School of Economics Working Paper Series

The Response of the Hotel Room Occupancy Rate in Fiji to Shocks: Empirical Evidence from Unit Root Tests with Endogenous Multiple Structural Breaks

Janesh Sami

March 2018

Working Paper # 2018/03

Recommended Citation:


Contact:

School of Economics | The University of the South Pacific
Private Mail Bag, Laucala Campus, Suva, Fiji Islands
Ph: (679) 32 32 547 Fax: (679) 32 32 522
Email: s.o.economics@usp.ac.fj Website: www.usp.ac.fj/economics

Note: This paper presents work in progress in the School of Economics at USP. Comments, criticisms and enquiries should be addressed to the corresponding author.
The Response of the Hotel Room Occupancy Rate in Fiji to Shocks: Empirical Evidence from Unit Root Tests with Endogenous Multiple Structural Breaks

Janesh Sami
School of Economics
The University of the South Pacific
Suva, Fiji Islands.
Email: janesh.sami@usp.ac.fj
Phone: (679) 3232534

Abstract

Despite the political coup in December 2006 and Global Financial Crisis (GFC) in 2008, the tourism industry in Fiji has proven to be quite resilient. This article examines the response of the hotel room occupancy rate in Fiji to domestic and external shocks using annual time series data from 1969-2015. We employ a suite of unit root tests accommodating for single and multiple endogenous structural breaks in the series and find that the hotel room occupancy rate is a non-stationary process. Therefore, shocks are likely to have permanent impact on the hotel room occupancy rate and the series does not return to its trend path following a shock. In particular, adverse shocks to the hotel room occupancy rate are likely to be transmitted to other related variables/sectors in the economy. Our finding underscores the importance of permanent policy measures to improve the hotel room occupancy rate and safeguard the industry from adverse shocks.

Keywords
Fiji, Hotel Room Occupancy Rate, Structural Breaks, Tourism, Unit Root
1. Background

Following the recovery aftermath of Tropical Cyclone Winston in February 2016, Fiji’s economy is posited to achieve eighth year of consecutive economic growth in 2017, with an expected growth rate of about 4 percent that supported by amongst others, a vibrant tourism industry (International Monetary Fund, 2018). Over the period 2010-2013, average tourism earning has been around $1.3 billion for the Fijian economy\(^1\). Since 2010, the number of visitor arrivals has exceeded 600,000 and in 2016, Fiji attracted 792,320 visitors and resulting tourism earnings of over $1.6 billion (Reserve Bank of Fiji, 2018; Government of Fiji, 2017a). Furthermore, recent data from Macroeconomic Committee and Bureau of Statistics indicates that the tourism earnings is likely to be in excess of $1.6 billion after 2017 (Government of Fiji, 2017b). By 2021, it is estimated that the Fijian economy will earn around $2.2 billion from the tourism industry as laid out in the Fijian Tourism Development Plan 2017-2021 (Government of Fiji, 2017a). The tourism industry therefore, has become a billion dollar industry, an important source of foreign exchange earnings, and has significant influence over the macroeconomic performance of the Fijian economy.

Following the Global Financial Crisis (GFC) in 2008, the industry has witnessed a number of policy reforms. In 2009, the government came up with a number of policy measures to support the hotel sector. The new hotel incentive package provided 10 year tax holiday for Short Life Investment Package (SLIP), where capital investment not below than $7million, exemption of import duty on capital goods not available in Fiji, and 55% investment allowance on capital expenditure conditional upon no movement of revenue abroad (Government of Fiji, 2008). To promote hotel development in Vanua Levu and maritime islands, investment with minimum 25%
equity by indigenous Fijian qualified for 20 years of tax holiday (Government of Fiji, 2008). In the 2010 budget, the government indicated the introduction of Super Yacht Charter Policy to regulate the operations of Super Yacht in Fiji and 3-6 months of marketing campaign by Tourism Fiji in overseas markets (Government of Fiji, 2009). The government implemented the registration of the Surfing Areas Decree as well as the Denarau Development Decree to support the growth of the industry, and allocated $23.5m in 2012 budget to Tourism Fiji as marketing grant (Government of Fiji, 2011). In addition, Tourism Fiji continued with its global marketing efforts through National Geographic and CNN TV networks (Government of Fiji, 2011). Between the 2009-2012, the government has allocated nearly $106 million in promoting Fiji as a tourist destination in countries such as India, China, the United Arab Emirates (Government of Fiji, 2012).

