

This is the accepted manuscript of the article:

Sharma, A., & Nicolau, J. L. (2019). Hotels to OTAs: “Hands off my rates!” The economic consequences of the rate parity legislative actions in Europe and the US. *Tourism Management*, 75, 427-434. <https://doi.org/10.1016/j.tourman.2019.06.009>

**Hotels to OTAs: “Hands off my rates!”**

**The economic consequences of the rate parity legislative actions in Europe and the US**

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#### **Abstract**

The objective of this research is to analyze the impact of the legislative actions regarding rate parity agreements on the market value of hotels and online travel agents in Europe and the USA. Rate parity clauses (uniform hotel room pricing across channels), have been solved differently depending on the countries: while several European countries have outlawed rate parity clauses, the legal status of rate parity has been reaffirmed by courts in the United States. However, whether rate parity is good for hotel and OTA performance is not completely understood. Drawing from Rochet & Tirole’s (2003) theory of two-sided markets and using a market value based measure of performance, this study examines in a 2x2 framework the effects of the contrasting legislative outcomes in Europe and the United States on hotels and OTAs. The results show coherent outcomes in both continents: rate parity is beneficial to OTAs but not to hotels.

**Keywords:** OTA; online travel agents; hotels; rate parity; two-sided network theory

## 1. Introduction

The intricate dynamics of the hotel and OTA (online travel agent) relationship have received considerable attention in the academic literature (for example Chang et al., 2019; Guo et al., 2014; Ling et al., 2014; Liu et al., 2019; Tekin, 2018). Whether hotels and OTAs should be considered allies or rivals depends perhaps on the specific dimension of the relationship one is interested in assessing. For instance, in resisting AirBnB and other business models that disrupt traditional hospitality systems, cooperation between hotels and OTAs is the likely strategy of choice for both parties. Yet in the complex and ongoing fracas involving control of online booking channels, the rivalry between hotels and OTAs can be fierce. This sort of cooperation-competition relationship between hotels and OTAs has been described in the literature as illustrative of *coopetition* (Guo et al., 2014; Della Corte and Aria, 2016; Tekin, 2018), and it poses elaborate strategic challenges not only for the hotels and OTAs themselves, but also for regulatory authorities seeking to maintain consumer protection, freedom of competition and market efficiency.

OTAs have grown rapidly in the last two decades, bolstered not only by advances in e-commerce, but also by fortuitous market conditions. By 2017, OTAs enjoyed approximately 40% of the online travel market in the United States (Phocuswright, 2017). The favorable conditions that have facilitated this growth have included the lack of clarity in (and in some cases the complete absence of) formal antitrust legislation regulating conduct in this distinct type of landscape- the *two-sided* market. In the typical two-sided market, an intermediary (in our case, the OTA), offers a platform that facilitates interaction between two sets of agents (hotels and prospective travelers) in a manner whereby the decisions of each agent have consequences for the outcomes of the other (Rysman, 2009). The relatively recent recognition in the literature of the *multi-sidedness* of certain markets and the unique treatment this multi-sidedness warrants on issues such as pricing perhaps explains the inadequacy of many conventional antitrust laws in regulating conduct in such markets. The web-based environment that characterizes the relationships in certain two-sided markets like that involving hotels and OTAs further confounds issues relating to regulation in an already complex framework.

However, recent advances in the literature involving two-sided markets, coupled with the staggering growth of certain players this kind of market – most notably perhaps certain lines of business of Amazon and Google – have forced competition regulators in many countries to look more closely at such markets. OTAs too have faced similar scrutiny in recent years with regulators in several countries investigating whether some of the strategies used by OTAs in their ascendancy could be considered anticompetitive. Pricing agreements between hotels and OTAs have received particular attention with the issue of rate parity, which entails uniform hotel room pricing across all distribution channels including those involving OTAs, being at the center of many investigations. Interestingly, these investigations relating to rate parity in different countries have resulted in vastly different legal outcomes. While several European countries, including Germany, France, Italy, Austria, Belgium and Sweden have outlawed rate parity clauses, the legal status of rate parity has been reaffirmed by courts in the United States.

The effects of these legislative actions in Europe and the United States on hotel and OTA performance are, however, not fully understood. The contrasting legislative outcomes in Europe and the United States allows us to explore, in a more rigorous 2x2 framework, changes in *market value* as determined by shareholder valuation of discounted future economic flows and reflected in stock returns (a commonly used finance based measure of performance as opposed to accounting based measures like profits) of OTAs and hotels resulting from two divergent categories of events. As such, the 2x2 framework employed in this study allows us to fill a critical gap in the literature.

This paper proceeds as follows: in Section 2, we provide a brief overview of the relevant competition related issues that arise under rate parity. Although an examination of *all* possible issues is beyond the scope of this paper, we attempt to introduce at least those issues which we believe have implications for the market value of hotels and OTAs. Section 3 summarizes the key objectives of this research. In Section 4, we describe the primary hypotheses for this study stemming from the two opposing legislative outcomes relating to rate parity in the United States and Europe. Section 5 breaks down our choice of method and in a systematic step-by-step manner illustrates the analytical techniques we employed for this research. Section 6 highlights our primary findings and discusses their ramifications for hotel and OTA performance. Finally in Section 7 we provide we provide some concluding remarks and suggest some future lines of research that would extend this study.

