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| Item Type | Poster |
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| Download date | 2026-04-23 02:55:59 |
| Link to Item | https://hdl.handle.net/20.500.14394/30063 |

The impact of currency exchange rate on Las Vegas gaming demand

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ABSTRACT

Currency exchange rate has been found to have a significant effect on international travel. The international visitors have become a very attracting market for Las Vegas, leading to much success. The objective of this study was to understand the foreign exchange rate as a determinant for international gaming demand in the Las Vegas gaming industry. This study used secondary data originated from a Las Vegas Strip casino property. Special events and seasonality were also taken into consideration and incorporated in the study as dummy variables. The study is designed to perform linear regression analysis to test the hypotheses and time series analysis to suggest a forecasting model.

Key Words: *Currency rate, Exchange Rate, Gaming behavior, International gaming demand, Seasonality, Time series analysis*

INTRODUCTION

There has been constant increase of the international market in the Las Vegas gaming industry over the past few years during the economic downturn while the total number of visitations actually decreased. International visitors are known to plan their trip in advance, stay longer, and spend more than domestic visitors (“Las Vegas,” 2009). Therefore, Las Vegas gaming industry has become more aggressive over the international market than ever due to the economic downturn (Sayre, 2008).

It has been known that currency depreciation usually impacts the prices of foreign travel while appreciating currencies usually encourage foreign travel (Raab & Scher, 2003). Despite other key ingredients, The Las Vegas Convention and Visitors Authority noticed that the weak dollar is currently one of the strong selling points for international tourism (Sayre, 2008). The purpose of this study is to understand the currency exchange rate effect as a determinant of the international gaming demand in the Las Vegas gaming industry and further forecast international gaming revenue. The study is designed to recognize future gaming demand of the international market based on the economic circumstances. The findings are expected to provide valuable insights for marketers to understand the international market gaming behavior from an economic standpoint.

LITERATURE REVIEW

The international gaming market in Las Vegas

The international market has become extremely potential and essential for businesses in Las Vegas, comprising a significant proportion. According to the Las Vegas Convention and Visitors Authority, the number of international visitors to Las Vegas increased to 15 percent in 2008 compared to 12 percent in 2005. In fact, the total visitor count dropped in 2008 but the number of international travelers jumped by approximately 900,000. International travelers stay relatively longer and spend more in Las Vegas than domestic travelers. While domestic travelers stay 4.2 days, international travelers stay 5.5 days per trip on average. International travelers also spend significantly more on accommodation, dining, shopping, entertainment, and sightseeing (Las Vegas Convention and Visitors Authority, 2010).

Overall, the international visitors have become a very attracting market for Las Vegas, leading to much success. More international travelers are showing repeat visitations to Las Vegas and it is expected that the Las Vegas Convention and Visitors Authority and hospitality businesses will continue making marketing efforts to obtain a larger international crowd (Las Vegas Convention and Visitors Authority, 2010).

The economic determinants of demand

Tourism demand is the amount of tourist goods that a tourist is willing and able to purchase at a certain time and condition. Many researchers attempted to examine a range of key factors as a determinant in international tourism demand and numerous studies show that economic determinants account for much of the variation in tourist demand. In general, classical economic theory suggests that income and price-type factors are the major determinants for international tourism (Crouch, 1994; Loeb, 1982; Tse, 2001; Qu & Or, 2006; Vanegas & Croes, 2000). Overall, the general international tourism demand model included income of origin country, relative prices, currency exchange rate, and special events as the major variables (Loeb, 1982; Chadee & Mieczkowski, 1987; Qu et al., 2006).

Exchange rate effect

Although, some researchers argue exchange rates are not clear cut as an explanatory variable because of the interrelationship with inflation rates (Witt & Martin, 1987), it has been receiving increasing attention for its rapid fluctuation rate in terms of evaluating its influence for international tourism (Qu et al., 2006). Currency depreciation, while other things being equal, usually impacts the prices of foreign travel. In contrast, appreciating currencies, while other things being equal, usually encourage foreign travel (Raab et al., 2003).