For 2014 and 2015, the government allocated operating grant and transfers of $6m and $47m towards Marketing Grant to Tourism Fiji, respectively (Government of Fiji, 2013; Government of Fiji, 2014). The government expanded the definition of “project” in the Eleventh Schedule of the Income Tax Act to incorporate the purchase and sales of residential units in hotels and integrated tourism development (Government of Fiji, 2014). In addition, the government announced the inclusion of new apartment in the SLIP incentives and amended the Fourth Schedule of the VAT Decree to extend the Tourist VAT Refund Scheme to Lautoka Wharf and Nausori International Airport (Government of Fiji, 2014). In 2015, the government introduced the environmental levy on tourism related activities which was expected to rake in $69.6m in 2016, and introduced the Tourism VAT Refund Scheme (TVRS) License, and allocated operating grant of $3.8m and a marketing grant of $30m to Tourism Fiji (Government of Fiji,
In addition, the government announced changes in the SLIP and Investment Allowances under which the existing hotels will not be included from 2017. However, new hotels will get SLIP with 4 years tax holiday (Government of Fiji, 2015). In 2016, the government allocated a massive $8.3m operating grant and $27.6m market grant to Tourism Fiji (Government of Fiji, 2016). For the financial year 2017-2018, the government allocated a massive $10.4m operating grant and $33.1m marketing grant to Tourism Fiji (Government of Fiji, 2017b). Hence, over the recent years, the government undertaken a number of tax related reforms, and increased marketing grant, and vigorous marketing abroad to encourage hotel investment and improve tourist visitor arrivals.

Despite these reforms, the hotel room occupancy rate for the period 2006-2015 has been below 60 percent (Reserve Bank of Fiji, 2018). In 2015, turnover from accommodation accounted for nearly 60 percent of total turnover from hotel sector (Fiji Islands Bureau of Statistics, 2016). Thus, it follows that the changes in the hotel occupancy rate is not only an important indicator for the industry but also has important implications for earnings, investment and long term viability of the industry. The main objective of this study is to investigate the response of the hotel room occupancy rate in Fiji following external and domestic shocks. Unit root tests have been increasingly used in tourism economics literature to understand whether different external and domestic shocks has permanent or transitory impact on tourist visitor arrival (for instance, Solarin, 2016; Smyth et al., 2009; Lean and Smyth, 2009; Narayan, 2008; Tan and Tan, 2014; Solarin, 2015), and convergence in tourism market (for instance, Ozcan and Erdogan, 2017; Hepsag, 2016; Yilanci and Eris, 2012; Narayan, 2006). These groups of studies provided useful
insights on whether the external and domestic shocks have permanent or transitory impact on tourist visitor arrivals, convergence, and effectiveness of marketing strategies.

The focus of this paper differs, as we focus on the hotel room occupancy rate which is one of the important indicators for the industry. Our study has several important policy and research implications. First, the empirical finding will enable us to understand whether external and domestic shocks are likely to have permanent or transitory impact on the hotel room occupancy rate in Fiji. If the hotel room occupancy rate is a stationary series, then shocks to the hotel room occupancy rate will have transitory effects and series will return to its trend path over time following a shock (see, Ozcan, 2013; Shahbaz et al., 2014a). This implies that positive policy shocks or policy reforms to improve the hotel room occupancy rate will be less effective. However, if the hotel room occupancy rate is a non-stationary series, shocks to the hotel room occupancy rate will have permanent or persistent effects. Thus, it follows that any adverse shock emanating from external or internal source will have permanent or persistent impact on the hotel room occupancy rate. This presents a strong case for policy intervention, as positive policy shock will have positive permanent effects and likely to improve the hotel room occupancy rate (see, Barros et al., 2013; Lean and Smyth, 2014; Shahbaz et al., 2014a; Gozgor, 2016).