## **2. Rate Parity Agreements and the Theory of Two-Sided Markets**

The platform that defines the relationship between hotels and OTAs is not unlike the many two-sided market platforms that have resulted from the growth of the internet: an electronic marketplace is provided by an intermediary (OTAs) that enables downstream buyers (prospective travelers) and upstream sellers (hoteliers) to come together to conduct transactions on a medium that is perhaps mutually agreeable to both sides, even if the medium is not individually preferred by at least one of the parties. The theory of two-sided markets asserts that in order for its business model to be viable, the intermediary must be able to get both sides 'on-board' (Rochet & Tirole, 2003). As such, the survival and continuity of the intermediary is contingent on the cooperation – voluntary or sometimes induced by the intermediary – of both sides in the two-sided market.

The two-sided network theory is in many ways grounded in Katz & Shapiro's (1985) theory of network externalities (Rochet & Tirole, 2003). To succeed, the intermediary platform must be able to generate cross-group network externalities- i.e., benefits that one side derives from being party to this market that are a function of how effectively the platform is able to attract customers to the other side (Armstrong, 2006). Consequently, increases in demand by one group can, in general, drive demand by the other group. Value is created by the intermediary by matching demand from both sides, and strong intermediaries are able to avail of increasing returns to scale (Eisenmann et al., 2006). It is for this reason that OTAs likely invest heavily in attracting prospective travelers to their platform and offer unique enticements – such as price comparisons across hotel brands – that prospective travelers may not find when transacting directly on hotel owned booking platforms. It is also the reason why the agency model remains a viable business model for numerous major OTAs, whereby OTAs need not charge travelers for bookings made on their portal: this side of the two-sided market is in essence subsidized by the other side, the hoteliers, who pay commissions on a per-booking basis. Commissions can be as high as 30% (Toh et al., 2011), depending on the imbalance of power between hotels and OTAs. The unusually high merger and acquisition activity that characterizes the OTA industry exemplifies the returns to scale that are available on this platform. Between 2013 and 2017 Expedia, TripAdvisor, Ctrip, and Priceline were involved in as many as 25 acquisitions in private markets (CBInsights, 2017).

An obvious concern that arises for the intermediary, especially when providing free access to one side of the platform, is the possibility of free-riding (Ezrachi, 2015; Vezzoso, 2018). This occurs, for example, when prospective travelers use only the hotel comparison tools of the OTA, but prefer to complete their bookings on other channels. Referred to sometimes as the “billboard effect” in the hospitality literature (for example Anderson, 2009), this kind of freeriding is certainly alluring for hotels - they are able to benefit from exposure on the OTA platform without incurring associated costs. For the OTA, however, freeriding is costly and discourages investments in the platform. In order to limit the possibility of free-riding, OTA strategy must therefore be able to offer rates and other benefits that are similar to those offered on other channels. In the absence of regulation, the success of the OTA in being able to offer rates comparable to other channels depends then on its market power. With sufficient market power and a favorable regulatory environment, however, the provider may be able to impose vertically integrating exclusivity contracts that protect investment, but nonetheless have certain consequences that under some legal jurisdictions may be considered anticompetitive.

Despite the admittedly legitimate cooperation between the actors involved in the framework being developed here, there simultaneously exist a number of inter and intragroup rivalries within this network (Tekin, 2018). Certainly, hotels compete with other hotels for customers, and OTAs compete with other OTAs as well as other smaller travel agents for market share of the booking platform. However, the competition for the platform also involves hotels - especially major hotel brands that are more likely to have the resources necessary to compete for booking channels. Shocks to the system - such an internal shock involving a strategy change by any of the mentioned parties, can have repercussions for all other parties in the network. Similarly, external shocks, such as changes in government regulations, even if directed at a single party in this network, tends also to impact the performance of other parties.

And while the larger hotel brands have taken certain initiatives to win a greater share of the online booking market, a handful of OTAs, benefiting from the increasing returns to scale, have largely dominated the market resulting in an almost oligopolistic market structure that has given the OTAs considerable market power. Information asymmetries in the network have also favored the OTAs: with more direct contact with consumers, OTAs have benefitted from a more

intimate understanding of consumer preferences (Iazzi et al., 2017). This has contributed to the hotels' dependency on OTAs, which in turn has only consolidated the market power of OTAs.

Not only have smaller travel agents been displaced, but OTAs have been able to dictate highly favorable terms in their contracts with hotels. Such terms include, but are by no means limited to the imposition of commission rates above what hotel brands may deem fair, the insertion of terms that prohibit hotels from contacting past customers that were obtained through the OTA, and the inclusion of rate parity clauses that restrict price-setting freedom of hotels and require them to apply parity in prices across their various distribution channels.

