



## Revisiting the impact of bed tax with spatial panel approach



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### ABSTRACT

The recent trend of US localities on adoption and increase of hotel occupancy taxes has been well noted. While the aggregate effect of hotel occupancy tax has been frequently investigated by prior studies, less research has examined the effect of price increase on the competition between geographic submarkets. Hypothesizing that a new bed tax will lead to competitive disadvantage of a hotel group against other adjacent groups unaffected by tax, this study examines the effect of bed tax on hotel performance in the Midland-Odesa lodging market. Using a random effects spatial panel model, significant evidence of competitive disadvantage created by the adoption of bed tax for Midland hotels in 2007, and also a possibility of error in pricing strategy by these hotels are found. Implications and suggestions for practitioners are discussed with the findings of the study.

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### 1. Introduction

Recent trend of localities raising hotel occupancy taxes to compensate for the recession-hit travel demand has been well noted by the business press (White, 2011; De Lollis, 2011). Simply referred to as “bed taxes,” these taxes are collected separately from the state sales taxes, assessed as a percentage of the room rate (Bonham et al., 1992), and effectively become additional cost to travelers. Occupancy taxes are generally regarded as easier means to generate revenue for regional administrative bodies, as they are primarily ‘exported’ to visitors (Dhalby, 1996; Fujii et al., 1985). Imposition of bed tax hence usually invokes less political resistance from the local voters (White, 2011).

After collected, tax funds are usually allocated to assisting local tourism, through such means as financing of convention centers and collective marketing of the destination (Spengler and Uysal, 1989). For example, New Orleans has used the bed tax to aid the expansion of the New Orleans Convention Center (Donovan, 1987), while San Diego increased the bed tax to help bring in visitors to the Holiday Bowl and back the bids for Super Bowl (Seal, 1987).

When effective, the advantages of such strategy seem lucrative. Increased funding into city marketing units such as Convention and Visitors Bureaus may lead to promotional efforts that may benefit the region and its component industries as a whole, the reasoning under which some practitioners show support (Murphy, 2010). In available literature, Bonham and Mak (1996) argue that tax for such

purpose is considered an effective way to reduce free riders and increase funding for necessary promotional expenditures. Aguilo et al. (2005), Bonham and Gangnes (1996), and Bonham et al. (1992) provide additional support to this end by reporting that the effect of tax on lodging demand can be negligible.

On the other side, however, effectiveness of this strategy is sometimes questioned. Kalnins (2006) argued that nationally, city convention centers have been overbuilt with subsidization from local government bodies, where a significant part of the funding is derived from hotel occupancy taxes. In another aspect, Sheehan et al. (2007) report that use of tax funds by destination marketing organizations (DMOs) are becoming subject to scrutiny for its lack of efficiency and effectiveness in trip generation. Finally, a number of studies cite the negative effect of bed tax on the lodging demand (Hiemstra and Ismail, 1993; Fujii et al., 1985).

The discussion on overall effect of this strategy, involving promotion of hospitality and tourism industries through bed tax, is still ongoing. Complications also persist from the effectiveness in the operations of DMOs and marketing entities to the oversupply of tax-backed tourism infrastructure. Yet a unique question is raised with regard to the price effect of bed tax on hotels' intermarket competition. It is well established that geographically adjacent hotel submarkets can engage in an intermarket competition for common demand (Ingram and Inman, 1996). In localized competition of hotels, substitutability of products is significantly determined by geographic proximity, if not entirely. Furthermore, it is a common understanding shared in literature that hotels compete through prices (McCann and Vroom, 2010). If the imposed bed tax translates into price increase for one group of hotels, the other group is likely to have a sustainable competitive advantage in operation.

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When the guests are reasonably flexible in their choices of location, it can be expected that rooms in two alternative regions are good substitutes for one another. In such case, existence of less expensive choices, hotels with lower or possibly no bed taxes, can affect the submarket competition through cross-price elasticities.

Therefore, both theoretical and empirical gaps in the current literature are identified. Although there have been a longstanding discussion and meaningful studies on the implementation of hotel occupancy taxes regarding its impact on the lodging demand, the question to date has largely revolved around the effect of tax on aggregate lodging demand. As a result, the potential competition effect among submarkets caused by bed tax remains to be examined. Meanwhile, understanding this effect is crucial in policy development issues pertaining to imposition and adjustment of hotel occupancy taxes. For the practitioners, the investigation of an important cause of effective price change warrants implications extending from revenue management to competition. While it is a recent trend for localities and municipalities to review the feasibility of bed tax adoption to increase tax revenues, the outcome of such strategy may not necessarily lead to anticipated outcome, if the marginal effect of such strategy is not well known or forecasted. With the effectiveness of the use of tax funds in question, the localities and hotels may even face possible disadvantages by adopting misinformed decisions. In order to shed light into this problem, the current study purports to examine the impact of hotel occupancy tax on the performance of hotels in the Midland-Odessa Combined Statistical Area (CSA).