The empirical results from this paper will provide new insights on how external shocks such as the Global Financial Crisis (GFC), Asian Financial Crisis (AFC), imposition of adverse travel advice by foreign governments after political coups, and domestic shocks such as political coups, natural disasters and policy reforms are likely to impact hotel room occupancy rate in Fiji. If effects are found to be permanent, there is strong case for policy intervention not only to
safeguard investment in the hotel sector but also for sake of the macroeconomic performance given Fiji’s economy has increasingly become dependent upon tourism. In other words, policy measures are required to ensure the resilience of the hotel industry. The presence of a unit root in hotel room occupancy rate would also imply that that permanent policy changes to improve hotel room occupancy rate are likely to be more appropriate than temporary policy changes (Gozgor, 2016). Hence, the finding of this study is of enormous importance for understanding the effects of shocks, designing and evaluation of policy reforms in the hotel sector.

Second, understanding the unit root properties of the hotel room occupancy rate is also important for understanding the transmission process. Depending upon the extent to which the hotel room occupancy rate is strongly linked with other sectors of the economy, any adverse shock to the hotel room occupancy rate will be transmitted to other related variables such as hotel turnover, employment in hotel sector, tourism earnings, and real GDP, etc (see, Ozcan, 2013; Gozgor, 2016; Barros et al., 2013). This is based on the argument by Hendry and Juselius (2000) who point out that: “variables related to the level of any variable with a stochastic trend will inherit that non-stationary, and transmit it to other variables in turn”.

Third, understanding the unit root properties of the hotel room occupancy rate series is essential for modelling, testing and forecasting its future path. In particular, our finding has important implications for future econometric work on modelling the determinants of the hotel room occupancy rate. This can be quite important as understanding the determinants is the key to improving the hotel room occupancy rate and stimulating investment and growth in the hotel sector through policy intervention. If the hotel room occupancy rate is a stationary process, then
this implies vector autoregressive (VAR) or structural vector autoregressive (SVAR) technique can employed to understand its determinants of tax revenue. Variance decomposition and impulse response analysis can be employed to understand the sources of variation and influence of different domestic and external shocks on the hotel room occupancy rate. The stationary of the hotel room occupancy rate series also reduces the chances of obtaining spurious results (see, Narayan and Narayan 2010). The presence of non-stationary series implies that researchers should exercise caution in selecting the econometric methodology. For instance, if the hotel room occupancy rate is found to be a non-stationary process, this implies that modelling should be undertaken within a cointegration framework. If the hotel room occupancy rate is a non-stationary variable and is regressed against other non-stationary variables, in absence of cointegration, then the estimated regression would be spurious, and therefore result misleading policy implications.

Fourth, this study has implications for studies on forecasting the hotel room occupancy rate. Given that the hotel room occupancy rate is one of key indicators of the industry and tends to be an important input in the planning process, future studies on forecasting the hotel room occupancy rate should carefully analyse stationarity properties of the data. If the hotel room occupancy rate is a non-stationary process, this implies that the past behavior of its series is of little or no use for forecasting and the researcher would need to look at alternative factors influencing the hotel room occupancy rate. On other hand, if the hotel room occupancy rate is found to be a mean (trend) reverting process, this implies that the series will return to its mean value following shocks and past behavior can be used to formulate forecast of the hotel room occupancy rate (see, Barros et al., 2013; Gozgor, 2016; Lean and Smyth, 2013; Narayan and
Narayan 2010; Öztürk and Aslan, 2015; Shahbaz et al., 2014a; Shahbaz et al., 2014b). In addition, this study also employs unit root tests that identify the break dates endogenously. Since there could be several sources of structural break in the hotel room occupancy rate series, correct identification of breaks is essential for the purpose of adopting a proper specification of econometric models (see, Ewing and Wunnava, 2001).

