



# Price dispersion, competition, and the role of online travel agents: Evidence from business routes in the Italian airline market



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## ABSTRACT

In this article, using data from the Italian airline market, we study the role of online travel agents (OTAs) in driving price dispersion as compared to the effect of airlines' websites. Specifically, we investigate how distinctive factors between OTAs and airlines' direct channels influence price dispersion. We find that after controlling for OTAs' features related to airline competition, price dispersion should be lower in the OTA channel relative to airlines' direct channels. On the other hand, we also find that OTAs' features related to the presence of airline competition play in favor of higher price dispersion in such indirect channel.

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## 1. Introduction

Airline markets are characterized by the existence of substantial price dispersion, to be intended as a measure of price variations in the market. Indeed, it is not unusual to see travelers on the same flight paying very different prices for the very same seats. This is due to the fact that airlines are able to distinguish among different types of customers and practice price discrimination, with the help of mechanisms such as advance selling, loyalty programs, nonrefundable tickets, etc. In addition, airline companies typically face uncertain demand with a fixed inventory consisting of very perishable products. Accordingly, they utilize revenue management systems to maximize revenues by dynamically adjusting prices for their seats based on whether the current booking is above or below expected values (Belobaba, 1989; McAfee and te Velde, 2007; Gillen and Mantin, 2009).

The study of price dispersion in the airline industry can provide numerous important implications for firms, consumers and authorities in terms of firms' pricing power, price discrimination, product differentiation, and reduction of search costs. For this reason, many researchers have devoted themselves to the study of price dispersion in this industry, trying to shed light on the factors behind this phenomenon. In particular, great effort has been devoted to study the role of airline competition in the emergence of price dispersion. These studies have been grounded on two contrasting economic theories. Traditional microeconomic theory predicts that price dispersion should decrease with competition, essentially because firms lose their ability to set prices over marginal costs as they approach the ideal perfect competition environment. In contrast, according to an alternative perspective (often referred to as brand loyalty theory) greater competition should lead to greater price dispersion when firms can price discriminate among segments of different price sensitivity, e.g., leisure and business

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travelers. Empirical evidence has been mixed with several studies documenting either a positive (Borenstein and Rose, 1994; Stavins, 2001; Giaume and Guillou, 2004) or a negative impact of competition on price dispersion (Gerardi and Shapiro, 2009; Gaggero and Piga, 2011). The existence of contrasting forces might also explain why some studies find that the effect of airline competition on price dispersion does not emerge or is not relevant (Gillen and Mantin, 2009; Mantin and Koo, 2009). More recently, other studies have reconciled the two opposing views by showing the existence an inverted U-shaped relationship between price dispersion and competition (Obermeyer et al., 2013; Dai et al., 2014).

While this stream of research provides valuable insights by showing how the extent of competition among firms impacts on price dispersion, it pays scant attention to the role of the distribution channel. Today airlines distribute most of their tickets both via their own websites (direct channel) and through online travel agent (OTA) platforms, which are, in turn, linked to independent computerized reservation systems (CRSs). The OTA channel now is a key element in the US as well as the European airline industry, with gross booking of OTAs accounting for over 35% of the online travel market in the last few years (PhoCusWright, 2008a, 2011; Castillo-Manzano and Lopez-Valpuesta, 2010). OTAs retrieve the fares made available by airlines on CRSs and display these fares to final customers on their websites, possibly charging some fee for their booking services. The few works focusing on the role of OTAs suggest that price levels significantly change across different OTA websites (Clemons et al., 2002; Chen, 2006; Lin et al., 2009). However, no study has explicitly analyzed price dispersion in the OTA channel as compared to airlines' direct channels.