Contractually, rate parity may be enforced through *most-favored-nation* (MFN) clauses in agreements between hotels and OTAs, and can these clauses vary in their explicitness and scope. The more restrictive MFN clauses may impose *wide* rate parity, and bar hotels from offering lower prices on all other distribution channels, including hotel-controlled channels (like the hotel website), and those channels involving distribution to other OTAs. Under *narrow* rate parity- a less restrictive form of rate parity, hotels may offer lower prices to other OTAs, but are generally still disallowed from offering lower rates on their website than what they offer to the OTA with which the agreement is in effect. In addition, narrow rate parity may also permit hotels to undercut OTAs on certain offline channels (such as walk-in reservations, telephone reservations, etc.), and through select indirect distributional outlets such as hotel loyalty programs. In practice, the scope of rate parity contracts can vary from narrow to wide, depending on the severity of the restrictions. Although rate parity agreements have pro-competitive effects in that protect the OTA platform by limiting incentives for free-riding, they tend also to result in effects that may be considered detrimental to competition. And while narrower forms of rate parity may result in generally lower levels of competitive harm than what might arise under wide rate parity, narrow rate parity too can lead to conduct that could be considered collusive and exclusionary.

The dominance of the OTAs and their ensuing business practices were sufficiently concerning for the Accor Hotel Group and the five major French hotel unions (Union des Métiers and des Industries de l'Hôtellerie, Groupement, National des Chaînes Hôtelières, Confédération des Professionnels Indépendants de l'Hôtellerie, Syndicat National des Hôteliers, Restaurateurs, Cafetiers and Traiteurs, Fédération Autonome Générale de l'Industrie Hôtelière Touristique) to

initiate a complaint to the France's competition authorities alleging that the actions of the OTAs were anticompetitive and constituted what under antitrust law should be considered an abuse of dominant position. Central to the plaintiffs' argument were the previously mentioned rate parity agreements and most-favored-nation clauses. Similar legal proceedings took place in other European countries including Germany, Italy, Austria, Sweden and Belgium. A lawsuit was also brought to US courts. The investigations in the European countries resulted in the banning of rate parity clauses in agreements between hotels and OTAs. On the other hand, the American court dismissed the rate parity lawsuit and in the process reaffirmed the legal status of rate parity clauses in the United States.

### **3. Research Objectives**

In a recent study, Nicolau and Sharma (2019) found significant increases in market value of hotels stemming from shareholder optimism brought about by the forementioned rate parity bans in Europe. The greater price setting freedom of hotels across distribution channels gives them more control of the booking platforms. Hotels are able to establish preferred partnerships with OTAs based on their own preferences (thereby giving OTAs of their choosing lower rates), but hotels, no longer bound by rate parity, might be able to offer more competitive rates on their own online and offline channels. Shareholders believe that this increased control over booking channels will give hotels more market power. These expectations push hotel market value upward as reflected in statistically significant abnormal returns.

While the study of Nicolau and Sharma (2019) examines reactions of hotels in response to rate parity bans across Europe, to the best of our knowledge, market value based reactions of OTAs to these bans remains unexplored. If the reactions of OTAs to these bans are divergent from hotel reactions – that is, if the market value of OTAs decreases – this would add credibility to argument that rate parity agreements are detrimental to hotel performance but beneficial to OTA performance. Moreover, the contrasting legislative outcome in the United States, where the lawsuit alleging anticompetitive effects of rate parity agreements was dismissed, provides us with a unique opportunity to examine this issue under a 2x2 framework presented in Table 1.

*Insert Table 1 about here*

#### 4. Hypotheses

H1: *The passing of legislation banning rate parity in Austria, France, Germany, Italy, Belgium and Sweden results in a decrease in market value of major OTAs.*

Argument for H1: Because the presence of most favored-nation-clauses has consequences for the price structure of the entire market (Dennis, 1995), investors might expect changes in both the hotel and OTA market following the rate parity ban. When an industry is characterized by widespread most-favored-nation like agreements, new entrants in the market may be deterred (Akman and Sokol, 2017). One would therefore expect that the European nations' banning of rate parity clauses then lowers what previously posed a formidable barrier to entry in the OTA industry. Investors might consequently expect that new OTAs might enter the market increasing levels of competition faced by incumbent OTAs. Hotels too may see an opportunity to expand into the online booking market. And existing OTAs might be forced to compete more strongly than they did before the bans. This is because under rate parity customers are less likely to actively look for the same room across different channels (Law et al., 2007). Once the parity clauses cease to exist, it follows that in an effort to entice customers, the various distribution would be expected to compete on many dimensions, including price. Under the intensification of competitive conditions, OTAs may have to lower commission rates to hotels, thereby reducing their own margins of profit.

Moreover, the possibility of free riding – whereby prospective travelers use OTA comparison tools but end up booking on hotel websites, can only be expected to increase following the legislation in European countries (Ezrachi, 2015). Essentially, MFN clauses between OTAs and hotels serve as a protective measure for the OTA by dulling incentives for free-riding. In other words, such agreements secure investment by minimizing externalities (Colangelo, 2017). In the absence of measures to secure the platform, it becomes difficult for the OTA to recoup investments, or entice new investments. Since investments facilitate innovation, the performance outlook of OTAs in European markets could therefore appear more bleak than it did prior to the bans. The resulting shareholder pessimism about the future performance of OTAs – at least in comparison with current performance- drives market value downward.

