

The Effects of Porter Airlines' Expansion*

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Abstract

In 2007 Porter Airlines entered the Canadian airline industry and since then it has rapidly increased its route offerings in both the Canadian domestic and transborder markets. This note documents the effects of Porter's expansion to date on fares and passengers.

1 Introduction

This note documents the effect of Porter Airlines' entry and expansion in the Canadian airline industry. Starting in late 2006, Porter has entered 23 domestic and transborder routes from its hub at Toronto's Billy Bishop airport. Our goal in this note is to examine how Porter's service has affected the total passengers on a route as well as the fares charged by Porter's rival airlines. This note is part of a larger research project analyzing the Canadian domestic and transborder airline markets.

Table 1 documents the expansion of Porter's route network. To date, Porter has entered 17 domestic routes and 6 trans-border routes. Most flights originate or end at Toronto's island airport. Porter's current fleet is made up entirely of Bombardier Dash Turboprop planes. This restricts the routes that Porter is able to fly, and therefore its current network of destinations are all within about 1,000 miles of Toronto. As a result Porter exclusively serves destinations in Eastern Canada as well as a few destinations in the Northeast and Midwest of the United States.

In this note, and in the broader research project, we utilize data on US and Canadian air travel that, to our knowledge, has not been used before for a large-scale empirical study of the Canadian airline industry. Thus, we believe this is the first academic study to analyze the Canadian domestic and transborder markets. Our empirical analysis will estimate the effect of Porter's presence on a route on the total number of passengers who fly that route and the average fares paid on that route. We will control for route-specific effects, seasonal effects, temporal shocks that affect all air travel and the possibility that Porter enters growing markets.

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Table 1: Porter Airlines' Route expansion, 2007–2012

	Year Entered	Route
Transborder:	2008	YTZ-EWR
	2008	YTZ-MDW
	2009	YTZ-BOS
	2010	YTZ-MYR*
	2011	YTZ-BTV*
	2012	YTZ-IAD
Domestic:	2007	YHZ-YOW
	2007	YHZ-YUL
	2007	YTZ-YOW
	2007	YTZ-YUL
	2008	YHZ-YQB [†]
	2008	YTM-YUL*
	2008	YTZ-YHZ*
	2008	YTZ-YQB
	2008	YTZ-YTM*
	2009	YHZ-YYT
	2009	YTZ-YQT
	2010	YOW-YQM
	2010	YTZ-YQM*
	2010	YTZ-YSB
	2011	YTZ-YAM
	2011	YTZ-YQG
	2012	YTZ-YTS

Note: * denotes seasonal service. [†] denotes discontinued service.

2 Data

The data used for this study are drawn from the Airport Data Intelligence (ADI) database, compiled by Sabre Holdings. Sabre is a travel technology company that owns a global distribution system (GDS) used by thousands of travel agents including several of the largest online agencies. Based on its GDS bookings, as well as data it collects to capture bookings that do not go through its GDS, Sabre produces the ADI database, which contains fare and booking information for most passengers and flights worldwide. We obtained ADI data on travel on within-Canada and trans-border routes between January 2002 and July 2012.

3 Construction of Sample and Variables

For the purposes of this paper, we restrict attention to the set of domestic and transborder routes that were entered by Porter airlines by March 2012. We construct two separate datasets - one with the set of domestic routes that Porter enters and the other with the set of transborder routes that Porter enters. We exclude routes that Porter serves only seasonally (see Table 1). We also exclude the YHZ-YQB route which Porter entered but later discontinued service. The domestic sample includes observations on 24 directional routes. The transborder sample includes observations on eight directional routes. We include observations on each route for each month between January 2002 and March 2012.¹

4 Empirical Analysis

Based on the ADI data, we calculate the total number of passengers and total number of direct passengers who fly a route in each month. We also calculate the average fare paid by passengers flying a route on a month as well as the average fare paid by passengers flying the route on Air Canada. We construct an indicator variable that equals one once Porter enters a route. We regress our passenger and fare measures on the indicator for Porter's presence on the route. We include route-fixed effects in all specifications. We use data from all available years (2002-2012) in order to better estimate these route fixed-effects. We define a route as a *city-pair* instead of an airport pair to estimate the true effects that Porter's service had on its rivals. In most cases, Porter's flights from Billy Bishop airport are competing with Air Canada flights from Toronto's Pearson airport.²

Given that we include route fixed-effects in our specifications, the effect of Porter's entry to a route is identified solely through within-route changes in passengers and fares after Porter begins serving the route. Because Porter enters different routes at different times, we are able to also include year effects to control for general trends that are common across the types of routes that Porter serves. We also include calendar-month fixed effects to control for seasonal trends.

One potential concern with this approach is that Porter may choose to enter markets that it anticipates are going to experience demand growth, independent of their entry. If so,

¹Our sample of the domestic market ends in December 2011.

²The city pair classification clubs together the following airports: Toronto — YTZ, YHM and YYZ; New York — LGA, JFK and EWR; Chicago: MDW and ORD; Washington DC — IAD and DCA.

