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The effects of consumer animosity on demand for sharing-based accommodations: Evidence from Airbnb☆

Yating Li [a,1], Bin Li [b,1], Gang Wang [c,1], Shuai Yang [d,*,1]

[a] Coordinated Innovation Center for Computable Modeling in Management Science, Tianjin University of Finance and Economics, China; School of Economics and Management, Tsinghua University, China
[b] Raj Soin College of Business, Wright State University, United States
[c] Lerner College of Business and Economics, University of Delaware, United States
[d] Glorious Sun School of Business and Management, Donghua University, China

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ABSTRACT

Online home-sharing platforms, such as Airbnb, have recently become increasingly popular among travelers, including outbound travelers. This study investigates the impact of consumer animosity, a determinant of consumers' purchase decisions in international businesses, on outbound travelers' demand for sharing-based accommodations. In particular, we examine the differential effects of two types of consumer animosity: economic animosity and war animosity. Utilizing a unique geopolitical environment where Chinese consumers bear economic animosity (towards South Korea) and war animosity (towards Japan), we collected a comprehensive panel data set including listings and reviews from Airbnb, together with a list of events inducing animosity. Utilizing the events as exogenous shocks, we applied difference-in-differences (DID) approach to infer the causal effect of consumer animosity on Chinese outbound travelers' demand for sharing-based accommodations. Contrary to the extant studies which mostly show a negative effect of consumer animosity on purchase intentions, we find that consumer's economic animosity is likely to have a positive effect on outbound travelers' decisions in the context of sharing-based accommodations. However, war animosity has limited effect on outbound travelers' decisions. Further, such effects of consumer animosity are negatively moderated by the intensity level of events inducing animosity. As the intensity increases, both war animosity and economic animosity will ultimately have a negative effect on consumers' Airbnb booking decisions. This study contributes to the fast-growing literature focusing on various factors affecting consumers' booking decisions on online home-sharing platforms. Our results also provide important practical implications for online home-sharing platforms.

1. Introduction

The sharing economy refers to an economic model that is based on sharing underutilized goods or services between peers and has the temporary transfer of the right of usage for monetary or non-monetary benefits [1–3]. Various sharing-based online platforms, such as Airbnb and Uber, have disrupted a wide range of traditional businesses and industries. For example, the entry and prosperity of Airbnb, the world's largest home-sharing online platform (i.e., sharing-based accommodations), has caused a significant decline of the revenues for traditional hotels [4,5]. As of December of 2019, Airbnb has reached over 150 million users, with 6 million listings globally [6], which is larger than the world's three largest hotel chains combined [7]. Moreover, these home-sharing online platforms have not only facilitated the domestic travels but also outbound traveling and tourism. For example, approximately 60% of Airbnb guests in New York City are international visitors [8].

Recent studies have examined various factors affecting consumers' booking decisions on home-sharing online platforms. First, a relatively lower cost and a greater variety of listings are attractive features for consumers to choose peer-to-peer accommodations over a hotel room [9–11]. Second, home-sharing online platforms provide consumers an

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* Corresponding author at: Glorious Sun School of Business and Management, Donghua University, 1882 West Yan'an Road, Shanghai 200051, China.
E-mail address: shuai.yang@dhu.edu.cn (S. Yang).

[1] Please note that all authors have contributed equally to this article.

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opportunity to engage in local communities [12]. However, consumer animosity, a critical factor that may affect outbound travelers' destination decisions [13], has not been investigated in extant studies on sharing-based accommodations. Defined as the remnants of dislikes derived from previous or ongoing hostile events from an offending nation, consumer animosity can affect consumers' perceptions of the brand image of foreign products and services, which further affect consumers' purchase intentions [13,14]. Different from the majority of prior studies on consumer animosity, which utilized survey data on consumers' perceptions and willingness to purchase, this study investigates the role of consumer animosity in outbound travelers' decisions by providing empirical evidence collected from Airbnb.

Moreover, studies on the antecedents of consumer animosity have shown two major sources: economic animosity and war animosity [15–17]. Economic animosity results from actions of economic aggression or conflicts initiated by an offending nation [13,19]. In contrast, war animosity results from war-based actions by an offending country, such as territorial violations and invasions, which generally lead to severe consequences [13,18]. Different in nature, economic animosity and war animosity are likely to exert different effects on outbound travelers' booking decisions via home-sharing online platforms, which is underinvestigated in prior studies.

Also, consumer animosity can be induced by contemporary events, which remind consumers harboring animosity of the historic offending actions by another country [17]. For example, in 2012, Japanese government's nationalization of an island in the East China Sea stirred up enmity against Japan from Chinese consumers, because China also claimed sovereignty of the island [20]. The territorial disputes over the island reminded Chinese consumers of the invasion and war crimes by Japan during World War II, which intensified animosity of Chinese consumers towards Japan [13]. Further, the events inducing consumer animosity have differing intensity levels. An event inducing consumer animosity with a high level of intensity is very likely to have a different effect on consumer decisions, compared with an event with a low level of intensity. Thus, we address two questions in this study: 1) How do the two types of consumer animosity (economic animosity vs. war animosity) affect outbound travelers' Airbnb booking decisions differently? 2) How does the intensity level of events inducing consumer animosity moderate the effects above?

To answer these questions, we collected relevant information on sharing-based accommodations, such as listings and consumer reviews from Airbnb from January 2015 to April 2017. In particular, we focused on Chinese outbound travelers' booking decisions on Airbnb due to the unique geopolitical context, where Chinese consumers bear both economic animosity (towards South Korea) and war animosity (towards Japan). We also compiled a list of events from public news during the same period, which induced consumer animosity of Chinese consumers towards South Korea and Japan, separately. By utilizing a difference-in-differences (DID) model, our empirical analyses revealed some interesting results. First, contrary to the extant studies mostly showing a negative effect of consumer animosity on purchase intentions, our results show that consumer's economic animosity is likely to have a positive effect on outbound travelers' decisions in the context of sharing-based accommodations. In contrast, the main effect of war animosity on outbound travelers' decisions is negative and not statistically significant. Second, we show that the intensity level of the events inducing the animosity negatively moderates the effects of the economic animosity events and war animosity events. That is, as the intensity level of the events inducing animosity increases, consumer animosity (both economic animosity and war animosity) have a negative effect on consumers' Airbnb booking decisions.