*H2: The dismissal in the United States of the lawsuit alleging anti-competitive implications of rate parity agreements results in an increase in market value of major OTAs.*

Argument for H2: With the ratification of the legal status of rate parity agreements occurring because of the dismissal of the rate parity lawsuit in the United States, OTA investors feel more confident about OTAs being able to sustain their dominant position on online booking platforms. OTAs would continue to exert pressure on hotels to accept potentially adverse terms and conditions, or face delisting and de-prioritization on the OTA portal (Ling et al., 2014). Given the importance of positioning on an OTA website (Ert and Fleischer, 2016) such de-prioritization might include a de-ranking in the OTA's search results. OTA investors infer therefore that hotels might remain dependent on OTAs, and that favorable competitive conditions for OTAs prevail. This further means that OTA investors would feel confident that OTAs could continue to impose high rates of commission on hotels, and sustain elevated profit margins.

Additionally, the US lawsuit dismissal of the rate parity lawsuit also suggests to investors that the platform can be expected to remain protected against free-riding by the existing most-favored-nation clauses for the foreseeable future. While technically the legal status of rate parity remained unchanged in the United States following the lawsuit dismissal, any uncertainty brought resulting from the proceedings would be substantially reduced following the final outcome. Since free-riding and network externalities discourage investment in the OTA platform (Colangelo, 2017), one would then expect that the US outcome provides assurance to investors about the capacity of OTAs to recoup investments. The confidence in the platform attracts the necessary level of investment needed for innovation, elevating the long term outlook for the OTA business model.

Furthermore, with the persistence of rate parity, investors expect that significant barriers to entry in the OTA market are likely to remain, and the existing players remain dominant. Since most-favored-nation clauses have an exclusionary effect on potential entrants (Baker and Chevalier, 2012; Gürkaynak et al., 2016), they contribute to the market power of incumbent OTAs and in the process create market value. Motivated by increasing to scale, the market concentration of OTAs might further increase leading to further expectations of dominance. These factors

translate to optimism about the capacity of the OTAs to sustain the two-sided platform, while leveraging oligopolistic profits for the foreseeable future. OTA market value therefore increases.

*H3: The dismissal of the lawsuit alleging anti-competitive implications of rate parity agreements results in a decrease in market value of hotels brands*

Argument for H3: Following the dismissal in the United States of the rate parity lawsuit, hotel investors would not be expected to be optimistic about the ability of hotels to be able to compete effectively with OTAs for the booking platform. This is because the investors believe that with the persistence of rate parity, hotels will be forced to continue to accept unfavorable terms from their OTA partners. Market power remains with the OTAs, and the dismissal by US courts of the rate parity lawsuit helps hotels retain the power to control commission rates. Hotels, bound by parity across channels, will be forced to either accept lower margins or pass-on the higher commissions to consumers, thereby deviating from their own profit maximizing price levels.

The reaffirmation of the legal status of rate parity also means that customers have less incentive to search various channels for price. Under parity in rates, the prospect of hotels attracting customers through the 'billboard effect' (Anderson, 2009) – whereby customers simply use OTAs for seeking information but ultimately book on the hotel website, is dimmed. Enticing customers away from OTA portals would require competing on dimensions other than price. However, for hotels to compete with OTAs on dimensions other than price is challenging, as OTAs possess considerable marketing expertise.

In addition, most-favored-nation clauses disallow hotels from establishing preferential partnerships in the form perhaps of a differential pricing with OTAs of their choosing (Vezzoso, 2018). For investors these factors culminate in a bleaker overall outlook for hotels in the competition with OTAs. The sense of pessimism among hotel investors drives the market value of hotels downward.

## **5. Method**

The methodology used to analyze the extent to which two contrasting categories of rate parity related legislative events (the first category of events consists of the passing of rate parity

bans in multiple European countries, and the second being the dismissal of the rate parity lawsuit in the United States) might have an impact on the market value of the hotel and OTA industries involves several steps, based on McWilliams and Siegel (1997).

The abnormal returns are estimated through an event study. Under the tenets of the Efficient Market Hypothesis, given available information, stock returns fully reflect all information affecting a firm, including expectations about anticipated performance. In other words, the methodology incorporates investors' valuation of discounted future economic flows. Because market value is determined by stock prices, this widely accepted view holds that when new firm relevant information arises, it results in changes in market value of firms - or the market value of the industry, when the multiple firms in the industry are impacted. Regulatory shocks in the two-sided hotel booking market, including the rate parity related legislative outcomes that we are interested in assessing should therefore manifest themselves in the form of abnormal returns for the OTA and hotel industries, respectively.

