Journal of Urban Economics 86 (2015) 128–146

Contents lists available at ScienceDirect

Journal of Urban Economics

www.elsevier.com/locate/jue

Air service and urban growth: Evidence from a quasi-natural policy experiment ☆

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ARTICLE INFO

Article history:
Received 6 December 2013
Revised 12 January 2015
Available online 11 February 2015

JEL classification:
O18
R1
R4

Keywords:
Air transport
Passenger aviation
Urban growth
Regional development
Airline Deregulation Act

ABSTRACT

While significant work has been done to examine the determinants of regional development, there is little evidence on the role of air services. This paper exploits the large and swift changes to air traffic induced by the 1978 Airline Deregulation Act to identify the link between air traffic and local economic growth. Using data for 263 Metropolitan Statistical Areas (MSAs) over a two-decade time period, we estimate the effects of airline traffic on local population, income, and employment growth. Our most conservative estimates suggest that a 50-percent increase in an average city's air traffic growth rate generates an additional stream of income over a 20-year period equal to 7.4 percent of real GDP, the equivalent of $523.3 million in 1978 dollars.

1. Introduction

Almost since the invention of the airplane, policymakers at all levels of government have spent considerable resources to promote air services for their constituents. Currently in the United States, local airports and communities are quite active in providing subsidies and pledging future travel tickets in order to encourage airlines to add new routes for their region (e.g., Tampa[2]), or to deter them from terminating strategic routes (e.g., Portland[3]), or from downgrading a city from its hub status (e.g., Cleveland[4]). A 2009 survey by Airports Council International North America found that of the 52 responding airports, 33 had incentive agreements involving domestic air service, and 23 airports had incentive agreements for international air service.[5]

The universal justification for these government policies is the stated belief that air services are crucial for regional economic growth. In support of this belief there is anecdotal evidence suggesting that air transport improves business operations by providing quick access to input supplies, it stimulates innovation by facilitating face-to-face meetings, and overall it represents an essential input to the activity of many industries. However, it is not clear how much local economies significantly rely on air services, nor the extent to which other modes of transportation and communication can be easily used as substitute. In the end, a positive correlation between air services and economic growth may make policymakers erroneously believe that there is a causal

☆ We thank the editor and the anonymous referees for their constructive comments, which significantly improved this paper. We also thank Leah Brooks, Ariel Burstein, Jan Brueckner, Pablo Fajgelbaum, James Harrigan, Walker Hanlon, Vernon Henderson, David Hummels, Jason Lindo, Jerry Nickelsberg, Nicholas Sheard, Matthew Turner, Alex Vrtiska, Glen Waddell, Wes Wilson and Clifford Winston for helpful discussions and comments, as well as seminar participants at UCLA and the Urban Economic Association meeting (Ottawa, 2012) for useful suggestions. Mitchell Johnson provided excellent research assistance. Any remaining errors are our own.

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[2] See "Intense competition boosts airport incentives to airlines" at: http://www.tampabay.com/news/business/airlines/intense-competition-boosts-airport-incentives-to-airlines/1042035.

[3] See "Port's gamble on Delta pays off" from 06/11/2010 on www.oregonlive.com.

[4] See "Pittsburgh could foreshadow future of Cleveland Hopkins International Airport" from 11/22/2009 on www.cleveland.com.

[5] McAllister, Brad, "Regaining stability," Airport Business Magazine, September 15, 2011 at: http://www.airportbusiness.com/print/Airport-Business-Magazine/Regaining-stability/137314.

http://dx.doi.org/10.1016/j.jue.2015.02.001
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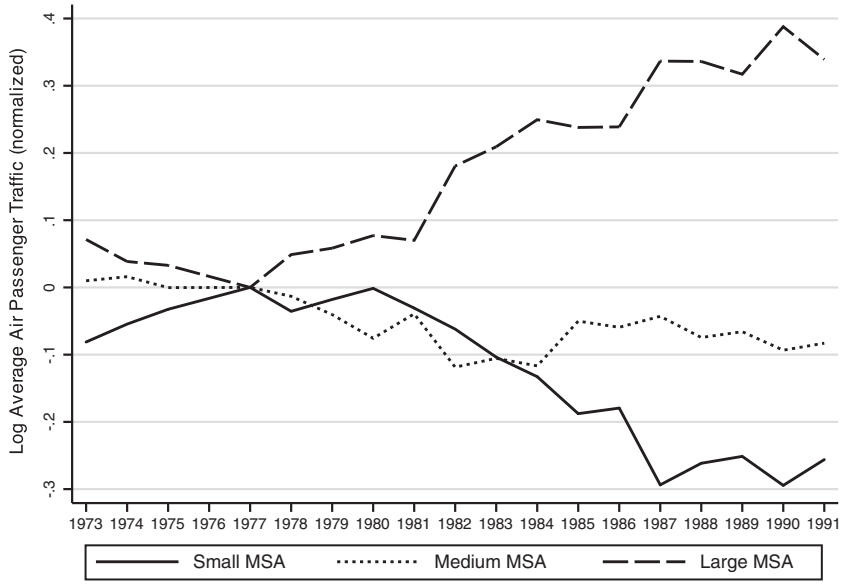