This research contributes to the literature in three ways. First, we complement prior studies on factors influencing travelers' booking decisions in home-sharing platforms by focusing on consumer animosity, an important determinant in outbound travelers' decisions. Second, different from extant animosity studies utilizing survey methods, our study provides empirical evidence on how consumer animosity affects consumers' decisions. Our empirical results show that the effect of consumer animosity on outbound travelers' Airbnb booking decisions may be positive, which contradicts the findings from the majority of prior studies on consumer animosity. Moreover, we examine the two different types of consumer animosity (economic animosity and war animosity) and show that the positive effect of consumer animosity on consumers' decisions is conspicuous only upon economic animosity, but not war animosity. In addition, our study contributes to a broader literature on the role of geographic factors in online markets. Our results also provide important managerial implications for sharing-based accommodation platforms (e.g., Airbnb).

2. Related literature

2.1. Sharing economy and sharing-based accommodations

As the sharing economy becomes increasingly popular, relevant studies have developed rapidly and covered a variety of areas, such as sharing-based accommodations, ride-sharing trips, and skill-sharing based task assignments [1]. Studies on sharing-based accommodations have examined the effect of various factors on individual consumers' purchase intention and/or purchase decisions. First, self-disclosed information by hosts (e.g., detailed description of the property and property images) can provide useful information (e.g., style and cleanliness) for consumers' booking decisions [21,22]. Zhang et al. [2] showed that the quality of property photos had a positive impact on Airbnb's room booking. Second, reviews from other customers also provide essential information to alleviate quality uncertainty. However, the bilateral rating systems deployed by home-sharing platforms may induce rating inflation, which undermines the credibility and information value of online ratings [5,23].

Moreover, agreeing on the critical role of trust, prior studies have factored different information sources into a comprehensive framework [3,21,24–26]. Other factors, such as perceived authenticity and price have been shown to be important in influencing consumers' purchase intention in home-sharing platforms [27]. We add to the rising sharing-economy literature by investigating an essential factor in outbound traveling, consumer animosity.

2.2. Consumer animosity

Consumer animosity is formally defined as remnants of antipathy (anger) rising from previous or ongoing hostile actions (e.g., military, economic, or diplomatic events) taken by a foreign country [13]. Often referred to as a negative attitude comprising emotion and belief components towards another country, consumer animosity is a critical factor affecting consumers' product perceptions and purchase behaviors, particularly in the context of international businesses [15,28].

The extant studies have mainly shown an adverse effect of consumer animosity towards a foreign nation on consumers' willingness to purchase products/services from a particular country [13,29,30]. Consumer animosity is likely to reduce outbound travelers' tendencies to choose the offending country as their tourist destination [31,32]. Under certain circumstances, consumers tend to buy domestically made products or refuse to purchase products/services from a country towards which they feel animosity, even if the products/services from a foreign country have higher quality [33,34]. However, some other researchers have demonstrated the complexity in the consumer animosity effect on consumers' intention and behaviors by showing no influence [18,35] or showing product- and country-specific results [36–38]. These aforementioned extant studies mainly relied on a survey method. Our current study investigates the effect of consumer animosity by providing empirical evidence of outbound travelers' Airbnb booking decisions.

Moreover, the studies analyzing the antecedents of consumer animosity have shown two major sources for consumer animosity:

economic animosity and war animosity [16,17]. Economic animosity results from actions of economic aggressions or conflicts, such as the economic sanctions that the U.S. has imposed on Iran over the past decades [19]. In contrast, war animosity stems from war-based or military-related actions by a country, which generally lead to serious consequences, such as German's war crimes and massacres in other European countries [18] during World War II. Consumer animosity stemming from different sources (war animosity vs. economic animosity) is likely to affect consumers' perceptions and decisions differently [39]. We, therefore, investigate how economic animosity and war animosity affect outbound travelers' Airbnb booking decisions differently.

2.3. Role of geographic factors in online markets

This study is also related to a broader stream of literature on the influence of geographic factors in online markets. Although the advances in information technology have lowered the distance barrier in communications and reduced search costs, geographic factors (e.g., country of origin, physical distance) still affect consumers' purchasing decisions online [40].

Prior studies have shown the existence of home-bias in various online platforms. For example, Blum and Goldfarb [41] argued that American consumers tend to visit websites from nearby countries and reduce their online purchases as physical distance increases. Hortaçsu et al. [42] found that distance between the seller and buyer has a negative effect on sales in online markets, such as eBay. Relatedly, Safari and Thilenius [43] showed that country of origin (COO) is a key factor affecting consumers' perception of retailers in foreign online purchasing. Zhao et al. [40] found that the COO of online retailers can be a substitute for their online reputation and affect consumers' purchase decisions.

In our research setting, consumer animosity could be an important geographic factor in outbound travelers' booking decisions in online home-sharing platforms. To the best of our knowledge, this study is the first to examine how different types of animosity affect travelers' booking decisions, which extends the literature on the role of geography in online markets.

3. Hypotheses development

3.1. Effects of consumer animosity: economic animosity vs. war animosity

Extant studies have mainly shown a negative impact of consumer animosity on consumers' willingness to buy products and/or services from the opposed countries [17]. In general, hostile emotions affect both cognitive and affective processes for consumers bearing animosity in their decisions to purchase a product from an opposing country [35]. Even if products from the opposing country have higher quality, consumers with animosity are still less likely to buy them. Regarding outbound tourism, in many cases, consumers are reluctant to choose a country, towards which they hold animosity, as their travel destination [31,44,45].