To achieve our research objective, this paper employs a battery of unit root tests that allows for structural breaks. In recent years, several studies have been conducted on Fiji’s tourism industry. These includes studies on: impact of devaluation on tourism (Pratt, 2014), relationship between tourism and poverty (Scheyvens and Russell, 2012a; Scheyvens and Russell, 2012b), effect of political instability on tourism (Narayan, 2005a; Narayan, 2005b; Fletcher and Morakabati, 2008), influence of climate change on tourism (Becken, 2005), economy – wide impact of tourism (Narayan, 2004a), determinants of tourism demand and tourist expenditure (Narayan, 2002; Narayan, 2003; Narayan, 2004b), and issues, challenges and performance of the tourism industry (Narayan, 2000; Rao, 2002; Narayan and Prasad, 2003a), relationship between tourism and growth (Narayan and Prasad, 2003b; Kumar and Kumar, 2012). However, there has no major empirical study on the hotel room occupancy rate in Fiji – which is one of the key indicators for the hotel industry. This paper fills this gap in the literature and extends upon the above mentioned studies.

The rest of the paper is structured as follows. Section 2 provides an overview of the empirical analysis. Section 3 discusses the results, while Section 4 provides the concluding remarks.
2. Empirical Analysis

The data on the hotel room occupancy rate \((ROR_t)\) is extracted from various country economic reports by World Bank (1995); World Bank (1977); World Bank (1980) and Current Economic Statistics Report by Fiji Islands Bureau of Statistics (1986); Fiji Islands Bureau of Statistics (1985) and Statistical Annex by Reserve Bank of Fiji (2017). The sample period is restricted to 1969-2015. Our analysis starts by investigating the order of integration of the hotel room occupancy rate \((ROR_t)\) series using Augmented Dickey Fuller (ADF) test (Dickey and Fuller, 1979), and Phillip-Perron (PP) unit root test (Phillips and Perron, 1988). The details of these two unit root tests are not provided since they are well-known in the literature. An important aspect of our analysis is that we allow for structural breaks. This is an important consideration, as the tourism industry in Fiji, since the independence has been through number of economic and political shocks. These include: political coups in 1987, 2000, and 2006, Asian Financial Crisis in 1997-1998, Global Financial Crisis in 2008, and devaluation of the Fijian dollar by 20 percent in 2009, to name a few others. These shocks need to be considered, as failure to account for structural breaks can bias the unit root test towards non-rejection of unit root hypothesis (see, Perron, 1989). Accordingly, this study allows for a single structural break by using unit root tests developed by Zivot and Andrews (1992). To account for multiple structural breaks in the hotel room occupancy rate \((ROR_t)\) series, this study uses unit root test developed by Narayan and Popp (2010).

Zivot-Andrews (1992) Unit Root Test

This unit root test is implemented by estimating the following equation:

\[
\Delta ROR_t = \alpha_0 + \phi y_{t-1} + \beta T + \delta_i DU_t + \varphi_r DT_r + \sum_{j=1}^k \tau_j \Delta ROR_{i-j} + \nu_t \quad (1)
\]
The terms in equation (1) are defined as follows: $ROR_t$ is the hotel room occupancy rate; $T$ represents the time trend variable; while $\alpha_0$ is the constant term; $\Delta$ is the first difference operator, $\nu_t \sim iid (0, \sigma^2)$, $t = 1, \ldots, n$. Note, the term $\Delta ROR_{t-j}$ is included equation (1) is to account for autocorrelation and ensure that error term is white noise. $DU_t$ is an indicator dummy variable for a mean shift occurring at time $TB$, while $DT_t$ is the corresponding trending shift variable, where $DU_t = 1$ and $DT_t = t - TB$ if $t > TB$; otherwise 0.

