A Re-examination of Incumbents Response to the Threat of Entry: Evidence from the Airline Industry

Philip G. Gayle* and Chi-Yin Wu**

the carrier to have lower marginal cost in the market due to the relatively high volume of passengers it will transport between the endpoints of the market.

Second, we argue that some

Notable contributions to this literature include, Berry (1990, 1992); Borenstein (1989, 1990, 1991, 1992); Brueckner, Dyer and Spiller (1992); Brueckner and Spiller (1994); Chen and Savage (2011); Evans and Kessides (1993, 1994); Evans, Froeb, and Werden (1993); and Ito and Lee (2004) among others. Our empirical model also measures incumbents' price response to

2. Definitions

to Chicago (ORD) but not to Denver. Since this airline has been offering service from Atlanta to cities other than Denver, it is likely that AA can more easily start flying the ATL-DEN route in

3. The Model

Applying methodologies from Singh and Zhu (2008) and Berry (1992),[2] we investigate how incumbents respond to the threat of entry. Our model provides an empirical framework to examine strategic interactions in an oligopolistic market, which allows us to study the

Squared; and *Slot_dummy*.[5] Űةج is the equilibrium number of firms that actually enters market *m*. As such, the characteristics of rival firms affect firm *k* via the equilibrium number of firms in a given market.

standard normally distributed across firms and markets. For identification, we impose the traditional constraint that the variance of the unobservable ($-_{جـ}$) equals one, via the restriction

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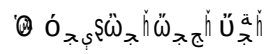
are unobserved to researchers but observed by firms can influence not only firms' pricing, but also alter firms' decision to operate in the market. For exam

sequential order-of-entry assumption is that the most profitable firms enter first on a given draw

instruments that include the interactions of *Population* with *Nonstop Flight Distance* and *Nonstop Flight Distance Squared* .

We obtain the GMM estimates for the profit equation by solving: [11]



focus on U.S. domestic flights offered and operated by U.S. carriers in a single year, which is 2007 in our study.

To identify potential entrants

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Table 1
Airlines represented in the dataset in the 3rd Quarter of 2007

Code	Airline	Number of markets served by each carrier
AA	American Airlines Inc.	190
AS	Alaska Airlines Inc.	

period. Among the 4,400 potential entrants that only serve one city of a pair

6. Results

This section presents the results from

The positive

entry model allow us to correct for this problem of potential endogeneity in incumbents' price regression. Results for price regressions are shown in Table 5. Specification (1) in the table captures the average effect of entry threats. In Specification (2), we decompose the effect of entry threats based on: (1) whether a market endpoint airport is a hub for a potential entrant; and (2) whether a potential entrant has an alliance partnership with any of the market incumbents.

Recall that the unit of analysis for these regressions K)#@0gfTVhL6£•XGqUqXt)¥pOtêqNSšA)®u1™K1C"@

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Consistent with the findings in Goolsbee and Syverson (2008), the negative signs of actual entry and entry threat coefficients suggest that incumbents cut prices when faced with increased actual competitors or entry threats. While Goolsbee and Syverson'

When it comes to the average effects due to the threat of entry, the market median price drops 0.77% with an additional threat of entry in the case of the endogeneity-corrected specification. This average price effect is marginally larger than the 0.84% average price drop in the case of the specification without endogeneity correction. Therefore, the measured average price effect from the threat of entry could be slightly overestimated if we ignore the endogeneity of market structure.

Note that the significantly negative coefficient on the "Endogeneity correction" variable implies a negative relationship between price shocks and profit shocks. This negative coefficient implies that

Appendix

Table A.1
Parameter Estimates for Price Regressions

Evans, William N., Luke M. Froeb, and Gregory J. Werden (1993), “Endogeneity in the Concentration-