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Socio-economic mobility and air passenger demand in the U.S.

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ABSTRACT

In this research, we examine how socio-economic mobility affects domestic passenger enplanement volumes at U.S. airports. In addition to metrics such as income and population levels, socio-economic mobility has been identified as an important characteristic of the socio-economic fabric of market areas. As such, it is a potentially significant determinant of demand for goods and services, including air travel. Drawing on data from the U.S. domestic airline industry and newly available measures of socio-economic mobility, we empirically discern how the latter affects both yields and passenger counts at U.S. airports. The results offer compelling evidence that greater mobility is associated with lower air fares. In addition, our findings suggest that greater passenger volumes are also lower in areas marked by higher socio-economic mobility, all else equal. Collectively, our results document the significance of socio-economic mobility as a determinant of air travel demand and thereby highlight the importance of considering it in the context of forecasting, demand management and, ultimately, infrastructure planning.

1. Introduction

The prediction of future air travel demand is of critical importance in the aviation industry and the basis for policy and managerial decision-making related to infrastructure and production planning (see Carson et al., 2011, for example, for a more detailed discussion on this matter). Accordingly, there is a rich academic literature concerned with forecasting air passenger volumes and understanding their supply and demand-side determinants (Alperovich and Machnes, 1994; Chi and Baek, 2012). Recent industry publications[1] indicate that demand dynamics shift according to different stages of a country's economic development: Emerging markets throughout the world have shown that air travel is one of the first discretionary expenditures to be added as consumers join the global middle class. In developed markets such as the U.S., GDP per capita matters less, while factors such as consumer confidence, service pricing and service quality are more important. In a similar vein, a report published by The Boston Consulting Group (2013) highlights the role of socio-economic factors in influencing air travel demand in the United States. Hence, the exploration of how socio-economic characteristics affect air passenger demand is a timely and worthwhile endeavor. Focusing on the role of socio-economic mobility (SEM), in particular, this study contributes to the advancement of the existing literature explaining and predicting passenger demand for air travel.

In their recent research, Chetty et al. (2014a, 2014b) define socio-economic mobility as the extent to which children of low-income families are able move up in the income distribution and empirically explore this phenomenon using data from U.S. federal

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[1] E.g., Boeing 2016-2035 Market Outlook, IATA Country Report-US, Airbus Mapping Demand 2016-2035 Report.

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income tax returns. Their empirical analysis yields several important findings: (1) there is a significant degree of variation in SEM across U.S. commuting zones[2]; (2) SEM is largely uncorrelated with income levels; and (3) SEM is correlated with other socio-economic factors such as racial segregation, the quality of public school systems, and social capital indices.

While the determinants and implications of SEM and, more broadly, socio-economic characteristics have been studied in a number of academic fields and literature streams, there appears to be a paucity of research on SEM in the context of aviation. In the transportation economics literature, several studies include measures such as income and population levels as predictors of passenger volumes and air fares (e.g., Borenstein, 1989). Yet, the findings of Chetty et al. (2014a) suggest that SEM is a concept that is distinct from the average wealth or size of a market and, instead, captures important aspects of the socio-economic fabric of economic areas. Such socio-economic characteristics have been shown to affect demand for health care (Celik and Hotchkiss, 2000), broadband connectivity (Dwivedi and Lal, 2007), fuel (Wadud et al., 2009), gambling (Layton and Worthington, 1999), and alcoholic beverages (Johnson and Oksanen, 1974), to name just a few examples. Hence, there is ample research documenting that socio-economic characteristics are important determinants of demand for a variety of goods and services.

Research on consumer spending is consistent with the notion that SEM may have a bearing on air travel demand above and beyond other supply and demand characteristics studied in prior research. Data from the U.S. Bureau of Labor Statistics, for example, indicate that transportation-related consumer spending is relatively highest for medium-income households as compared to the lower and upper quintiles of the income distribution.[3] Moreover, a 2016 report by the U.S. Travel Association[4] indicates that weak or even negative income growth tends to weigh on discretionary travel spending. Given this pattern, it is conceivable that intergenerational SEM—in addition to variations in income levels across geographic markets—might explain changes in passenger demand for air travel.

Examining the role of SEM as a predictor of air passenger demand refines our theoretical understanding of the drivers of air travel demand and has the potential to improve the accuracy of air travel demand forecasts. As such, this research should be of interest to the academic and practitioner communities alike. In the remainder of this article, we briefly review the relevant literature and provide further detail on the concept of socio-economic mobility, particularly as it may relate to air travel demand. We then discuss the data and measures used in our empirical analyses, address methodological issues, and present the estimation results. We conclude with a summary and discussion of our findings and highlight implications for future research.

2. Literature review

Our research is informed by two key streams of research. First, we build on and contribute to the literature predicting or explaining passenger demand for air travel. Second, we draw on recent research on SEM. Below, we provide a brief overview of both literature bases and discuss the role of SEM in the context of demand for air travel.

2.1. The air travel demand literature

There is a sizeable literature examining the determinants of air travel demand, with some early work focusing on fares, income and population as the key predictors of traffic volumes (Verleger, 1972). Subsequently, researchers have examined the role of characteristics such as quality of air service (Ippolito, 1981; Hsiao and Hansen, 2011), consumer wealth (Alperovich and Machnes, 1994), the business climate (Chi and Baek, 2012), and flight delays (Britto et al., 2012) in affecting passenger demand. Similarly, Blalock et al. (2007) studied the effect of post 9/11 airport security measures on air travel demand and found that newly instituted baggage and passenger screening procedures had a significant adverse effect on air passenger volumes.

Collectively, this research has refined our understanding of the supply-side, consumer-level, and environmental conditions that shape air travel markets in terms of both passenger counts and fare levels. But with regards to the effects of aggregate social phenomena and SEM, in particular, the literature is scant. One exception is the work of Laplace et al. (2007) who predicted that factors such as increased job mobility and migration flows would significantly impact passenger demand by 2025. In this spirit, recent advances in the conceptualization and measurement of SEM, as outlined below, present an opportunity to explore how hitherto ignored socio-economic characteristics shape demand for air travel.

2.2. Research on socio-economic mobility

A burgeoning amount of recent research has argued that the United States is faced with record levels of income inequality and one of the lowest rates of SEM among industrial nations (Piketty and Saez, 2003). Corak (2013) presents cross-country evidence that inequality is transmitted across generations. It is now common to refer to this relationship as “The Great Gatsby Curve” (Krueger, 2012). Despite these apparent constraints on economic opportunities, Americans continue to have hope in the ‘American Dream’, the promise that individuals, regardless of the circumstances of birth, have an equal opportunity to move up the socio-economic ladder. These beliefs in social class mobility are widespread (Kraus and Tan, 2015), frequently referred to in political speeches (Obama,

[2] Commuting zones are geographic units that identify local economies. As of 2000, there are 709 commuting zones in the U.S. (http://www.ers.usda.gov/data-products/commuting-zones-and-labor-market-areas/documentation.aspx, last accessed on 9/23/2016).

[3] http://www.bls.gov/cex/csxann11.pdf (last accessed on 9/23/2016).

[4] https://www.ustravel.org/system/files/Media%20Root/Document/Outlook_Back_Page_February_2016.html (last accessed on 9/23/2016).