The main parameter of interest is $\phi$. We follow Zivot and Andrews (1992) and set the ‘trimming region’ to: $[0.15, 0.85]$. The break date is determined by selecting the value of $TB$ for which the ADF $t$-statistic (absolute value of the t-statistic for $\phi$) is maximised. Equation (1) is the Model C version of the Zivot-Andrews (1992) unit root test that allows a change in both slope and intercept. The null hypothesis is that the series is an integrated process without a structural break against the alternative hypothesis that the series is a trend that is stationary with a structural break in the trend function that occurs at an unknown time. Our decision to consider Model C version test is based on the findings of a seminal study by Sen (2003), that demonstrated Model C version of the test minimises the loss of power and is relatively superior to Model A.

Narayan and Popp (2010) Unit Root Test with Two Structural Breaks

This study implements unit root test developed by Narayan and Popp (2010) to account for multiple structural breaks. While there are other unit root tests that allows for multiple structural breaks (e.g., Lee and Strazicich, 2003; Lumsdaine and Papell, 1997), in a recent study Narayan and Popp (2013) has found that unit root test developed by Narayan and Popp (2010) has a better size and high power and identifies break dates more correctly. Narayan and Popp (2010) unit
root test implemented by estimating the equations (2-3). Model 1 allows for two breaks in the level, while Model 2 allows for two breaks in the level and the slope. We estimate both models for the sake of consistency.

Model 1

\[ ROR_t^{M1} = \rho ROR_{t-1} + \alpha_1 + \beta_1 t + \theta_1 D(T_B^1)_{1,t} + \theta_2 D(T_B^2)_{2,t} \]
\[ + \delta_1 DU'_{1,t-1} + \delta_2 DU'_{2,t-1} + \sum_{j=1}^{k} \beta_j \Delta ROR_{t-j} + \epsilon_t \]  

(2)

Model 2

\[ ROR_t^{M2} = \rho ROR_{t-1} + \alpha_2 + \beta_2 t + \kappa_1 D(T_B^1)_{1,t} + \kappa_2 D(T_B^2)_{2,t} \]
\[ + \delta_1 DU'_{1,t-1} + \delta_2 DU'_{2,t-1} + \gamma_1 DT'_{1,t-1} + \gamma_2 DT'_{2,t-1} + \sum_{j=1}^{k} \beta_j \Delta ROR_{t-j} + \epsilon_t \]  

(3)

The unit root null hypothesis of \( \rho = 1 \) is tested against the alternative hypothesis of \( \rho < 1 \). In Model 1 and 2, the \( t \)-statistic of \( \hat{\rho} \) is denoted by \( t_{\hat{\rho}} \). The break dates in the hotel room occupancy rate \( (ROR_t) \) series is determined by either grid search or sequential procedure. However, break dates are not much different and sequential procedure is less computationally demanding (Narayan and Popp 2010).

3. Results and Discussion

Unit Root Test Results without Breaks

Table 1 report the ADF and Phillips-Perron unit root tests results for the hotel room occupancy rate in Fiji. All empirical analysis is this paper is undertaken in Eviews 9.0, Stata 13.0 and Gauss 15 packages. The test results indicate that the null hypothesis of a unit root is rejected in levels as
the ADF test statistic is significant at 1% level. However, the Phillips-Perron test statistic is not significant and it is not possible to reject the null hypothesis that the series has a unit root. However, both ADF test statistic and Phillips-Perron test statistic are significant and the null hypothesis of a unit root is rejected at 1 percent significance level when the hotel room occupancy rate series is expressed in the first difference. The ADF unit root test results imply that hotel room occupancy rate is a stationary series, while the PP unit root test results indicate that hotel room occupancy rate is a non-stationary series. Thus, the ADF and PP unit root test results are inconclusive, possibly due to the fact that we have not yet accounted for structural breaks in the series.

<table>
<thead>
<tr>
<th>Table 1. Unit Root Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In Level</strong></td>
</tr>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>ROR_t</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>In First-Difference</strong></td>
</tr>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Note: The reported values are test-statistics. Figures in bracket are probability values. *** indicates statistical significance at 1 percent level. C denotes constant; C & T denotes constant and trend.