However, a few studies have also argued that consumer animosity may not have a negative effect on consumers' decisions in choosing an opposing country as a travel destination. For example, Russian consumers, especially young people, still view the U.S. as an attractive destination-country for tourism, because their interest in knowing the people and culture in the U.S. counter the effects of animosity on their visit intentions [37,38]. In the context of home-sharing accommodations for outbound travelers, a majority of home-sharing users are millennials (ages between the 20s and 30s).[2] They have a strong desire to explore cultural diversity and to engage intercultural dialogue [1]. Therefore, the interest in cultural exploration may reduce the negative impact of animosity on outbound travelers' demand via home-sharing accommodations.

What adds to the complexity of the consumer animosity effect on consumer response is the two different sources of animosity – economic animosity and war animosity. Some researchers have found that economic animosity is situational (i.e., less stable) and stems from contemporary events [18]. In contrast, war animosity is stable in consumers' psychological processes and can also be passed from generation to generation [13,17]. The negative effect of war animosity is relatively intense. Therefore, we argue that the impact of economic animosity on consumer decisions is less intense than that of war animosity.

To summarize, considering consumers' interest in cultural exploration via home-sharing platforms, the negative effects of economic animosity and war animosity on outbound travelers' demand are both likely to be reduced. The effect of economic animosity will be less negative than that of war animosity. Hence, we develop our hypothesis as follows:

H1. Economic animosity and war animosity have a different effect on outbound travelers' booking decisions via home-sharing platforms, in that the negative effect of war animosity is stronger than that of economic animosity.

3.2. Moderation effect of intensity of animosity-inducing events

Consumer animosity, often taken as underlying attitudes, can be induced by contemporary events, such as economic tension and territorial disputes between two nations [17]. For example, with embedded war animosity of the Chinese towards Japan, current events further exacerbated the anti-Japan emotions by Chinese consumers [46].

Moreover, animosity-inducing events have various levels of intensity. When the intensity level is low, the adverse emotions from consumer animosity are consequently low and have a limited negative effect on consumers' demand. The low-intensity event may also increase consumers' awareness during their decision-making process. For outbound travelers, increased awareness may further spur their interest in visiting the opposing country to explore the different cultures and choose home-sharing accommodations [1]. However, when the intensity level is high, the adverse emotions from consumer animosity may become extreme [47,48]. Extreme emotions can further intensify the negative effect of consumer animosity on consumers' purchase decisions, i.e., outbound travelers' demand for home-sharing accommodations in our context. Hence, we hypothesize that,

H2a. The intensity level of events inducing *economic animosity* negatively moderates the effect of war animosity on outbound travelers' booking decisions via home-sharing platforms.

H2b. The intensity level of events inducing *war animosity* negatively moderates the effect of economic animosity on outbound travelers' booking decisions via home-sharing platforms.

4. Research background and data collection

4.1. Research background

To test our hypotheses, we choose to examine Chinese outbound travelers' decisions for two reasons. First, as China has become one of the largest outbound tourism markets, many travel-related online platforms consider Chinese consumers as an engine of growth [49,50].

Second, Chinese consumers bear both economic animosity (towards South Korea) and war animosity (towards Japan), which provides a unique geopolitical context for our investigation. More specifically, since 1992, bilateral economic exchanges between China and South Korea have increased rapidly [51]. However, as China's economy has grown rapidly, the relationship between China and South Korea has shifted to a competitive mode [51]. Hence, the increased economic conflicts result in economic animosity between China and South Korea.

[2] https://news.airbnb.com/chinese-new-year-update/

In contrast, the China-Japan relation has been brought into a hostile state by a series of wars between the two countries since the First Sino-Japanese War in 1894 [52]. During the World War II, Japan's war crimes in China, of which the 'Nanjing Massacre' is the most severe one, further deepened the hostility between China and Japan [53].

To further verify consumers' animosity perceptions towards Japan and Korea, 166 participants in China were randomly assigned to rate their perceived economic animosity and war animosity (1 = strongly disagree, 5 = strongly agree [13,58]) towards South Korea and Japan. Results show that participants perceived a higher level of economic animosity towards South Korea than towards Japan (mean of economic animosity towards South Korea = 3.661 vs. mean of economic animosity towards Japan = 2.985; $t = 7.723$, $p < 0.001$), whereas they perceived a higher level of war animosity towards Japan than towards South Korea (mean of war animosity towards Japan = 3.936 vs. mean war animosity towards Korea = 2.941; $t = 8.746$, $p < 0.001$). Therefore, in our study, economic animosity is operationalized using Chinese consumers' animosity towards South Korea, whereas war animosity is operationalized using Chinese consumers' animosity towards Japan.

4.2. Data collection

To explore the impact of consumer animosity on Chinese outbound travelers' demand for sharing-based accommodations, we constructed our data from two sources. First, we collected data related to sharing-based accommodations from Airbnb. Hosts provide descriptions of their spare rooms/apartments on Airbnb and offer accommodations to guests. Guests can write online reviews and rate their stay on Airbnb, such as location and cleanliness. In this study, we collected consumer-facing information from the Airbnb website on all listed properties in South Korea and Japan. Each listing is associated with several attributes such as the number of bathrooms and price (for details, see Appendix A). Airbnb has built an online reputation system that enables and encourages consumers (guests) to rate and review each completed stay. We collected all reviews from a complete set of guests on the Airbnb website up to April 1st, 2017. Because 67% of Airbnb guests are willing to provide their review for their stay [54], we follow the recent studies [5,21] and use the number of reviews as a proxy for the number of bookings in Airbnb, the dependent variable of this study.

We identified the national identity of each guest on Airbnb based on the languages in their historical comments. For example, if all historical comments posted by a user on Airbnb were written in Chinese, this user would be identified as a Chinese consumer. Similarly, we identified citizens of South Korean or Japan according to the corresponding language. Moreover, we exclude multilingual users from our final data set, which account for a small proportion of users (0.33% of all users in our dataset).

