indicator variables across the board. This should lead to some deeper levels of analysis for the conclusion of our study.

## Our Model

$$Change\ in\ Airline\ Equity/Airfare = \beta o + \beta 1(Change\ in\ Oil\ Prices) + \beta 2(Change\ in\ Aluminum\ Index) + \beta 3(Change\ in\ Consumer\ Conf.) + \beta 4(I : winter) + \beta 5(I : spring) + \beta 6(I : summer) + \upsilon$$

## Results

| VARIABLES | (1) dAmerican | (2) dDelta | (3) dUnited | (4) dSouthwest | (5) dJetBlue | (6) dSpirit | (7) dAirfarePrice |
|---|---|---|---|---|---|---|---|
| dOilPrices | -0.336*** | -0.214*** | -0.338*** | -0.158*** | -0.174*** | -0.047 | -0.044 |
| | (0.061) | (0.051) | (0.056) | (0.035) | (0.049) | (0.054) | (0.078) |
| dAlumIndex | 0.117 | 0.073 | 0.092 | 0.163*** | 0.099 | -0.046 | 0.029 |
| | (0.090) | (0.074) | (0.081) | (0.052) | (0.072) | (0.079) | (0.092) |
| dConsumConf | -0.038*** | -0.022* | -0.020 | -0.019** | -0.014 | -0.008 | -0.070*** |
| | (0.014) | (0.011) | (0.013) | (0.008) | (0.011) | (0.012) | (0.014) |
| Winter | 0.001 | 0.001 | 0.001 | 0.000 | -0.002 | 0.003 | 0.008*** |
| | (0.003) | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.003) |
| Spring | 0.001 | -0.000 | -0.001 | -0.001 | -0.003 | -0.000 | 0.016*** |
| | (0.003) | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.003) |
| Summer | -0.005* | -0.003 | -0.002 | -0.001 | -0.003 | -0.002 | -0.007** |
| | (0.003) | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.003) |
| Constant | 0.004** | 0.003* | 0.002 | 0.003** | 0.004** | 0.002 | 0.003 |
| | (0.002) | (0.002) | (0.002) | (0.001) | (0.002) | (0.002) | (0.002) |
| Observations | 793 | 793 | 793 | 793 | 793 | 793 | 689 |
| R-squared | 0.053 | 0.030 | 0.050 | 0.037 | 0.022 | 0.008 | 0.126 |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1