Unit Root Test Results with a Single Break

Table 2 reports the unit root test results allowing for a single break. The unit root test is based on the Model C version of the Zivot-Andrews (1992) Unit Root Test that allows for a change in both slope and intercept. The test statistic is –5.062 and the estimated break date is 1978. The computed test-statistic of -5.062 is less than the critical value of -5.080 at 5% significance level. Thus, the null hypothesis of a unit root with a structural break in both the intercept and trend is
not rejected in the levels. When the unit root test was conducted with the hotel room occupancy rate expressed in the first difference, the test statistic is -7.235, exceeds the critical value of -5.570 at 1% significance level. Thus, the unit root hypothesis is not rejected in levels but in the first difference, implying that that hotel room occupancy rate is a I(1) variable.

### Table 2. Unit Root Tests with a Single Structural Break

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test-statistic</th>
<th>Break date</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ROR_t$</td>
<td>-5.062</td>
<td>1978</td>
<td>1</td>
</tr>
<tr>
<td>$\Delta ROR_t$</td>
<td>-7.235***</td>
<td>2006</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: *** indicates statistical significance at 1 percent level. k denotes the optimal lag length.*

Unit Root Test Results with Multiple Structural Breaks

Table 3 reports the unit root test results allowing for multiple structural breaks. The unit root test results using Clemente-Montañés-Reyes (1998) Unit Root Test results is reported in Panel A. The unit root hypothesis is not rejected in levels given that the computed test statistics are insignificant at 5% significance level. However, the test-statistics are statistically significant at 5% significance when the unit root test was conducted in the first difference of the series. The estimated break date according to AO model is at 2003 that is due to 2003 South Pacific Games. The second estimated break date is 2007 and is very close to political coup in December 2006 and start of Global Financial Crisis that could have affected the hotel room occupancy rate. Since the unit root hypothesis is not rejected in the levels but in the first difference, the results indicate that the hotel room occupancy rate is I(1) – a nonstationary series.
**Table 3. Unit Root Tests with Multiple Structural Breaks Results**

### Panel A: Clemente-Montañés-Reyes (1998) Unit Root Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model</th>
<th>Test-statistic</th>
<th>TB1</th>
<th>TB2</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROR(_t)</td>
<td>IO model</td>
<td>-4.869</td>
<td>1985</td>
<td>2007</td>
<td>1</td>
</tr>
<tr>
<td>Δ ROR(_t)</td>
<td>IO model</td>
<td>-7.362**</td>
<td>1986</td>
<td>2003</td>
<td>1</td>
</tr>
<tr>
<td>ROR(_t)</td>
<td>AO model</td>
<td>-3.519</td>
<td>2003</td>
<td>2007</td>
<td>0</td>
</tr>
<tr>
<td>Δ ROR(_t)</td>
<td>AO model</td>
<td>-7.590**</td>
<td>1985</td>
<td>2002</td>
<td>1</td>
</tr>
</tbody>
</table>

### Panel B: Narayan and Popp (2010) Unit Root Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model</th>
<th>Test-statistic</th>
<th>TB1</th>
<th>TB2</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROR(_t)</td>
<td>Model 1</td>
<td>-4.395</td>
<td>1986</td>
<td>1999</td>
<td>8</td>
</tr>
<tr>
<td>Δ ROR(_t)</td>
<td>Model 1</td>
<td>-6.477***</td>
<td>1986</td>
<td>1999</td>
<td>1</td>
</tr>
<tr>
<td>ROR(_t)</td>
<td>Model 2</td>
<td>-4.900</td>
<td>1986</td>
<td>1999</td>
<td>1</td>
</tr>
<tr>
<td>Δ ROR(_t)</td>
<td>Model 2</td>
<td>-6.489***</td>
<td>1986</td>
<td>1999</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note: the reported figures are test-statistics. *** indicates statistical significance at 1 percent level; ** indicates statistical significance at 5 percent level. TB1 denotes first break date; TB2 denotes second break date. AO (additive outlier) model allows for sudden change in mean; IO (innovational outlier) model allows for gradual change. The critical value at 5% significance level is -5.490. For Narayan and Popp (2010), the reported figures are test-statistics. The critical values for Model 1: 1% (-5.259); 5% (-4.514). The critical values for Model 2: 1% (-5.949); 5% (-5.181). The critical values were extracted from Narayan and Popp (2010). k is the optimal lag length.*