Second, we collected data on animosity events from public news that might induce Chinese consumers' animosity towards South Korea or Japan. In total, we found five events inducing animosity towards South Korea and six events inducing animosity towards Japan from January 1st, 2015 to April 1st, 2017.[3] The detailed descriptions of each event are summarized in Tables B1 and B2 in Appendix B. We then obtained the Baidu Index of "anti-Korea" for the five Korea related events and "anti-Japan" for the six Japan related events as the measurement of event intensities. Because the indexes for keyword "Animosity to South Korea" (仇韩) or "Animosity to Japan (仇日)" are not available on Baidu, we have collected and compared several sets of keywords, such as "Boycott South Korea" and "Boycott Japan". All of them have similar patterns. We finally choose "anti-Korea" (反韩) or "anti-Japan" (反日) because they appear to be more relevant to animosity. Similar to Google Trend, the Baidu Index indicates the search volume for a given keyword, and has been widely used in the previous research to measure the intensity of public attention [55,56].

Furthermore, we conducted a survey to validate the Baidu index as the proxy for the intensity level of the events.[4] Specifically, 248 participants were randomly assigned to read the description of one of the events used in our study. They then rated the perceived public attention caused by the event. Results indicate that the participants' perceived public attention has a significant and positive correlation with Baidu indexes ($r = 0.491$, $p < 0.001$).

4.3. Model-free evidence

We first provide initial model-free evidence in Fig. 1. We randomly select one high-Baidu-Index and one low-Baidu-Index animosity event from the two groups of events. For each event, we compare the number of reviews[5] from local guests and that from Chinese guests in South Korea and Japan during the pre-event periods (e.g., three weeks before the event) and post-event periods (e.g., three weeks after the event).

Compared to the local guests in South Korea, the number of Chinese guests increased after the event with a low Baidu Index (Fig. 1a), but decreased after the event with a high Baidu Index (Fig. 1b). Fig. 1c and Fig. 1d show that compared to the local guests in Japan, the number of Chinese guests decreased after an event inducing war animosity with a low or high Baidu Index. While Fig. 1 shows the differential effects of two types of animosity (economic animosity vs. war animosity) on Chinese guests' booking decisions, we next formally test our hypotheses.

5. Empirical analysis and results

5.1. Difference-in-differences (DID) estimation

We employ a DID approach to estimate the effect of animosity on outbound travelers' booking decisions. Specifically, we compare the demand from Chinese guests who were affected by animosity events in China (the treatment group) to the demand of local guests (the control group). The treatment group is exposed to animosity events in the post-event period (three weeks after the event) but not in the pre-event period (three weeks before the event). The control group is not exposed to animosity events during either period. This method first calculates the change in the number of reviews of the treatment (control) group before and after the happening of animosity events to remove any time-fixed heterogeneity resulting in the different effects of animosity events. The second differencing is applied to the change between the treatment and the control groups to eliminate other factors leading to moderate increases in the number of reviews over time [57]. Therefore, we estimate the effect of consumer animosity by the following model specification:

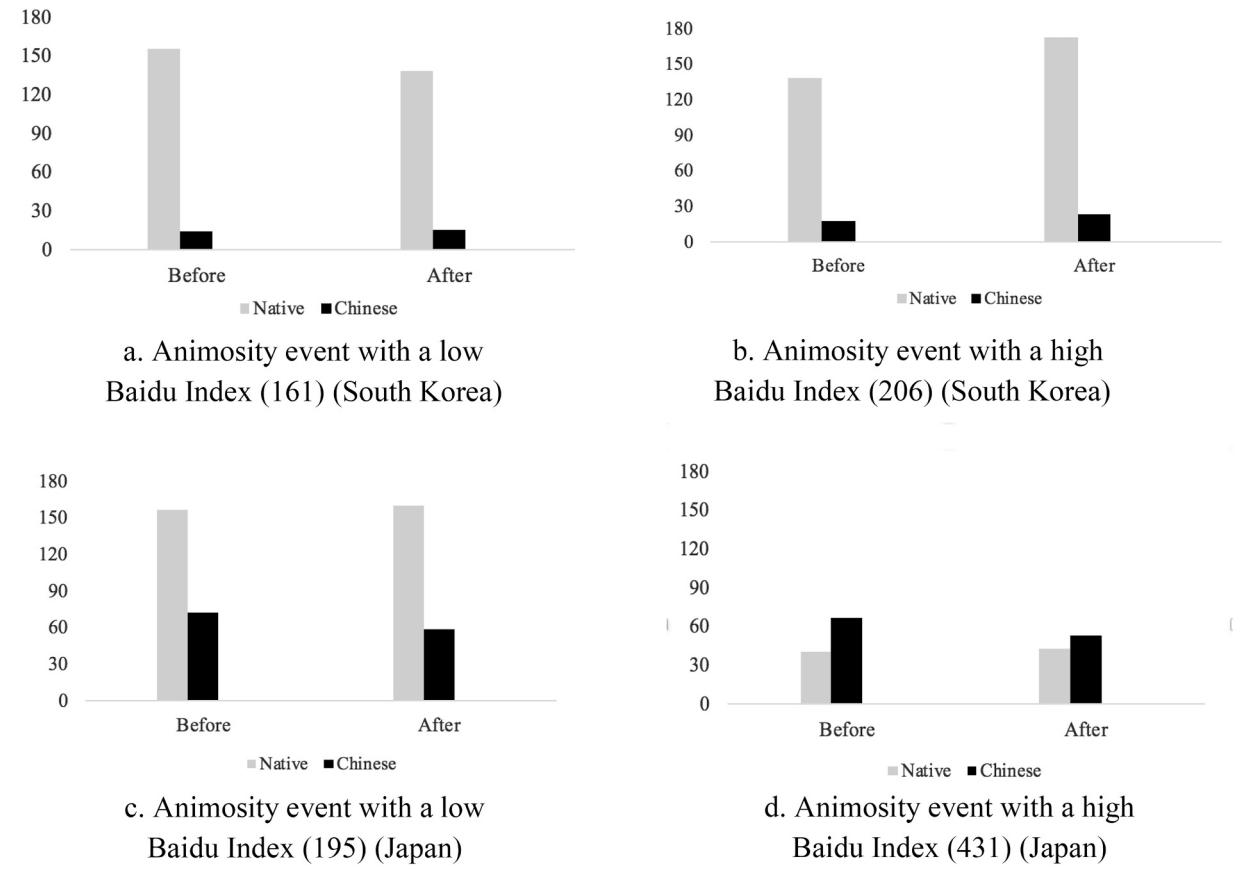
$$Log\left(Avereview_{itjg}\right) = \alpha + \beta_1 Postevent_{tj} + \beta_2 Group_g + \beta_3 Postevent_{tj} * Group_g + X_i\delta + \varepsilon_{itjg} \quad (1)$$

where $Avereview_{itjg}$ represents the average reviews of listing i from group g during the period t of event j. $Group_g$ is the indicator variable that represents the control/treatment group (i.e. local guests vs. Chinese

[3] To avoid overlapping effects of events, the time interval between every two selected events was longer than six weeks. Our results are robust when the time interval between every two selected events was longer than four or eight weeks.