This choice of methodology has several benefits compared to accounting based measures of performance (such as profits). Firstly, we are better able to isolate effects than we would with backward-looking accounting metrics. Also, stock returns are not as influenced by seasonality issues as accounting measures (Nicolau and Sharma, 2019). In addition, because stock returns reflect the discounted value of all future economic flows and relevant information affecting, they serve as an excellent estimate of true performance (McWilliams and Siegel, 1997).

To be specific, the event study methodology follows different steps to collect the data (McWilliams and Siegel, 1997):

i) *Detection of the event dates and sample selection.* In this analysis, we use two sets of event dates, one for the European case and the other for the US case<sup>1</sup>. The first set of event dates (consisting of dates when rate parity bans were passed in Europe<sup>2</sup>) are therefore: January 9th,

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<sup>1</sup> We use daily data, and the returns are obtained by the formula  $R_{it} = \ln(P_t \cdot SF_t + d_t) - \ln P_{t-1}$ , where  $P_t$  is the price,  $SF_t$  the split factor and  $d_t$  the dividend paid.

<sup>2</sup> We do not make a formal distinction between narrow and wide rate parity, because the legislation passed in each country varies somewhat in the extent to which parity across channels is allowed/disallowed. In general, however, we are concerned with wide rate parity

2015 (Germany); July 9th, 2015 (France); December 9th, 2016 (Austria); August 2nd, 2017 (Italy); July 19th, 2018 (Belgium); and July 20th, 2018 (Sweden). All these dates mark the dates when the legislations were passed in the European countries, even if the legislation was to come into effect at a later date in each country. However, because the methodology used here is a forward-looking measure based on investor valuation of future economic costs and benefits, one would expect that even if the actual law were to come into effect at a later date, changes in market value would be best reflected when the legislation was passed. Certainly, this would not be the case when using accounting based performance metrics such as profits, where it would be important to examine effects only after the laws came into effect.

It is important to recall that Nicolau and Sharma (2019) have already studied the impact of European rate parity bans on hotels; consequently, for the European case, we focus not on the effects on hotels, but on the effects on OTAs. The dataset of OTAs for which we assess changes in market value resulting from the passing of these legislations consists of the major global publicly traded OTAs: Booking Holdings Inc., Priceline Group Inc., Expedia Group Inc., Trivago N.V., Tripadvisor, Liberty Expedia Holdings<sup>3</sup> and CTrip.

The other event date consists of the date the rate parity lawsuit was dismissed in the United States – February 18, 2014. For this event, we examine both the effect on the previously listed major publicly traded global OTAs as well as on all major hotels listed on U.S. exchanges under the Standard Industrial Classification (SIC) system in the Center for Research in Security Prices (CRSP) database. The obtained publicly traded hotel firms with usable data were assumed to constitute the U.S. hotel industry for purposes of examining effects of the U.S. rate parity lawsuit dismissal.

Because there is a high frequency of merger and acquisition activity in the OTA industry, the actual list of OTAs was not identical for the set of events that consist of the dates when the European countries passed legislation banning rate parity. However, because we are interested in making industry level conclusions rather than conclusions about individual firms, the differences in list of OTAs from event-to-event are not of concern. There is of course a high frequency of

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<sup>3</sup> According to Bloomberg, Liberty Expedia Holdings, Inc. operates as an online travel company in the United States and internationally. The company enables business and leisure travelers to research, plan, book, and experience travel.

merger and acquisition activity in the hotel industry too, but because hotel reactions in the present study involve a single date – the U.S. dismissal of the rate parity lawsuit – the mergers and acquisitions in the hotel industry are not relevant.

ii) *Definition of the event window.* As new information might not be obtained by all shareholders at the same time, we select a 7-day event window to test for any excess returns i.e., the three days before and after (-3,+3) the announcement date. Shorter windows are preferred because they are less likely to be contaminated by confounding events (McWilliams and Siegel, 1997). Additional abnormal returns may be detected with longer windows, however, we would not be able to attribute with confidence those abnormal returns to the event(s) we are interested in assessing.

Indeed, it is also customary practice in the event study literature (MacKinlay, 1997; McWilliams and Siegel, 1997) to allow for the possibility that the market may acquire some information prior to an announcement, and have some expectation regarding the event. If this were indeed to happen, then the market is likely to react prior to the actual announcement. When dealing with regulatory events such as this, a reaction prior to the actual announcement may occur for instance because investors have an understanding of the economic policy “tendency” of the government. In the European cases note also that the rate parity bans were not simultaneously passed in all countries. As such, by simply having observed the prior legal outcomes in other European countries, investors might be able to predict the position an imminent announcement might take. We therefore include in the event window a small numbers of days leading up to each event.

iii) *Identification of potential confounding effects.* The third step tries to identify other news items -not related to the rate parity news- that might appear in the event window and that could have a confounding effect on the potential abnormal returns. In order to find any possible confounding effects, we queried Dow Jones’ Factiva database which covers over 32,000 news sources for the 7-day period that comprises each event window. Typically, in a study such as this, confounding news items on event dates would result in the exclusion of firms for those particular dates. However, given that no relevant news publications are detected in the event windows that we have used, the firms listed in step one are maintained.

