Chapter 1

Introduction

Aviation is at the core of global economic activity: an efficient international air transport market is crucial for the accessibility of countries, regions and cities, and therewith for their economic functioning and growth. Competition between airlines is an important component defining the efficiency of air transport markets. Not surprisingly, the extent and nature of competition between airlines constitute important areas of research in the academic literature.\(^1\) The majority of this research considers airline competition in domestic market settings. This thesis contributes to a better understanding of international airline competition by focusing on a distinct feature of international air transport markets: the prevalence of national carriers.

Throughout this thesis, the term national carrier is used to indicate the main national airline brand(s) of a country, such as KLM in the Netherlands, Qantas in Australia, and American, United and Delta in the United States. Although almost all western national carriers are now privatized (CAPA, 2018), many of these airlines retain a special position in their domestic country. For one, many governments are inextricably tied to their national carriers, which they regard as important drivers of domestic economic activity. Moreover, airlines devote extensive marketing efforts on cultivating a national brand image in order to

\(^1\)See, for instance, the recent special issue on the airline industry in the *International Journal of Industrial Organization* (Brueckner and Zhang, 2018).
protect the loyalty of their domestic consumer pool. Such mechanisms may create and sustain market power of national carriers on route markets originating from their domestic country.

From the 1990s onwards, the international airline industry has been gradually moving towards a liberalized market regime (Fu et al., 2010). For instance, as of September 2016, over 300 ‘open skies’ agreements involving more than 150 states have been signed (ICAO, 2016). The ultimate goal of this development is to increase the efficiency of the global air transport system by allowing for more competition between carriers on international routes. Market power of national operators distorts international competition and might pose challenges for the ongoing process of liberalization and deregulation. It is, thus, important that such deviations from the competitive ideal are well understood. The first objective of this thesis is to contribute to that understanding by empirically analyzing the sources and consequences of national carriers’ market power in the deregulatory international airline industry.

Consumer preferences for their own national carriers may play a pivotal role in preserving the competitive edge that national carriers have over their foreign competitors. As explained by Cosar et al. (2018), the presence of consumer preferences for national brands limits the extent to which deregulation of supply-side barriers can foster international market integration. It is indeed difficult and, most likely, undesirable to override such consumer preferences with regulation. For this reason, preference-based drivers of competitive advantages are especially relevant from a policy perspective. The second objective of this thesis is therefore to assess the persistence of consumer preferences and the consequential loyalty advantages enjoyed by national carriers in their domestic country.

The main body of this thesis consists of three independent empirical chapters that address these two objectives. Chapter 2 analyses firm conduct and therefore focuses on the first objective. Chapter 3 and 4 examine consumer behavior and naturally relate more to the second objective. Each chapter focuses on a different (geographical) context and utilizes its own dataset. Chapter 2 collects a unique database of published fares offered by two leading European carriers (i.e., Air France and Lufthansa) on long-haul routes that depart from Europe. Chapter 3
benefits from access to a confidential dataset provided by a major international frequent flier program with multiple European sponsoring carriers. Chapter 4 uses an experimental setup to collect air travel preferences from a representative panel of more than 500 Australian air travel consumers.²

The analysis contained in these chapters draws upon several strands of research from both the economics and marketing literature. For instance, the approach taken in estimating the market power of national carriers on international routes, resembles the methods used by studies that evaluate airline market power in domestic settings (e.g., Borenstein, 1989; Bilotkach and Lakew, 2014). Insights from the broader aviation economics literature that relate to, among others, airline competition (e.g., Brueckner et al., 2013), frequent flier programs (e.g., Lederman, 2007, 2008) and codeshare agreements (e.g., Ito and Lee, 2007), are used throughout the thesis. Behavioral marketing theory on consumer bias towards domestic products and services (e.g., Verlegh, 2007) provides the background for the study of consumer loyalty towards national carriers. Methodologically, this thesis relies on recent advances in the applied (micro-)econometrics literature, such as state-of-the-art discrete choice modeling (e.g., Train, 2009) and regression discontinuity designs (e.g., Lee and Lemieux, 2010).