[4] We thank the comment from one of the reviewers. For brevity, we do not report the detailed survey results.

[5] We have normalized the number of reviews for a home-sharing accommodation by the number of days when it is available during the three weeks before or after the event happens. We use such a normalized number of reviews rather than the total number of reviews in Fig. 1 because the availability of every home-sharing accommodation might be different in the three weeks before or after each event.



a. Animosity event with a low Baidu Index (161) (South Korea)

b. Animosity event with a high Baidu Index (206) (South Korea)

c. Animosity event with a low Baidu Index (195) (Japan)

d. Animosity event with a high Baidu Index (431) (Japan)

Fig. 1. Model-free results of the effect of animosity event on Chinese guests' demand via Airbnb in South Korea and Japan.

guests). $Postevent_{tj}$ is a dummy variable to indicate whether a period t of event j is post-event or not. The coefficient (β_3) of the interaction term of $Postevent_{tj}$ and $Group_g$ is the parameter of interest. We also include all available control variables, represented byX_i, such as the number of bedrooms, and price.

To further test whether the animosity effect varies across events with different levels of intensity, we conduct an analysis using the following specification:

$$\begin{aligned} Log(Avereview_{itjg}) = {} & \alpha + \beta_1 Postevent_{tj} + \beta_2 Group_g + \beta_3 Postevent_{tj}{*}Group_g \\ & + \beta_4 Postevent_{tj}{*}BaiduIndex_j + \beta_5 Group_g{*}BaiduIndex_j \\ & + \beta_6 Postevent_{tj}{*}Group_g{*}BaiduIndex_j + X_i\delta + \varepsilon_{itjg} \end{aligned} \quad (2)$$

β_6 in Eq. (2) is the parameter that captures the moderating effect of the Baidu Index of animosity events on the treatment effect.

5.2. Results

Table 1 and Table 2 below present the estimation results for economic animosity (towards South Korea) and war animosity (towards Japan) respectively. In both tables, Model 1 presents the results of Eq. (1), whereas Model 2 presents the results of Eq. (2). Model 3 and Model 4 are alternative specifications for Model 2. More specifically, in Model 3, we consider the correlation between the same residences and cluster the error terms at the listing level. In Model 4, we conduct an analysis with a fixed effect of listings.

Interestingly, the results of Model 1 in Table 1 show that the effect of economic animosity on Chinese outbound travelers' demand for sharing-based accommodations is positive and statistically significant ($\beta_3 = 0.0034, p < 0.0010$). Given that the mean value of the dependent variable in the regressions for economic animosity towards South Korea is 0.0118, our result indicate that Chinese outbound travelers increase their demand for Korean Airbnb accommodations by 29.2% when there is an event inducing economic animosity towards South Korea. Results of Model 1 in Table 2 show that β_3 is negative and not statistically significant ($\beta_3 = -0.0002, p > 0.0500$). On average, war animosity had a negative effect on Chinese outbound travelers' demand via Airbnb. However, the negative effect of war animosity is not statistically significant. Therefore, our results indicate the different effects of economic animosity versus war animosity on Chinese consumers' booking decisions via Airbnb. The negative effect of war animosity is stronger than that of economic animosity, supporting our hypothesis H1.

Further, the Model 2 results of Table 1 show a negative and statistically significant moderating effect of the Baidu Index ($\beta_6 = -0.0044, p < 0.0010$), which supports our hypothesis H2a. Similarly, the Model 2 results of Table 2 show that the intensity level of events inducing animosity (Baidu Index) also had a negative and statistically significant moderating effect ($\beta_6 = -0.0025, p < 0.0010$), supporting our hypothesis H2b. As the events inducing animosity (both economic animosity and war animosity) get more intense, consumers bear a stronger level of hostility and therefore consumer animosity has a negative effect on outbound travelers' booking decisions via Airbnb.

5.3. Robustness tests

5.3.1. An alternative control group

In the analyses above, we examined the effect of animosity by comparing Chinese guests (the treatment group) with the local guests (the control group) in South Korea/Japan. We conducted a robustness test using the non-Chinese and non-local guests as an alternative control group, because they were not affected by the animosity events that occurred in China.

Table 3 below shows that when using the non-Chinese and non-local

Table 1
Effect of economic animosity (towards South Korea).

Variable	Model 1	Model 2	Model 3	Model 4
Postevent	−3.3809*** (0.4184)	−1.0971 (0.8149)	−1.0971 (0.6409)	−1.0971* (0.5017)
Group	−21.8259*** (0.3384)	−21.7507*** (0.6523)	−21.7507*** (0.6881)	−21.7507*** (0.5017)
*Postevent*Group (DID)*	3.4363*** (0.4297)	1.6437 (0.8442)	1.6437** (0.6638)	1.6437* (0.7096)
BaiduIndex		1.0030 (1.2791)	1.0030 (1.1483)	3.3448*** (0.7335)
*Postevent*BaiduIndex*		5.5599*** (1.6997)	5.5599*** (1.2795)	5.5599*** (1.0162)
*Group*BaiduIndex*		−0.1830 (1.3085)	−0.1830 (1.1831)	−0.1830 (1.0162)
*Postevent*Group* BaiduIndex*		−4.3642** (1.7520)	−4.3642*** (1.3219)	−4.3642*** (1.4372)
Control Variables	Yes	Yes	Yes	
Observations	154,456	154,456	154,456	154,456
R^2	80.2000	80.7000	80.7000	
Rho				293.2167***

Notes: *** $p < 0.0010$; ** $p < 0.0100$; * $p < 0.0500$. Values were multiplied by 10^3 for readability.