iv) *Estimation of the market model.* The estimation of the market model allows us to calculate the “normal returns”, so a period of 150 days is established for such estimation. Estimates are made based on the market model, defined as

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it},$$

where for firm  $i$  on day  $t$ ,  $R_{it}$  defines the daily returns and  $R_{mt}$  defines market portfolio's returns based on the Center for Research in Security Prices' (CRSP) value weighted index, which covers the NYSE, NYSE American, NASDAQ, and ARCA exchanges. The parameter  $\alpha_i$  describes the returns on the shares of company  $i$  independent of the market, whereas  $\beta_i$  refers to the sensitivity of returns of  $i$  to variations in the market returns.  $\varepsilon_{it}$  represents the error term that follows the GARCH type autoregressive conditional heteroskedasticity model with  $\varepsilon_{it} = h_{it}^{1/2} \eta_{it}$  and  $\varepsilon_{it} / \varepsilon_{it-1}, \varepsilon_{it-2}, \dots \sim N(0, h_{it})$  being identically and independently distributed and  $E(\eta_{it}) = 0$  and  $E(\eta_{it}^2) = 1$ . The conditional variance assumes the form  $h_{it} = c_i + \lambda_i \varepsilon_{it-1}^2 + \gamma_i h_{it-1}$  where parameters  $c_i$ ,  $\lambda_i$ , and  $\gamma_i$  are to be estimated. Securities in our database for which we had an insufficient data to estimate the normal returns were excluded from further analysis. Abnormal returns,  $AR_{it}$  for hotels and/or OTAs, resulting from the two categories of legislative events are obtained as

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}).$$

v) *Testing abnormal returns.* To analyze the impact of these legislative events on share prices, the significance of these abnormal returns is tested using Giaccotto and Sfiridis' (1996) jackknife test, which computes the standardized abnormal returns (SAR) for each stock  $j$ . For a window length  $L$  and  $N$  firms, this test is defined as

$$t_{jackknife} = \frac{\overline{SAR}_t}{S_{jackknife} / \sqrt{N}}$$

where

$$S_{jackknife} = \left[ \frac{1}{N-1} \sum_{j=1}^N (SAR_{jt} - \overline{SAR}_t)^2 \right]^{1/2}$$

where

$$\overline{SAR}_t = \frac{1}{N} \sum_{j=1}^N SAR_{jt}$$

$$SAR_{jt} = \frac{AR_{jt}}{\hat{\sigma}_{AR_{jt}}}$$

$$\hat{\sigma}_{AR_{jt}} = \left[ \sum_{t \in L} \frac{(AR_{jt} - \overline{AR}_j^2)}{L} \right]^{1/2}$$

The advantage of this test is that it controls for event-induced variance and helps reduce estimation bias by jackknifing the SAR values. For more specific nuances as to its calculation, Giaccotto and Sfiridis (1996) provide a detailed step-by-step procedure.

## 6. Results and Discussion

The abnormal returns of both hotels and OTAs in response to two contrasting categories of legislative events we considered – the rate parity bans in Europe and the dismissal of the rate parity lawsuit in the United States – are displayed in Table 2. All findings are based on analysis conducted in EViews, WRDS (Wharton Research Data Services, 2019), and Microsoft Excel. In the days surrounding both categories of events, we detect statistically significant yet, equally importantly, *dissimilar* abnormal returns for hotels and OTAs.

Recall that Nicolau and Sharma (2019), also using an event study, found an increase in market value of hotels in response to the rate parity in Europe. Our analysis in this study therefore focused on the three other quadrants that complete the 2x2 framework. As we mentioned previously, our choice of technique has the advantage of also being able to detect reactions in the

days before each category of events This, as we have discussed when describing the methodology, is done because some knowledge or expectation about an imminent event – such as the legal outcome of a court case- can occur prior to any event under study. Indeed, in our analysis, we found some evidence for this. For the rate parity bans in Europe, for example, we detected significant negative abnormal returns for OTAs on the day prior to the rate parity bans. This reaction of OTAs is not surprising, and in line with our expectations, an almost polar opposite of the positive reaction that hotels exhibit on the day prior to the European bans in the Nicolau and Sharma (2019) study. Specifically, we detect abnormal OTA returns for of -0.52% on the day before bans- a considerable decrease for a single day.

Conversely, but nonetheless also in line with our expectations, the dismissal of the rate parity lawsuit in the United States results in reactions for hotels and OTAs that are in stark contrast to their reactions to the European bans. While the rate parity bans in Europe result in an increase in market value of hotels and a decrease in market value of OTAs, the dismissal of the rate parity lawsuit and therefore the affirmation of the legality of parity agreements in the United States leads to a decrease in market value for hotels and an increase in market value for OTAs. On the day the rate parity lawsuit was dismissed in the United States, the hotel stocks we analyzed experienced single day abnormal returns of -0.62%. This figure marks a considerable fall in market value of hotels.