Chapter 2 conceptualizes a carrier’s national identity as a source of market power. As explained above, national carriers may accrue market power through privileged treatment by their governments or consumer preferences for their own national carrier. Due to its focus on domestic airline industries and on airport dominance as a source of market power (e.g., Borenstein, 1989; Evans and Kessides, 1993; Bilotkach and Lakew, 2014), the extant airline market power literature has not considered the accumulation of market power through these mechanisms. This chapter takes a first step in the investigation, by analyzing the market power that carriers enjoy due to operating from domestic grounds.

The domestic market power of national carriers is identified as the premium that they command on routes that originate in their domestic country relative to similar routes that originate in foreign countries. To control for many of

²All chapters focus on passenger transport, air freight is left out of the scope of this thesis.
the factors that may vary between domestic- and foreign-originating routes, the approach compares fares charged for domestic- and foreign-originating connecting flights that share the same main, intercontinental, flight leg (e.g., Nice - Paris - New York vs. Turin - Paris - New York). Variation in airline market shares at the origin airports in the sample is used to disentangle the domestic country premium from the traditional airport dominance premium.

It is found that national carriers charge a substantial premium of about 9 per cent over average fares on routes that originate in their domestic country. This premium is much larger than the traditional airport dominance premium. Moreover, a higher premium for trips that are predominantly bought by business travelers suggests that national carriers are better able to price discriminate in their domestic country. These results establish domestic market power as an important and economically-relevant force in international airline competition.

Chapter 3 empirically pinpoints consumer loyalty as one of the underlying mechanisms that creates and retains the dominance of national carriers in their domestic country. In the behavioral marketing literature, the idea that consumers are biased towards domestic products and services is widely recognized (e.g., Balabanis and Diamantopoulos, 2004; Verlegh, 2007). Nevertheless, it is difficult to estimate the magnitude of the resulting loyalty advantages because of spatial differences in supply and demand characteristics and domestic and foreign consumers residing in different locations. For instance, domestic consumers typically live closer to the airports from which their own national carrier operates the majority of its services and hence have better access to these services relative to foreign consumers.

This chapter takes advantage of geocoded microdata on membership and activity in an international frequent flier program with multiple European sponsoring carriers. Using a geographic discontinuity approach (Keele and Titiunik, 2015), domestic consumers that reside at the national border of the program’s sponsoring carriers are compared with foreign consumers that live just on the other side of the border. As these domestic and foreign consumers are living in virtually the same location, all supply and demand characteristics that vary continuously over space are controlled for.
Results from this approach indicate that foreign consumers are about 70 per cent less likely to be program members compared with domestic consumers, all else being equal. After controlling for changes in membership composition at the border, the evidence furthermore suggests that foreign members spend less than their domestic counterparts. Given the credible and clean identification strategy, these results are indicative of the persistent loyalty of consumers towards their own national carrier even in the profoundly deregulated European airline industry.

Chapter 4 presents an empirical analysis of consumer choice behavior in international route markets where carriers engage in codeshare agreements. Under these international codeshare agreements, carriers market and sell seats on flights operated by their (foreign) partners as if these are seats on their own flights. The motives for and consequence of codesharing have received a lot of attention in aviation economics (e.g., Brueckner, 2003; Ito and Lee, 2007; Zou et al., 2011). This chapter contributes to this literature, by studying how consumer valuation of flights by alien foreign carriers (e.g., carriers from distant countries) changes due to codesharing by their own national carrier.

Unlike most of the prior research on the impact of codesharing, the approach uses individual-level data obtained from a stated preference experiment. This data-rich approach is used to measure the impact of codesharing by Qantas, the Australian national carrier, in trans-Pacific route markets departing from Australia, and to explore the behavioral mechanisms underlying the consumer choice process in the presence of codeshared and non-codeshared flight alternatives.

Australians are shown to be willing to pay a premium of about 4.5 - 6% for alien flights that are codeshared by Qantas, over non-codeshared alien flights. The premium for codesharing by a neighboring national carrier, Air New Zealand, is significantly lower at 2 - 4%. Quality signals perceived from codesharing by a familiar carrier seem to drive the effects. These findings demonstrate the advantage that foreign carriers can obtain from partnerships with local national carriers.

Chapter 5 summarizes the findings and provides conclusions. This thesis ends with a discussion of the implications for global aviation policy and for the management of carriers that are operating in the international airline industry.