Table 2
Effect of war animosity (towards Japan).

Variable	Model 1	Model 2	Model 3	Model 4
Postevent	0.2099 (0.1474)	0.2020 (0.1825)	0.2020 (0.1684)	0.2020 (0.1620)
Group	−1.1234*** (0 0.1479)	−2.7478*** (0.1827)	−2.7478*** (0.1898)	−2.7478*** (0.1620)
*Postevent*Group (DID)*	−0.2682 (0.1906)	0.2770 (0.2351)	0.2770 (0.2122)	0.2770 (0.2292)
BaiduIndex		1.0408* (0.4210)	1.0408* (0.4215)	−0.7298* (0.3273)
*Postevent*BaiduIndex*		0.0358 (0.5282)	0.0358 (0.4804)	0.0358 (0.4482)
*Group*BaiduIndex*		7.3639*** (0.6192)	7.3639*** (0.6265)	7.3639*** (0.4482)
*Postevent*Group* BaiduIndex*		−2.4713*** (0.7846)	−2.4713*** (0.6835)	−2.4713*** (0.6338)
Control Variables	Yes	Yes	Yes	
Observations	248,828	248,828	248,828	248,828
R^2	6.1000	9.9000	9.9000	
Rho				190.6804***

Notes: *** p < 0.0010; ** p < 0.0100; * $p < 0.0500$. Values were multiplied by 10^3 for readability.

Table 3
Robustness Test of using non-Chinese and non-Local Guests as the Control Group (South Korea).

Variable	Model 1	Model 2	Model 3	Model 4
Postevent	−9.7762*** (0.5834)	−6.8202*** (1.1527)	−6.8202*** (0.9558)	−6.8202*** (0.7016)
Group	−52.0889*** (0.4761)	−58.8984*** (0.9630)	−58.8984*** (1.0187)	−58.8984*** (0.7016)
*Postevent*Group (DID)*	9.8316*** (0.5989)	7.3667*** (1.1840)	7.3667*** (0.9771)	7.3667*** (0.9922)
BaiduIndex		16.4314*** (1.8689)	16.4314*** (1.7032)	18.2151*** (1.0256)
*Postevent*BaiduIndex*		7.1963*** (2.3313)	7.1963* (1.8744)	7.1963*** (1.4210)
*Group*BaiduIndex*		−16.5778*** (1.8987)	−16.5778*** (1.7394)	−16.5778*** (1.4210)
*Postevent*Group* BaiduIndex*		−6.0007* (2.3920)	−6.0007*** (1.9135)	−6.0007*** (2.0096)
Control Variables	Yes	Yes	Yes	
Observations	154,456	154,456	154,456	154,456
R^2	188.5000	192.1000	192.1000	
Rho				294.7292***

Notes: *** p < 0.0010; ** $p < 0.0100$; * $p < 0.0500$. Values were multiplied by 10^3 for readability.

guests in South Korea as the alternative control group, economic animosity has a positive effect on Chinese travels' booking decisions via Airbnb ($\beta_3 = 0.0098$, $p < 0.0010$ in Model 1). The Baidu Index (the intensity of animosity events) negatively moderates the positive animosity effect on Chinese guests' sharing accommodation in South Korea ($\beta_6 = -0.0060$, $p < 0.0500$ in Model 2). Therefore, the results are consistent with the results in Table 1.

Table 4 shows that when using the non-Chinese and non-local guests in Japan as the alternative control group, war animosity has a negative effect, however not statistically significant, on Chinese guests' booking decisions via Airbnb ($\beta_3 = -0.0005$, $p > 0.0500$ *in* Model 1). The Baidu Index of the animosity events negatively moderates the animosity effect on Chinese guests' sharing accommodation in Japan ($\beta_6 = -0.0006$, $p < 0.0500$ in Model 2). Therefore, the results in Table 4 are consistent with those in Table 2.

Table 4
Robustness Test of using non-Chinese and non-Local Guests as the Control Group (Japan).

Variable	Model 1	Model 2	Model 3	Model 4
Postevent	0.4198 (0.2947)	0.4154 (0.2981)	0.4154 (0.2754)	0.4154 (0.2200)
Group	−7.4226*** (0.2507)	−7.8261*** (0.2515)	−7.8261*** (0.2798)	−7.8261*** (0.2200)
*Postevent*Group (DID)*	−0.4781 (0.3187)	−0.3226 (0.3198)	−0.3226 (0.2932)	−0.3226 (0.3111)
BaiduIndex		0.5317* (0.2128)	0.5317* (0.2128)	0.3575** (0.1386)
*Postevent*BaiduIndex*		0.0181 (0.2671)	0.0181 (0.2430)	0.0181 (0.1898)
*Group*BaiduIndex*		1.6452*** (0.2420)	1.6452*** (0.2451)	1.6452*** (0.1898)
*Postevent*Group* BaiduIndex*		−0.6340* (0.3048)	−0.6340* (0.2728)	−0.6340* (0.2684)
Control Variables	Yes	Yes	Yes	
Observations	248,828	248,828	248,828	248,828
R^2	14.3000	15.8000	15.8000	
Rho				213.2535***

Notes: *** p < 0.0010; ** $p < 0.0100$; * $p < 0.0500$. Values were multiplied by 10^3 for readability.

5.3.2. A complementary laboratory study

In addition, we conduct a laboratory study to examine the effect of consumers' perceived animosity on their decisions in a more controlled condition. The results of the laboratory study are consistent with those in our main analyses. We provide details as follows:

Procedure A total of 122 Chinese participants who live in China were randomly assigned to one of the 2 (South Korea vs. Japan) × 2 (high animosity vs. low animosity) conditions. The two levels of animosity were designed through instructional manipulations.