*Insert Table 2 about here*

On the other hand, we found that the corresponding reaction for OTAs on the day the US lawsuit was dismissed was an extraordinary +2.62%, suggesting a remarkable increase in OTA market value fueled by immense optimism among OTA investors. We find therefore that all three of our hypotheses are supported. In terms of the 2x2 framework we have used in study these results are summarized, for the sake of convenience, in Table 3.

*Insert Table 3 about here*

Our results suggest that rate parity is crucial facet of OTA strategy and their ability to optimally and profitably sustain the two-sided platform. At the same time, our findings provide evidence that rate parity agreements – notwithstanding some benefits that they may offer to hotels

– are seen as detrimental to overall hotel performance. In the absence of rate parity, as would be the case in Europe following the legislative bans, several issues engender a feeling of pessimism for OTA investors, while fostering optimism for hotel investors. One concern for OTA investors following the legislative outcomes in Europe is the previously discussed possibility of hotels free-riding on the OTA platform whereby prospective travelers merely use the OTA portal as a search tool, but end up making their reservations through other possibly cheaper channels. This sort of free-riding renders the two-sided business model needed to sustain OTAs less appealing. Contrarily, hotel investors are buoyed the possibility of free exposure for the hotel on the OTA platform without the burden of bearing either the cost of investments into the OTA platform or having to pay commissions to OTAs. This anticipated intensification of the “billboard effect” (Anderson, 2009) contributes to bullishness in the hotel industry and therefore an increase in market value of hotels following the European bans, as seen in the Nicolau and Sharma (2019) study. Under rate parity, since prices are uniform across channels, possible incentives for prospective travelers to simply use the OTA website as a search tool before making their reservations elsewhere are greatly reduced. This would at least partially explain our findings in United States for example, where we observe that the market value of OTAs increases when the rate parity lawsuit is dismissed, whereas the market value of hotels decreases.

Another equally important explanation for our results has to do with the direct competition related ramifications of the two categories of events for both the hotel and OTA industries. In Europe, the banning of rate parity opens up the possibility of more platform competition between OTAs and also between OTAs and hotels. Coordination – tacit or otherwise – between OTAs becomes more difficult. Moreover, new OTAs are more likely to enter the market as a significant barrier to entry is eliminated. These factors culminate in OTAs competing to offer lower commission rates to hotels in order to attract more business. Although some of the expectations we describe here are only likely to be realized over a much longer term (of course the changes in market value driven by these expectations are realized immediately), there is some empirical evidence in that there were actual reductions in commissions following the legislative changes in Europe. Mantovani et al. (2018) contend for example that room price reductions in France and Italy to likely reductions in commission rates resulting from the antitrust investigations in those countries. This makes us more confident that expectations of OTA and hotel investors, as reflected

in changes in market value in the days surrounding the European event dates, were rational and indeed involved commission rates. In the United States, on the other hand, the courts' ratification of rate parity agreements fuels optimism in the OTAs ability to sustain lucrative rates of commission and further leverage gains from scale. This optimism is reflected in our finding of an increase in market value of OTA stocks following the dismissal of the lawsuit. The corresponding outlook for hotels on the other hand is more bleak.

Furthermore, the rate parity bans in Europe place hotels in a position to gain more control over their distribution channels. They may, for instance, establish preferred partnerships with OTAs of their choice and dictate pricing more optimally with every individual OTAs as well as on its own direct sales channels. For OTA investors, however, the OTA's blunted capacity to match prices offered on other hotel-determined channels means that questions arise about its capacity as intermediaries to generate cross-group network effects as effectively as they could prior to the ban.

## **7. Concluding remarks and future research**

In this study, we have used a 2x2 framework to investigate the impact of two contrasting categories of rate parity related legislative outcomes on the performance of hotels and OTAs. The first category of events consists of the dates when several European countries passed legislation banning rate parity agreements between hotels and OTAs. The other category is described by a single event day- the date when authorities in the United States dismissed the lawsuit relating to rate parity and thereby reaffirmed the legal status of rate parity agreements in the US market. In a recent study, Nicolau and Sharma (2019) find that the European rate parity bans boost hotel performance. Our analysis therefore focuses on the three other quadrants that are required complete the underlying 2x2 framework. In other words, the analysis in this paper examines the impact of the European bans on OTAs, the impact of the US authorities' dismissal of the parity lawsuit on OTAs, and the impact of the US authorities' dismissal of the rate parity lawsuit on hotels. Our results, based on the event study methodology and examined under the lens of the theory of two-sided markets, suggest that while the US dismissal of rate parity hurts the hotel industry, it has the opposite effect on OTAs- that is, it bolsters OTA performance. And while Nicolau and Sharma (2019) find that the European rate parity bans lift hotel performance, we find that the bans have an adverse impact on the performance of OTAs.

Our findings certainly do not in any way suggest that rate parity agreements are undesirable for *all* hotels – or that the existence of agreements is beneficial to *all* OTAs. Previous literature indeed suggests that there may be certain benefits to hotels of maintaining rate parity agreements. These include, for example, greater visibility, customer perceptions of fairness (Choi and Mattila, 2009), customer attraction through Anderson’s (2009) ‘billboard’ effect, etc.