In Panel B of Table 3, we report results using Narayan and Popp (2010) Unit Root Test. Model 1 allows for two breaks in the level, while Model 2 allows for two breaks in the level and the slope. The unit root hypothesis is not rejected in the levels of the series regardless of the choice of model at 5% significance level. However, the unit root hypothesis is rejected in the first difference of the hotel room occupancy rate. The estimated first break date according to results reported in Panel A is 1986 and this is within before Fiji’s first political coup in 1987. The estimated second break date is 1999, and corresponds to May 1999 general elections. Hence, the hotel room occupancy rate is best described as a nonstationary process, I(1) implying that shocks are likely to exert an permanent impact on the hotel room occupancy rate. Different (internal or external) shocks are likely to have permanent on Fiji’s hotel room occupancy rate. Following shocks, the hotel room occupancy rate is unlikely to return to trend path. The evidence of nonstationary also implies shocks to the hotel room occupancy rate are likely to be transmitted to related variables and sectors of the economy.
4. Conclusion

Despite the adverse external conditions owing to the GFC and domestic political developments, the tourism industry has brought more than a billion dollar for Fiji’s economy. Whilst a growing body of empirical literature has investigated the link between tourism and macroeconomic performance, there is no empirical study that has systematically examined the behavior of the hotel room occupancy rate following external and domestic shocks. This article fills this gap. Using a suite of unit root tests, allowing for a single and multiple endogenous structural breaks, this study shows that the hotel room occupancy rate is a non-stationary process.

Our finding has implications for policy and research. First, non-stationary of the hotel room occupancy rate indicates that different external and domestic shocks have permanent impact on hotel room occupancy rate. Adverse external and domestic shocks are likely to have permanent impact on hotel room occupancy rate and hotel room occupancy rate is unlikely to return to its trend path following shocks. Second, since hotel room occupancy rate is a non-stationary process, other variables and sectors strongly linked with it will also inherit non-stationary and will adversely affected by an adverse external and domestic shock. This presents a strong case for policy intervention to shelter the hotel sector from adverse shocks.

In recent years, the government has implemented several tax-related measures to attract investment in the hotel sector. Our finding suggests that, to enhance long-term viability and build resilience of the hotel sector, additional measures are required to cushion the hotel sector against adverse external shocks. The finding of non-stationary also indicates that permanent policy measures are likely to be more effective than temporary policy measures (for e.g., hotel
discounts) to improve the hotel room occupancy rate. There is strong case for Fiji to tap into
different tourism markets and offer new tourism services such as cruise tourism, sports tourism,
and honeymoon tourism to make the industry more resilient.

Our finding has important implications for future forecasting work on the hotel room occupancy
rate. Given that the hotel room occupancy rate is a non-stationary variable, its past values will be
little use for forecasting, and as such, future studies should consider other determinants of the
hotel room occupancy rate. The non-stationary also suggest that future studies should exercise
great caution in selecting their econometric methodology while modelling the hotel room
occupancy rate or regressing it on another non-stationary variable, in the absence of a
cointegrating relationship, as this will yield spurious regression. This study was restricted to Fiji.
Future studies can undertake a similar analysis for other tourism dependent economies and
considering modelling hotel room occupancy rate and identifying its key determinants.
Declaration of conflicting interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Notes

1. The earnings are measured Fijian dollars unless and otherwise stated
2. I wish to thank Professor Paresh Narayan for generously sharing Gauss Code to implement Narayan and Popp (2010) unit root test. Any remaining errors are my responsibility.
References


Smyth R, Nielsen I and Mishra V. (2009) 'I've been to Bali too' (and I will be going back): are terrorist shocks to Bali's tourist arrivals permanent or transitory? *Applied Economics* 41: 1367-1378.