Previous studies show controversy findings of the currency exchange rate effect on international tourism. Still, the researchers pointed out that many questions were remained unanswered and highlighted the value of further empirical research efforts. As cited in the research from Crouch (1994), there is not enough evidence to support that exchange rates have an influence in tourist receipts. It was noted that there may be good reasons to expect a mixture of results such as different purposes of traveling or how likely the destination is developed since less developed countries are not likely to impact on inbound tourism demand.

It is therefore the purpose of this study to specifically investigate the effect of currency exchange rate as an economic determinant for international gaming demand in Las Vegas. Income and relative price was not what this study primarily aimed to examine as a determinant. The following hypotheses have been derived based on the findings of the literature review:

H1: Currency exchange rate will affect the total gaming demand.

H1a: Currency exchange rate will affect the gaming visits.

H1b: Currency exchange rate will affect the gaming days.

H1c: Currency exchange rate will affect the gaming expenditure.

METHODOLOGY

Variable selection

Demand theory suggests that the ideal demand variable should be able to measure the quantity of the product demand. It has been investigated that the number of tourist visits and tourist expenditure were used most frequently among previous studies to measure tourism demand (Qu & Or, 2006). This study used both number of tourist visits and tourist expenditure as the dependent variable.

This study chose exchange rate as the primary explanatory variable. In addition seasonality will be incorporated as dummy variables. Seasonality is one of the most salient and significant characteristics of tourist flows and expenditure, and therefore, were added since Las Vegas is a tourist destination that is greatly influenced by seasonality. Special events were not included as explanatory variables because the casino does not send out special event invitation to customers who do not have an US residential address.

Data collection

Secondary data will be used for this study. For the measurement of demand, data have been collected from an upscale Las Vegas Strip hotel casino property. The name of the specific property cannot be stated in order to insure anonymity. Monthly time series data were selected from May, 1999 (from opening date) to May, 2010. The population for this study included international customers with international residence addresses in the property's casino database. The database was scanned for the top 10 international countries with the highest visit frequency and they were Canada, Mexico, England, Japan, Australia, Germany, China, Israel, Hong Kong, and Taiwan respectively. All data with missing values were excluded for truthful analysis. The data for the currency exchange rate were collected from the Board of Governors of the Federal Reserve System.

Method and data analysis

Time series is an ordered sequence of values of a quantitative random variable at equally spaced time points. Linear regression analysis will be performed to test the hypotheses. Dummy variables for months will be created from January to November and December will be the reference category. Dummy variables for the countries will be created for England, Israel, Hong Kong, Japan, China, Canada, Mexico, Australia, and Taiwan and Germany will be the reference category. Dummy variables will be created to account for seasonality or any potential categorical effect that may influence the outcome. A variable testing for trend will also be created to reflect the changes at a point in time. The trend component accounts for the increase or decrease in the data set over time (Norušis, 2008).

An ARIMA(p, d, q) model is composed of three types of mathematical processes where p indicates the order of AR term (auto regressive), d indicates integrated (I), and q indicates the order of MA term (moving average). ARIMA modeling especially has benefits in time series analysis for gaming data because it accounts for systematic effects and shock effects in the endogenous variable itself, therefore it will be utilized in identifying the final model (Eisendrath et al., 2008).

Data will be transformed into a time series object and rendered stationary. The autocorrelation function (acf) and the partial autocorrelation function (pacf) of the regression model residuals will determine the ARIMA model for each dependent variable. Parameters will be estimated after the order of the ARIMA model is specified. The model with the lowest AIC (Akaike Information Criterion) value will be selected since it indicates the best fit.

Diagnostic checks will evaluate the goodness of fit. Diagnostic checks include the observation of each coefficient in the model to be statistically significant, the plots of standardized residuals not to show any specific trend, the autocorrelations of the residuals plot to show no autocorrelation, and the Q-Q plots of residuals to show a linear trend for normality. Lastly, future values of the levels under the model will be predicted at a 95 percent confidence interval (Shumway & Stoffer, 2006).

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