Tourism and Hotels in Sarawak: Economic Performance

Dayang Hummida Abang Abdul Rahman\textsuperscript{a}, A.M Dayang-Affizzah\textsuperscript{b}, Salbiah Edman\textsuperscript{a,b,*}

\textsuperscript{a}Dayang Hummida Abang Abdul Rahman, Department of Economics, Kota Samarahan, 94300 Sarawak, Malaysia
\textsuperscript{b}A. M Dayang Affizzah, Department of Economics, Kota Samarahan, 94300 Sarawak, Malaysia

Abstract

This study investigates the relationship between output growth in the hotels industry in Sarawak (in term of Revenue), tourist arrivals, exchange rate and economic growth in Sarawak, using the time series data from 1975 to 2004. An Augmented-Dickey Fuller (ADF) unit root test, Johansen and Juselius cointegration approach and causality test based on Vector Error Correction Model (VECM) were deployed to run the analysis. The findings show the existent of the long-run and short-run relationship between the variables. Besides that, the results reveal that tourist arrivals have a positive impact on growth. However exchange rate has a negative impact on economic growth.

Keywords: economic growth ; causality

1. Introduction

The tourism expansion is one of the important determinants of economic growth (Hall, 1997) and there were 2,028 hotels operating in the hotel industry in 2004 against 1,984 hotels in 2003. Growth in the hotel industry was attributed mainly to the increase in tourist arrivals into Sarawak. Tourism is an activity that has flourished tremendously over the years as a source of revenue to the country. Tourism sector is one of the important generators of national wealth and employment creation and contributed as the

\textsuperscript{*} Salbiah Edman. Tel.: +082-584427; fax: +082-583999.
E-mail address: esalbiah@feb.unimas.my
economic engine for developed and developing economies worldwide (World Tourism Organization, 2008). This study had been done with the purpose to analyze the relationship between hotels revenue, tourist arrivals, exchange rate and growth domestic product (GDP) in Sarawak. This study can provide some important point to government on the causal relationship between the selected variables. By knowing the relationship, the government able to design appropriate policy that can improve tourism sector. In order to maintain outstanding contribution of tourist arrivals towards hotels industry in Sarawak and generally in Malaysia the policy makers should adopt and establish the policy guidelines such as establishment of a good hotels infrastructure for the development of the hotels industry. For instance, give more attention on hotel services so that the tourists become more comfortable.

2. Literature Review

According to the World Tourism Organization (2008), tourism is all activities that occur when tourists do their travel. In addition, Rita (2000) found that as the largest generator of wealth and employment in the world, tourism is the economic engine for developed and developing economies worldwide by using the European Social Model. Then, Ghost, Siddique and Gabbay (2003) pointed out that the tourism has become an engine to promote economic development. Balaguer and Cantavella-Jorda (2002) find out a stable long run relationship between tourism and economic development by using standard Granger (1969) causality test. They further found that tourism affected Spain’s economic growth in one direction, so they support that the tourism-led growth hypothesis. Then, Dritsakis (2004) who also investigates the impact of the tourism sector on the long-run economic development of Greece showed that there was cointegration relationship between GDP, real effective exchange rate and tourism earning. The Granger causality test based on Error Correction Models exhibited a strong Granger causal relationship between international tourism earning and economic growth and exchange rate. Furthermore, Jeffrey and Hubbard (1998) found that the numbers of the tourist arrival is important to demonstrate the output of hotels industry. On the other hand, Jasmina (2008) pointed out that the recent trend of demand and the direction of hotel industry could be determined by the number of tourist arrivals. Besides, tourism and hotel business is becoming one of the leading industries of the world. Furthermore, Kim (2005) found that there is strong Granger causal relationship between international tourism earnings and economic growth and a strong causal relationship between exchange rate and economic growth. Thus, this situation will affect the number of tourist arrivals and output of hotels industry as well. It able to examines the magnitudes and determinants of changes in destinations shares of a major tourist origin. Besides that, Divisekera (2003) found Tourism Price Indices could be use to proxy prices that would not result in biased price elasticity. Different to Sanchez, Callarisa, Rodriquez and Moliner (2004), their study indicate both the cognitive and the affective components play a fundamental role in explaining purchase and consumption behavior in tourism sector.

