



Hotel roomrates under the influence of a large event: The Oktoberfest in Munich 2012



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ABSTRACT

Surprisingly few studies deal with the implications of large events for hotel prices. We address this issue by modeling hotel prices in Munich under the influence of the Oktoberfest. By utilizing internet data from a metasearch provider for check-in dates prior to and during the Oktoberfest 2012, it is analyzed how the event affected the daily price level as well as price differentials between hotels. In general, average hotel prices are very volatile over time. Apparently, Munich hotels tend to set prices according to expected demand and vary those depending on the day of the week during the event. *Ceteris paribus*, roomrates are highest on Oktoberfest Friday and Saturday nights, followed by Oktoberfest weekdays and Oktoberfest Sunday nights, but there is a general and strong price-raising impact. Prices differ across hotels mainly due to the star category attributed to a hotel and the proximity to the event. Both price premia are time-dependent.

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1. Introduction

There is a high public and academic interest in how special sporting or cultural events affect the city or region that hosts the event. Decision-makers at the community, regional or even national level need guidance by economic analyses and forecasts. Consequently, an increasing number of such event studies have appeared in travel demand and sports economics (see Dwyer et al., 2010, Chapter 11). Often, these studies were based on regional input-output (IO) models. Porter and Fletcher (2008) show for Olympic Games that critical assumptions of IO models may bias, e.g., estimates of the additional demand due to the event severely upwards. Realistic event-study modeling should, therefore, also consider the price impacts of an event in the region. It is this important aspect which we address here for the implications of a large event for hotel roomrates.

We concentrate on a cultural rather than a sports event. A particularly important special event in Munich, Germany, that occurs each year in September and October is the Oktoberfest. On its official homepage, the Oktoberfest is described as the largest folk festival in the world (<http://www.oktoberfest.de>). It was reported in the media in September 2012 that hotel room prices in Munich skyrocketed under the influence of the Oktoberfest with peak price

increases by more than 850% (Nicolai, 2012). Although background surveys provide some statistical information on how hotel room prices developed and suggestions on best buys for tourists and visitors (CHECK24, 2012), systematic price analyses with multivariate methods and research publications on the issue are lacking.

It is the objective of this article to analyze how hotel roomrates developed in Munich under the influence of the Oktoberfest 2012 and which determinants are decisive for their development. In contrast to the existing event-study literature, our analysis of hotel room prices is based on high-frequency, daily data. We elaborate how those daily hotel room prices change as a consequence of the special event and other supply and demand shifters. We investigate prices from a rich internet data source, i.e. the metasearch provider *swoodoo.com* that is supposed to compare hotel prices from various search providers.

The article is organized as follows. After the introduction, the literature on determinants of hotel prices will be reviewed in Section 2. In Section 3, we present the theoretical framework for the analysis of hotel roomrates. It is based on a model for the demand for and the supply of hotel rooms from which a hedonic pricing model for hotel roomrates is derived as a reduced form of the market equilibrium. In Section 4, the database will be described and the empirical analysis is presented. We will elaborate how the Oktoberfest affected the aggregate course of hotel room prices in Munich, how dynamic pricing occurred dependent of the distance between booking and check-in dates and whether hotels differed in their pricing strategies. Some implications and conclusions are derived in the final Section 5.

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2. Review of the literature

The economics of tourism has become a booming area during the last decade and, in particular, the last few years. The database “econis”, e.g., showed 276 entries of publications in December 2013 which included the term “tourism demand”. Among those, 74% or 203 entries were published since the year 2000 and 50% or 137 entries appeared in 2008 or later. A very broad introduction to tourism economics is given by [Dwyer et al. \(2010\)](#). Within the booming literature on tourism economics and demand, travelers’ choices among destinations or the selection of hotels after having first selected a destination ([Candela and Figini, 2012](#)) are major issues. In this context, the analysis of hotel roomrates in certain cities or holiday regions as a function of characteristics of the destination, the hotel or the hotel room plays an important and increasing role.

One reason for the strongly rising number of studies on the determinants of hotel roomrates is the better availability of internet data on hotel room prices and the rising market for online booking of hotel rooms. A number of the earlier studies was based on brochure information, e.g. on the determinants of tourist packages from the Middle and North European countries to Mediterranean countries. Methodologically, these earlier as well as the more recent studies are mainly based on hedonic price models. Following [Rosen \(1974\)](#), it can be argued that the supply of and the demand for a differentiated commodity determine its price. The price can be explained by variables that either shift the demand or supply function or both. The price of the differentiated commodity, i.e. a touristic package, is then a function of the characteristics of the package which affect the consumers’ valuation and/or the marginal costs of the package providers. [Espinet et al. \(2003\)](#) elaborate with a hedonic price analysis how the attributes of Spanish holiday hotels are valued. [Thrane \(2005\)](#), in a similar approach, analyzes determinants of prices for sun-and-beach package tours to the Canary Islands by Norwegian tour operators. In a study for ten major Mediterranean regions, [Fleischer \(2012\)](#) investigates the implicit price of a view from the hotel room to the Mediterranean Sea using internet data from booking.com.