Since OTAs act as agents for selling products of airlines, it would appear reasonable to expect a more limited ability to influence prices on their side as compared to airlines. However, it has been recently argued both in the academia and in the industry world that the role of OTAs is not merely "technical", i.e., simply related to adding booking fees to customers. Rather, OTAs can have some influence on prices displayed in their own channel, which they can use to discriminate for and against some airlines (Bilotkach and Pejcinovska, 2012). This influence on prices may result from the fact that OTAs can negotiate special deals with airlines based on long-term agreements (Shapiro, 2002; Perkins, 2011), but also because OTAs may have revenue sharing agreements with CRSs, which might give them some margin to shave the fares displayed to customers in their own channel (The Economist, 2012). In addition, OTAs display further unique features that airlines do not have, such as the ability to combine products from different carriers and pull out those combinations especially attractive to specific groups of customers (Clemons et al., 2002). In part in response to the increasing power of CRSs and the OTA-based distribution channel, airlines more and more try to retain flexibility by keeping some attractive fares and services only for their own channel so that they can implement price discrimination more successfully and avoid the high distribution costs of CRSs (Alamdari and Mason, 2006; Hobica, 2011; Perkins, 2011, 2012). On the other hand, this incentive is tempered by the need to maintain visibility in the OTA channel (Koo et al., 2011). Finally, the two channels seem to appeal to different types of customers even within the same (business or leisure) macro-segment. OTAs seem to target more-price sensitive customers, which would suggest lower heterogeneity in their channel, while airlines reasonably focus on customers with different price consciousness, who also value ancillary services not offered by OTAs (PhoCusWright, 2008b; Atmosphere Research Group, 2012). These considerations would suggest that OTAs could have some room to actively influence prices in their channel and segment differently from airlines in their own direct channel. At the same time, airlines try to preclude this possibility to OTAs, not without difficulties (e.g., American Airlines vs. Expedia fight), by releasing some fares only in their own websites. As a result, the role of the type of distribution channel in influencing price dispersion is not immediate and, thus, needs to be unraveled. Accordingly, various important unanswered questions remain as to whether and when price dispersion should be different across the two types of channels, and what rationale is behind these differences. Our paper aims at filling this important gap in literature by studying the role of OTAs vs. airlines' direct channels as another important source of price dispersion in the airline industry.

We draw on the literature studying the role of competition in price dispersion in the airline market and contribute along two important directions, which help shed light on the above unexplored issues. First, we study the difference in price dispersion between OTAs and airlines' direct channels due to distinctive factors that emerge *irrespective* of the existence of airline competition. Second, we study the difference in price dispersion attributable to those OTAs' distinctive features exclusively *related* to the presence of airline competition. In particular, we argue that, when controlling for any distinctive factor related to airline competition, price dispersion should be lower in OTAs as compared to airlines' direct channels. Indeed, the lower customer heterogeneity in OTAs with regard to price sensitivity coupled with the larger portfolio of fares retained by airlines in their own channels, should play in favor of lower price dispersion in the OTA channel. On the opposite, higher price dispersion should be observed in OTAs as a result of distinctive features that emerge only contingent upon airline competition, namely OTAs' ability to offer and, even, combine products of different airlines and the possible presence of additional fees that vary across routes and airlines.

To test our theoretical arguments we use an *ad-hoc* panel dataset related to products offered in airlines' direct and OTA channels in the Italian market. Specifically, at different dates before flight departure and on different routes, we observe posted fares of products offered only to the business segment, to be intended as the segment of customers who book airline tickets for reasons related to their job or business activity. In this respect, it is noteworthy that OTAs have increasingly gained power in attracting the business segment (Alamdari and Mason, 2006). Thus, considering such segment of travelers is suitable to the scope of this paper. More importantly, focusing on the business segment helps deliver a further contribution to extant literature. That is, we investigate whether the brand loyalty effect can emerge also when considering one segment. At first blush, only the effect predicted by the traditional microeconomic argument should be observed due to the fact that the leisure segment is absent. In contrast, not all business travelers have the same willingness to pay or the same brand loyalty (Alderighi et al., 2012; PhoCusWright, 2012). As a result, the brand loyalty effect might still emerge to significantly impact on

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