In each condition, participants were first asked to indicate their initial perceived economic and war animosity towards the assigned country (i.e., South Korea or Japan), initial intention to visit the country, initial purchase intention on its Airbnb, and the country's attractiveness to them. Then, participants were instructed to read the description of a randomly selected event. After reading the event, participants were asked to re-evaluate their perceived economic and war animosity towards the country, and their intention to visit the country and purchase intention on the Airbnb. The critical measures include perceived economic animosity [13,58], perceived war animosity [13,58], country attractiveness [59], intention to visit the country [58], purchase intention on Airbnb [60]. We also collected participants' background information, such as age, gender, education, marital status, and monthly income.

Manipulation check The paired samples *t*-tests showed that under the conditions related to South Korea, participants reported an increased level of their perceived economic animosity after reading the event (2.956 vs. 3.377, $p < 0.001$), but an unchanged level of perceived war animosity (3.092 vs. 3.043, $p > 0.1$). In contrast, under the conditions related to Japan, participants reported an increased level of their perceived war animosity after reading the event (3.370 vs. 3.826, $p < 0.001$), but an unchanged level of perceived economic animosity (3.202 vs. 3.205, $p > 0.1$). Moreover, increased perceived economic and war animosity were further intensified for the high-animosity conditions than for the low-animosity conditions ($p < 0.001$). Therefore, our manipulation of war and economic animosity were successful.

Hypotheses testing First, we examine the effect of economic animosity on participants' intention to visit the country and purchase intention on Airbnb when we have controlled for effects of control variables. We find that participants in the low-animosity towards South Korea condition increased their intention to visit the country ($p < 0.01$) and purchase intention on Airbnb ($p < 0.01$) after reading the event. But participants in the high-animosity towards South Korea condition decreased their intention to visit the country ($p < 0.001$) and purchase intention on Airbnb (3.683 vs. 2.721, $p < 0.001$) after reading the event. Second, we find that after reading the event inducing war animosity, participants in the Japan conditions decreased their intention to visit the country (p < 0.1000) and purchase intention on Airbnb (p < 0.1000). Moreover, participants in the high-animosity towards Japan condition experienced a stronger decreased intention to visit the country and purchase intention on Airbnb ($p < 0.001$). These results are consistent with our empirical findings in Section 5.2.

6. Conclusions, discussions, contributions, and limitations

6.1. Conclusions and discussions

This study investigates the effect of consumer animosity on outbound travelers' demand for sharing-based accommodations. Utilizing a panel data collected from Airbnb, we adopted a difference-in-differences approach for causal inference. Interestingly, we find that economic animosity has a positive effect on outbound travelers' demand for sharing-based accommodations. However, the effect of war animosity on outbound travelers' decisions is negative and not statistically significant. As the intensity level of events inducing animosity increases, the effects of both economic animosity and war animosity on outbound travelers' demand for sharing-based accommodations will eventually become negative. These results deepen our understanding of consumer animosity and their impact on consumers' decisions.

It is worth noting that, the result of a positive main effect of economic animosity contradicts prior studies, which mainly shows a negative animosity effect on consumers' purchase decisions/intentions. We argue that in the context of our study—outbound travelers' demand for sharing-based accommodations – the effect of consumer animosity could be decomposed into two opposing routes. The first is the same as extant studies—a negative effect of consumer animosity. Inducing events result in consumer animosity and hostile emotions, which further reduce consumers' purchase decisions. The second is a potentially positive effect from events inducing consumer animosity. One possible explanation for the positive effects of consumer animosity is the awareness effect of negative information [61,62]. The research conducted by Berger et al. [61] indicates that negative publicity may increase product awareness or accessibility and thus lead to higher sales when product awareness is low. Similarly, Yang et al. [62] showed a positive effect of negative customer reviews on product sales via consumer awareness under certain circumstances. Similarly, we argue that consumer animosity increases outbound travelers' demand for sharing-based accommodations is through increasing travelers' awareness of the animosity country. Chinese outbound travelers may not know well about another country such as South Korea or Japan. An event that induces consumer animosity can also increase awareness for outbound travelers. Further, outbound travelers may have increased desire in cultural explorations and are more likely to choose that country as their travel destination [1]. When the intensity of inducing events is relatively low, the positive effect of increased awareness is likely to offset the negative effect of

consumer animosity on consumers' demand, and even overturn the negative effect for economic animosity. When the intensity of inducing events increases, the negative effect of consumer animosity becomes dominant.

6.2. Contributions: theoretical and practical

Our results provide several theoretical contributions to the literature. First, we expand the rising literature on the sharing economy by investigating the impact of consumer animosity on outbound travelers' demand for sharing-based accommodations. Second, different from extant animosity studies mainly utilizing survey methods, our study provides empirical evidence on how consumer animosity affects consumers' purchasing decisions. Moreover, we examined two different types of consumer animosity (war animosity and economic animosity). We showed that the main effect of economic animosity on consumers' decisions is positive, which has rarely been documented in prior studies on consumer animosity. In contrast, the main effect of war animosity on consumes' decisions is not statistically significant. Also, our study contributes to a broader literature on the role of geographic factors in online markets.

These findings provide useful, practical implications for the online platforms of sharing-based accommodations, especially for those targeting outbound travelers. To reduce the negative impact of consumer animosity, the platforms should emphasize cultural explorations, sharing, and a greater sense of community and belonging in their advertising [1]. When the intensity level of events inducing animosity is relatively low, the platforms may utilize the events in their promotions to increase outbound travelers' curiosity and interest, which could lead to an increase in demand.