Table 2: Porter’s effect on Total Passengers: Domestic Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	0.20 ^a (0.03)	0.21 ^a (0.05)	0.26 ^a (0.03)	0.17 ^a (0.05)
Constant	8.40 ^a (0.03)	8.27 ^a (0.06)	8.48 ^a (0.13)	8.42 ^a (0.24)
Origin-Year FEs	No	No	Yes	Yes
Obs	2880	2843	2880	2843
R ²	0.92	0.82	0.94	0.88

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

our estimates of Porter’s effects would be biased upwards - that is, we would overestimate its impact on passenger volumes and underestimate its impact on fares. This concern is largely alleviated by the fact that we only consider the set of routes that Porter enters at some point in our sample period and, by including route and year fixed effects, econometrically identify the effect of Porter’s entry from within-route and within-year changes in passengers and fares. Put differently, in order for this to be a concern, it would have to be the case that not only does Porter enter routes that it expects to grow but it enters them at precisely the time the demand growth is expected. While we think this is unlikely, to further control for the possibility that entry is endogenous to route-specific time trends, we also estimate our specifications with origin-year effects.

Tables 2, 3 and 4 contain regression results for the domestic market. The dependent variable in Table 2 is the log of the total number of passengers flying the route in the given month. Column 1 uses total passengers — direct as well as connecting — while column 2 restricts the sample to passengers flying non-stop itineraries. Columns 3 and 4 then add Origin*Year fixed-effects to the specifications in the first two columns. The table shows that Porter’s presence on a route is associated with an increase of about 20% in the number of passengers. Adding Origin*Year fixed-effects increases the estimate for all passengers, and lowers it for direct passengers.

In Table 3 we use the log of the average fare on the route, across all carriers, as the dependent variable, while in Table 4 we restrict attention to Air Canada’s fares. On average, Porter’s presence is associated with a 25% drop in average fares on the route, and a smaller, but still economically important, 17% drop in Air Canada’s fares.

Tables 5, 6 and 7 contain regression results for the transborder market. Porter appears to have a larger effect on passengers in the transborder market compared with our earlier estimates for the domestic market; there is a 33-41% increase in the number of passengers on routes that get Porter service. Porter is associated with a 32% reduction in fares across all carriers, and about a 19% reduction on Air Canada alone. However, we are cautious in generalizing these estimates for transborder routes as there are only four transborder routes that Porter has entered with regular full-year service.

Table 3: Porter's effect on Average Fares: Domestic Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	-0.26 ^a	-0.27 ^a	-0.26 ^a	-0.27 ^a
	(0.01)	(0.02)	(0.01)	(0.02)
Constant	5.02 ^a	4.96 ^a	5.58 ^a	5.58 ^a
	(0.01)	(0.02)	(0.02)	(0.02)
Origin-Year FEs	No	No	Yes	Yes
Obs	2880	2843	2880	2843
R ²	0.73	0.62	0.80	0.73

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

Table 4: Porter's effect on Air Canada's Average Fares: Domestic Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	-0.18 ^a	-0.17 ^a	-0.14 ^a	-0.12 ^a
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	5.17 ^a	5.18 ^a	5.55 ^a	5.53 ^a
	(0.01)	(0.02)	(0.01)	(0.02)
Origin-Year FEs	No	No	Yes	Yes
Obs	2880	2838	2880	2838
R ²	0.66	0.52	0.74	0.64

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

Table 5: Porter's effect on Total Passengers: Transborder Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	0.33 ^a	0.41 ^a	0.33 ^a	0.41 ^a
	(0.02)	(0.02)	(0.02)	(0.02)
Constant	9.39 ^a	9.34 ^a	9.37 ^a	9.28 ^a
	(0.02)	(0.02)	(0.03)	(0.03)
Origin-Year FEs	No	No	Yes	Yes
Obs	1008	1008	1008	1008
R ²	0.95	0.95	0.96	0.96

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

Table 6: Porter's effect on Average Fares: Transborder Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	-0.32 ^a (0.01)	-0.33 ^a (0.01)	-0.32 ^a (0.02)	-0.33 ^a (0.02)
Constant	5.22 ^a (0.02)	5.24 ^a (0.02)	5.81 ^a (0.02)	5.82 ^a (0.02)
Origin-Year FEs	No	No	Yes	Yes
Obs	1008	1008	1008	1008
R ²	0.76	0.75	0.79	0.78

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

Table 7: Porter's effect on Air Canada's Average Fares: Transborder Routes

	All Pax	Dir. Pax	All Pax	Dir. Pax
Porter service	-0.19 ^a (0.02)	-0.19 ^a (0.02)	-0.19 ^a (0.02)	-0.20 ^a (0.02)
Constant	5.28 ^a (0.02)	5.28 ^a (0.02)	5.90 ^a (0.03)	5.91 ^a (0.03)
Origin-Year FEs	No	No	Yes	Yes
Obs	1008	1008	1008	1008
R ²	0.71	0.71	0.74	0.74

^c $p < 0.1$, ^b $p < 0.05$, ^a $p < 0.01$. All regressions include route and month FEs. Columns 1 and 2 include year FEs.

5 Conclusion

Using the set of domestic and transborder routes that Porter has entered since its launch in 2007, we have estimated what impact its entry to a route has on passengers numbers and fares on the route. Our findings indicate that Porter's entry lowers the average fares passengers pay and increases the volume of passengers who travel on a route.