Commonly known as the 'Petroplex,' the Midland and Odessa Combined Statistical Area (CSA) is located in Texas. The Midland and Odessa CSA consists of two Metropolitan Statistical Area (MSA) cities of Midland and Odessa in Texas. Today, the CSA serves as a hub of the West Texas nature-based tourism as well as the supply and medical center in the region (Sibley Nature Center, 2002). Travel and tourism-related industries represent a significant part of the economic activities in both cities. For example, in the year 2013 Midland Convention and Visitors Bureau (2013) attracted more than 90 group events totaling more than 147,000 attendees, 11,000 room nights, and \$24 million in direct visitor spending. According to the Odessa Convention and Visitors Bureau (2011), travel and tourism industry generates 2320 jobs and \$4.4 million in tax revenues.

The Midland-Odessa lodging market constitutes a unique environment for the natural experiment pertinent to the purpose of this study for the following reasons. First, the Midland and Odessa MSAs are approximately equal in size. Populations of the cities of Midland and Odessa were 126,408 and 129,570 respectively, in 2007. Second, the Midland and Odessa MSAs are not adjacent to other MSAs, landmarks, or major cities, thereby constituting a combined, isolated market of the two cities only. Third, in the second quarter of the year 2007, one percent hotel occupancy tax was imposed for the first time in history for hotels in Midland, effectively increasing the price of Midland hotels against the price of Odessa hotels. The current study utilizes this unique environment for a natural experiment that allows deduction of the marginal effect of hotel occupancy tax on submarket competition. Accordingly, this study sets forth the objective of investigating the effect of bed tax on comparative performances of hotels in the Midland and Odessa lodging submarkets. Implications and suggestions for future research are discussed along with the findings of the study.

## 2. Literature review

The effect of occupancy tax on lodging demand was first analyzed by Mak and Nishimura (1979). In their study, the authors found that increased tax rates in Hawaii did not affect either the

travel demand and or the length of stay for the visitors. The authors cited as reasons for this result as the reallocation of travel budgets by visitors, as well as the increase in willingness-to-pay from the visitors on rooms and decrease of expenditure on non-lodging goods and services. Combs and Elledge (1979) offered additional support for this argument by stating that the lodging demand is inelastic with respect to price, and that a 'small' bed tax, leading to minimal increase in room rate, would have insignificant impact on the hotels' operating performance.

Further empirical support has been provided by a series of following studies (Bonham et al., 1992; Bonham and Gangnes, 1996). In both of these studies, the authors analyzed room revenues of hotels in Hawaii, and concluded that the five percent room tax introduced in 1987 did not have a statistically significant effect on the Hawaiian hotels' room receipts. More recently, Aguilo et al. (2005) examined the case of visitors from the United Kingdom, Germany, France, and the Netherlands to the Balearic Islands and concluded that hotel occupancy tax did not affect the lodging demand, although the final price of these hotels paid by the guests was not controlled for in their model, according to the authors.

The reasons cited by aforementioned studies, attributed to insignificant change in lodging demand are substitution effects and price-inelasticity. Through budget reallocation, travelers may be willing to pay a higher price in order to stay at the same room (that she used to), while cutting cost on other expenditure categories such as food or transportation. Also, the magnitude of effect from small change in price may not be so substantial as to change traveler's destination. Though these claims are intuitive, opposing arguments on the effect of hotel occupancy tax on lodging demand should also be noted.

Fujii et al. (1985) claimed that the effect of hotel occupancy tax on the Hawaiian hotels was considerably negative. In a later study, Mak (1988) moved from his previous conclusion that the travel demand is relatively insensitive to tax imposition. In a series of studies Hiemstra and Ismail (1990, 1992a, 1992b, 1993) considered the impact of tax by estimating the demand elasticity and analyzing the incidence of the impacts of room taxes. The authors finally concluded with a negative elasticity of demand, and from the elasticity of supply that the lodging industry is responsible for approximately \$1 out of every \$7 in taxes paid indirectly, while the travel demand is responsible for \$6 out of every \$7.

As outlined above, there is still a lack of agreement on the impact of hotel occupancy tax on lodging demand. Further complicating the problem for policy makers and lodging professionals is that the collected taxes are usually allocated to promotion of tourism or to similar purposes. When the collected taxes can be effectively allocated to development of the destination and promotion of tourism, the bed taxes still can be justified despite the negative demand side impacts (Bonham and Mak, 1996; Fujii et al., 1985). Hughes (1981) discusses the various considerations in imposition of bed tax in this regard.

Notwithstanding the inconclusiveness of the foregoing arguments, however, possibility of a situation, under which geographically close regions compete for relatively homogeneous demand is highlighted. The above studies focus on the aggregate impact of hotel occupancy tax within a single region or the industry as a whole. In some cases at state, county, or city levels, however, the tax could be imposed only on the subset of hotels that fall within certain administrative boundaries. Meanwhile, the competition for room demand may extend beyond these boundaries. In this line of reasoning, ironically, the reason cited to refute the negative impact of hotel occupancy tax on lodging demand can be also used to support its likelihood. Consideration of 'cheaper' alternatives will facilitate substitution of the travelers to adjacent hotels, which are unaffected by the new tax.

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