In this research, we have made conclusions at the industry level. We have found that overall, at the industry-level, rate parity agreements boost OTA performance but are detrimental to hotel performance, despite their purported benefits. For certain individual hotel brands and individual hotel properties, however, any benefits that rate parity agreements offer might still outweigh the obstacles they create. Similarly, although we have demonstrated that rate parity agreements are highly beneficial to OTAs, it is quite possible that certain OTAs – perhaps smaller OTAs – might be opposed to such pricing agreements.

Other firm level characteristics might also matter. These include, but are not limited to hotel class, star ratings, ownership structure, liquidity and leverage ratios, etc. Market level characteristics might also help explain the extent to which rate parity impacts hotel and OTA performance. Relevant among these might be the market size of the countries effected by rate parity regulation, general business conditions, and overall economic outlook. Future research might explore those specific hotel, OTA and market characteristics that moderate the findings obtained here.

In this study, we have used a forward-looking finance based measure of performance in market value. Despite the many strengths of such a technique, we readily acknowledge that it is ultimately based on investors’ valuation of future economic flows, and that investors can at times err. As such, future research might also consider the effects of rate parity legislation on accounting based measures of performance such as profits. Finally, as a further research avenue, note that other dates (like the date when investigations began, the date when the laws were to be implemented, etc.) can also have an impact, and these dates also ought to be explored to extend this literature.

Regarding managerial implications, some points are to be made in terms of communication and negotiation: i) Communication. We find that the absence of rate parity is perceived to favor hotels and goes against OTAs, so it seems that shareholders believe that the prohibition of rate parity automatically would lead to complete freedom to set prices differently across distinct distribution channels. However, according to the study (EU Report, 2017), even in the absence of rate parity clauses, most hotels maintain the policy. Therefore, there seems to be a discrepancy between the shareholders' perceptions and the real decisions made by managers after the ban was put in place. Accordingly, especially for the OTAs there is a stronger need to inform their shareholders and better communicate with them about the fact that hotel companies seem to keep using rate parity even if in an implicit way. For the countries where the prohibition is already active, such communications would serve to reduce any possible reservations shareholders may have. For those countries in which there are indications that similar regulation might be imminent, a communication action should be carried out by OTAs to show their shareholders that with a ban on most-favored-nation clauses, although formal agreements would be disallowed, but parity in pricing may still persist. . ii) Negotiation. It is relevant to consider that one of the hurdles in negotiations between hotels and OTAs is rate parity. Certainly, our results show that shareholders, depending on what side they are -hotels vs OTAs-, have different perceptions. Nevertheless, it seems that the pressure on this issue when both parties negotiate should not be that strong because, in practical terms, when the hotels are given the freedom to set differently across distinct distribution channels, they choose not to retaliate as one would have thought beforehand. This cooperation-competition realm would be in line with the potential synergies outlined by Chang et al. (2019).

To have these managerial implications fully validated, there should be additional evidence to the one provided by EU Report (2017), showing that certainly hotels tend to follow the rate parity agreements in an implicit way even if there is no explicit and formal clause that forces it.

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**Table 1: 2x2 framework of hypotheses**

	<i>Hotels</i>	<i>OTAs</i>
<i>Effect of rate parity bans in Europe</i>	Examined in study by Nicolau and Sharma (2019)	Hypothesis 1 (H1)
<i>Effect of reaffirmation of rate parity by U.S court</i>	Hypothesis (H3)	Hypothesis 2 (H2)

**Table 2. Effect of regulatory actions regarding rate parity on the market value of hotels and OTAs**

Day	Rate Parity Bans in Europe		Dismissal of Rate Parity Lawsuit in US			
	OTA AAR	Jackknife Z	OTA AAR	Jackknife Z	Hotels AAR	Jackknife Z
-3	0.24%	0.192	2.05%	2.308*	0.09%	-0.104
-2	-0.25%	-1.670	2.24%	2.089*	-0.59%	-1.571
-1	-0.52%	-2.012*	-2.28%	0.084	1.17%	1.752
0	-0.41%	-1.599	2.62%	2.409*	-0.62%	-2.554*
1	-0.24%	-1.441	-0.11%	0.242	1.77%	0.152
2	-0.16%	-0.686	0.78%	-0.226	2.04%	-0.879
3	-0.19%	-0.982	0.60%	1.087	0.24%	1.507

\*=p<0.05, AAR=Average Abnormal Return

**Table 3: 2x2 summary of results**

	<i>Hotels Market Value</i>	<i>OTA Market Value</i>
<i>Effect of rate parity bans in Europe</i>	Examined in study by Nicolau and Sharma (2019). They find that hotel market value <i>increases</i> as a result of European bans.	Hypothesis 1 (H1) is supported: OTA market value <i>decreases</i> as a result of European bans.
<i>Effect of reaffirmation of rate parity by U.S court</i>	Hypothesis (H3) is supported: Hotel market value <i>decreases</i> as a result of reaffirmation of rate parity by U.S court.	Hypothesis 2 (H2) is supported: OTA market value increases as a result of reaffirmation of rate parity by U.S. court