Quite a bit of information is available on the determinants of hotel roomrates in non-European and European cities. [Zhang et al. \(2011\)](#) model for the city of Beijing, China, how site factors such as hotel star ratings or the year in which the property was built or refurbished and situation factors like location affect the hotel room prices. [Schamel \(2012\)](#), in his analysis of Bolzano, Italy, elaborates that the hotel star ratings, weeks of advance bookings and consumer assessments of the hotel are important determinants of roomrates. Additionally, the author shows that midweek stays for business travelers and weekend stays for tourists should be distinguished. [Abrate et al. \(2012\)](#) are particularly interested in dynamic pricing strategies at different European hotels. They study hotel roomrates in nearly 1000 hotels in eight European capitals by descriptive statistics and hedonic pricing models. [Abrate et al. \(2012\)](#) discover dynamic pricing strategies but those are again different for midweek and weekend stays: On weekdays, when business travelers are in the majority, prices fall when the hotel stay approaches and the authors recommend booking at the last minute. For weekends, when leisure travelers are in the majority, prices move up when the check-in-date comes closer and the authors suggest to book about three weeks in advance.

The economics of special events is seen as a core element of tourism economics ([Dwyer et al., 2010](#)) as well as sports economics ([Leeds and Von Allmen, 2014](#)). A growing number of event studies covers the impacts of large events like Olympic Games on the host region or country. The restrictive assumptions of regional input-output models, which have often been used, were criticized extensively ([Porter and Chin, 2012](#); [Crompton, 2006](#)). Other

analyses are built on computable general-equilibrium (CGE) models and capture many different effects of the event, including those on accommodations and on accommodation expenditures or earnings (e.g. [Li et al., 2013](#)). In most of these studies, however, the impacts of additional demand under the specific event are modeled under the assumption of given prices for accommodation. [Brännas and Nordström \(2006\)](#), e.g., deal with implications of festivals in Sweden on tourist expenditures for accommodation. The authors model average numbers of occupied rooms during festivals compared to those on non-festival days for a given time series of hotel prices. [Li et al. \(2013\)](#) investigate tourist impacts of the 2008 Beijing Olympics on the host city within a CGE approach. They estimated the “new money” that flows into the city by tourists and compute the macroeconomic and industry-specific output and price changes. For the accommodation industry, the authors calculate price- and output-raising effects with their imperfect-competition model that are comparatively small (+1.3 and +3.0%) at the annual aggregation level. An interesting alternative approach is taken by [Porter and Fletcher \(2008\)](#) who elaborate implications of the 1996 Olympic Summer and 2002 Winter Games in the USA on the regional economies of Atlanta and Salt Lake City respectively. The authors argue that ex-ante predictions with regional input-output models may yield biased impact estimates, e.g. by assuring constant factor prices. With multiple regression analyses of ex-post impacts, [Porter and Fletcher \(2008\)](#) derived that the impacts of an event can be very different on markets with inelastic rather than elastic supply. In particular, it is the hotel industry for which the authors compute very strong impacts on hotel room prices and expenditures.

The strong effects of special events on hotel room prices measured by [Porter and Fletcher \(2008\)](#) are based on monthly average roomrates and occupancy rates. To the best of our knowledge, hotel room prices have not been modeled by the use of daily roomrates for a larger sample of individual hotels before, during and after the event.

With regard to the Oktoberfest in Munich, a recent study covers demand effects of the Oktoberfest ([Süssmuth and Woitek, 2013](#)). There has been a major interest in the media each year on how hotel roomrates develop under the influence of the special event. Individual descriptive reports exist which were typically widely cited in the press, such as [CHECK24 \(2012\)](#). Scientific publications, in which causal relationships are explicitly modeled in order to elaborate the determinants of hotel room prices are lacking, however. We intend to fill this gap in the following.

3. Theoretical framework

The first general question is how the general price level at Munich hotels is affected by the Oktoberfest. We will address this question by analyzing average price levels for alternative overnight stays at a given booking date. If the hotel market clears for all possible check-in dates t , we can imagine that hotel room prices for a check-in date t can be derived as the reduced form of a market equilibrium between demand for and supply of hotel rooms. Demand for hotel rooms at the check-in date t , i.e. q_t^D , is a function of the price p_t , whether the check-in date is an Oktoberfest day ($OKTFEST_t$) and a non-price vector Z_t^D covering all other demand shifters:

$$q_t^D = \alpha_0 + \alpha_1 \cdot p_t + \alpha_2 \cdot OKTFEST_t + \alpha_3 \cdot Z_t^D. \quad (1)$$

Supply of hotel rooms, i.e. q_t^S , for the check-in date t can be seen as exogenously given at the booking date:

$$q_t^S = \bar{q}_t. \quad (2)$$

Market clears if

$$q_t^D = q_t^S. \quad (3)$$

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