Source: Authors' Calculations

Fig. 1. Trends in air passengers by city size category. *Note*: The series represent the average (log) number of air passengers by year and city size category. To remove level differences in air traffic and facilitate relative comparisons between city size categories, each series has been adjusted by its average value for year 1977. The small, medium and large city categories are defined by splitting the sample distribution of MSA population levels in three equal parts, based on city size information at the beginning of the sample period.

relationship that they can affect, when other factors out of their control could be driving the positive correlation.

Estimating the economic benefits of transportation projects in general, and of air services in particular, is difficult because there is a strong interdependence between the provision of such services and regional growth. Communities that benefit from more rapid economic growth tend to also invest more in infrastructure, and in the provision of transportation services. In turn, the availability of reliable transportation services further stimulates regional development.

Perhaps due to the difficulty of identification, there are only a couple prior studies examining the effect of air service on regional growth. Brueckner (2003) estimates the effect of airline traffic on employment using cross-sectional data at the Metropolitan Statistical Area (MSA) level, and finds that a 10 percent increase in passenger enplanements leads to an approximately 1 percent increase in MSA employment, with service sectors responsible for most of the effect. Brueckner (2003) uses hub status of an airport, the MSA's centrality within the U.S., and its proximity to the nearest large metropolitan area to instrument for the endogeneity of the level of air transport services. However, hub status may be endogenous with current and expected growth of an MSA, while geographic factors may affect general economic growth of a region just as much as air services.[6] Green (2007) estimates the effect of air transport on regional growth. Using information on 83 MSAs, he regresses air passenger traffic levels in 1990 on subsequent decennial population and employment growth, and finds that a 10 percent increase in boardings per capita generates a 3.9 percent higher population growth and 2.8 percent higher employment growth for the period 1990–2000. However, economic outcomes such as population, employment, and even air services are persistent processes. This too makes identification difficult in the absence of a major exogenous and long-lasting shock to the airline service.

In this paper we present an alternative way to identify the relationship between air services and regional economic growth, which relies on time series variation. We exploit a quasi-natural experiment that stems from the dramatic changes in the aviation industry following the 1978 U.S. Airline Deregulation Act.[7] In just a few years following the legislation, the industry was rapidly deregulated, transitioning from an environment of tight policy restrictions to free market. This transformation was accompanied by large changes in air services across cities to unwind the artificial constraints imposed under regulation. These constraints included a regulatory regime that had stopped approving new routes since the early 1970s, and that had explicitly subsidized air service to small and medium communities in the U.S. at the expense of larger cities.[8] To illustrate the relevance and impact of the policy, Fig. 1 illustrates the relative changes in air services across city size groups in the wake of deregulation around the phase-in years 1977–1983. The simple snapshot of the raw data suggests that the 1978 aviation deregulation led to sizable, long-lasting and heterogeneous effects on the provision of aviation services across urban locations.

Using historical data on economic and aviation indicators for 263 MSAs spanning the period 1969–1991, we exploit the significant changes in passenger aviation triggered by industry deregulation in order to infer the effect of air services on regional growth.[9] We

[6] There is a significant economic geography literature showing how spatial location influences regional development and income growth via market access effects. See, for example, Redding and Venables (2004) for a cross-country analysis, or Hanson (2005) and Head and Mayer (2006) for a regional analysis.

[7] Using the German division and reunification as a natural experiment, Redding et al. (2011) provide interesting evidence for how persistent the shocks to the aviation network can be, in large part due to the presence of sunk costs and network externalities.

[8] The only major form of regulation in the industry that remained was the Essential Air Service program, which mandated service to very small communities. This program has been quite limited in the communities it covers, and currently provides services to approximately 3000 passengers a day.

[9] Technically, the unit of observation in our dataset is a Core Based Statistical Area (CBSA), which includes both micropolitan and metropolitan statistical areas. However, since 75 percent of the cities in our sample are metropolitan statistical areas, throughout the paper we will be using the abbreviation MSA to refer to cities in our sample.