6.3. Limitations and extensions

This study is not without limitations. First, the DID approach is conducted with a common trend assumption. That is, the treatment and the control groups present parallel trends, and thus the average change for the treatment group without treatment would have been equal to that for the control group [63,64]. Under this assumption, any deviation from the average change can be attributed to the effect of treatment. When multiple periods before the treatment time are available, one simple approach to examining the assumption of parallel trends is to visually inspect the pre-treatment time trends between the treatment group and the control group [65]. Because our data is only for two periods (before versus after an event), we were unable to inspect the assumption directly. Instead, we partially verified the assumption by ensuring a similarity between the treatment and the control groups beforehand. We use the same residences. Although the Chinese and non-Chinese groups are different, they face the same residences supplied. Therefore, we could expect that the two groups with the same residences share the same trends.

Second, our primary analysis also requires that no exogenous event results in changes in the time trend. For example, advertising and/or promotions during the national holidays by Airbnb may only affect Chinese consumers, which further affects our results. To address this issue, we have excluded reviews during China's national holidays so that there is only animosity events' impact on the treatment group. Besides, our experiment period, six weeks instead of many months, is relatively short. We could expect or reasonably assume no significant changes in time trends, i.e., common shocks on the two groups. Still, we acknowledge that we are unable to exclude the possibility of exogenous events completely.

Third, due to the unavailability of real booking data, we use the number of reviews to represent the number of bookings by following the literature [5,21]. We note that our results may be hampered if the number of reviews and bookings are not fully consistent with each other. In the future, we will verify our findings once the real booking data are available.

Appendix A. Appendix

Table A1
Definition of variables in Airbnb data.

Variable	Description	Mean	Std. Dev.
No. of Reviews	The number of reviews	1.6436	3.4190
Cancel Policy	The strict level of cancellation orders (1 = flexible, 2 = moderate, 3 = strict)	2.3474	0.7909
Picture Count	The number of pictures describing the listing on the Airbnb website page	28.4553	21.9919
Review Rating	The average review rating of the listing	3.1113	2.2252
No. of Bathrooms	The number of bathrooms of the listing	1.2332	0.8076
No. of Bedrooms	The number of bedrooms of the listing	1.3384	1.1433
No. of Beds	The number of beds in the listing	2.9162	2.6801
Person Capacity	The maximum number of people the item can include	4.4056	3.1583
Price	The rent price of the item per day	616.0408	4213.0860
Legal Terms	Whether the item has agreed to the legal terms	0.8413	0.3654
Min. Night Rules	Whether the item has minimum night rules	0.1892	0.3917
Instant Bookable	Whether the item is instantly bookable	0.6200	0.4854
Private Room	Whether the type of room is a private room	0.3212	0.4670

Appendix B. Appendix

Table B1
Events inducing economic animosity of Chinese consumers towards South Korea.

Event date	Baidu Index	Brief event description	Number of observations	Number of reviews
2015/8/30	179	The "basketball game conflicts" event occurred during the China-South Korea Men's Basketball Challenge (This event triggered the hostility between China and South Korea with the on-going economic conflicts context).	1727	2168 (1374 before, 794 after)
2016/7/13	206	The initial "THAAD" deployment event (Following this event, Chinese consumers started to boycott the consumption of South Korea products/services).	4321	6639 (2653 before, 3986 after)
2016/9/30	161	The second "THAAD" deployment event.	5265	7052 (3401 before, 3651 after)
2016/11/21	171	The competitive advantages of Korean entertainment products (such as music and movies) in the Chinese market triggered the concerns from Chinese consumers.	5063	7187 (3731 before, 3456 after)
2017/1/12	134	The Lotte Group in Korea announced to transfer its land to the Korean military to build the "THAAD" anti-missile system.	6791	12,022 (6491 before, 5531 after)

Table B2
Events inducing war animosity of Chinese consumers towards Japan.

Event date	Baidu index	Brief event description	Number of observations	Number of reviews
2015/2/23	202	The 70th anniversary of the founding of the United Nations and the 70th anniversary of the victory of the World War II, which reminded Chinese people of the war crimes by Japan.	1395	817 (371 before, 446 after)
2015/4/21	390	Japanese Prime Minister Shinzo Abe performed "Zhenzhen" sacrifices to the historical figures, whom are viewed as war criminals during the World War II by Chinese people.	2384	1329 (615 before, 714 after)
2015/9/3	431	The 70th anniversary of the victory of the Anti-Japanese War (emphasized by Chinese mainstream media).	4436	4045 (2099 before, 1946 after)
2016/4/21	156	Japanese Prime Minister Shinzo Abe offered a sacrifice to the historical figures (war criminals viewed by Chinese people) in the name of "Minister of the Prime Minister".	12,035	6049 (2940 before, 3109 after)
2016/7/7	160	The 79th anniversary of the *Lugou Bridge Incident*, which occurred in 1937 and has been taken as the start of the second Sino-Japanese war.	13,394	7017 (3033 before, 3984 after)
2016/9/18	195	The 85th anniversary of the *Manchurian incident*, which marked an invasion and occupation of a Chinese city by Japan army in 1933.	16,313	9227 (4474 before, 4753 after)

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Yating Li is a postdoctoral student at school of Economics and Management in Tsinghua University. She received her Ph.D. degree in Management Science and Engineering from the Nankai University. Her research interests include operation management, pricing in two-sided markets and sharing economy.

Bin Li is Assistant Professor of Marketing at the Raj Soin College of Business at Wright State University. He received his Ph.D. degree in Marketing from the University of Connecticut. His research focuses on empirical modeling of online and offline interactions. His research has been published in *MIS Quarterly* and *Journal of Global Marketing*.

Gang Wang is Assistant Professor of Management Information Systems at the Lerner College of Business and Economics at the University of Delaware. He received his Ph.D. degree in Operations and Information Management from the University of Connecticut. His research interests include social media, firm strategies in e-markets, and online learning. His research has been published in *MIS Quarterly*, *Information Systems Research*, *ACM Transactions on Management Information Systems* (TMIS) and *Decision Support Systems*.

Shuai Yang is an Associate Professor at the Glorious Sun School of Business and Management, Donghua University, China. She received her Ph. D. from the University of Connecticut. Her research studies have been published in such journals as *Journal of Management Information Systems, International Journal of Electronic Commerce, Journal of Electronic Commerce Research, and International Journal of Hospitality Management*, among others.