3. Methodology

3.1 Theoretical Framework

The hotels demand function can be implementing as:

\[ Y_{HO_t} = f(GDP_t, TA_t, ER_t) \]  

Where \( Y = \) aggregate output of hotels; GDP is real economic growth; TA is number of tourist arrivals; ER is exchange rate and subscript \( t \) denonots the time series period. After taking the log for the appropriate variables, we obtain:

\[ \ln Y_{HO_t} = \mu + \beta_1 \ln GDP_t + \beta_2 \ln TA_t + \beta_3 ER_t + \epsilon \]  

\[ \text{(2)} \]
3.2 Unit Root and Stationary Testing Procedures

The variables under investigation must be stationary time series by using any regression analysis (Gujarati, 1995). Therefore, the unit root test developed by Dickey and Fuller (1979, 1981) and Phillip Perron (1988) had been applied for unit root tests. The purpose is to test the existence of unit root for the variables under investigations.

3.3 Cointegration Test Procedures

The system-based cointegration procedure developed by Johansen and Juselius (1990) has been adopted in this study to test the absence or presence of long run equilibrium.

3.4 Granger Causality Test

Granger Causality Tests based on Vector Error Correction Model (VECM) is deployed when cointegration is detected. The purpose is to avoid problem of misspecification (Granger, 1988). The existence of a cointegrated relationship in the long run indicates that the residuals from the cointegration equation can be used as ECT as below.

\[
\Delta \ln H_0 = \chi_0 + \sum_{i=1}^{n} \gamma_1, i \Delta \ln H_0 t-1 + \sum_{i=1}^{n} \gamma_2, i \Delta \ln GDP t-1 + \sum_{i=1}^{n} \gamma_3, i \Delta \ln TA t-1 + \sum_{i=1}^{n} \gamma_4, i \Delta \text{ER} t-1 + \mu_3 \text{ECT} t-1 + \zeta t
\]  

\[
\Delta \ln GDP = \alpha_0 + \sum_{i=1}^{n} \beta_1, i \Delta \ln H_0 t-i + \sum_{i=1}^{n} \beta_2, i \Delta \ln GDP t-i + \sum_{i=1}^{n} \beta_3, i \Delta \ln TA t-i + \sum_{i=1}^{n} \beta_4, i \Delta \text{ER} t-i + \mu_4 \text{ECT} t-i + \zeta t
\]  

\[
\Delta \ln TA = \delta_0 + \sum_{i=1}^{n} \phi_1, i \Delta \ln H_0 t-i + \sum_{i=1}^{n} \phi_2, i \Delta \ln GDP t-i + \sum_{i=1}^{n} \phi_3, i \Delta \ln TA t-i + \sum_{i=1}^{n} \phi_4, i \Delta \text{ER} t-i + \mu_5 \text{ECT} t-i + \zeta t
\]  

\[
\Delta \text{ER} = \eta_0 + \sum_{i=1}^{n} \rho_1, i \Delta \ln H_0 t-i + \sum_{i=1}^{n} \rho_2, i \Delta \ln GDP t-i + \sum_{i=1}^{n} \rho_3, i \Delta \ln TA t-i + \sum_{i=1}^{n} \rho_4, i \Delta \text{ER} t-i + \mu_6 \text{ECT} t-i + \zeta t
\]  

4. The Empirical Results

4.1 Test results for unit roots

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Variables} & \tau_\tau (ADF) & \tau_\mu (ADF) & \tau_\tau (PP) & \tau_\mu (PP) \\
\hline
\ln H_0 & -1.629834(2) & -1.525883(0) & -2.505007(2) & -1.686524(2) \\
\ln GDP & -1.432795(5) & -1.755558(6) & -2.525360(0) & -2.302200(4) \\
\ln TA & -0.616973(0) & -1.696299(0) & -0.630273(1) & -1.696299(0) \\
\text{ER} & -0.659507(0) & -2.650337(0) & -0.604010(2) & -2.610437(3) \\
\hline
\Delta \ln H_0 & -3.932(0)** & -3.8860(7)** & -3.886410(1)** & -4.396566(1)*** \\
\Delta \ln GDP & -2.858536(4)* & -4.230160(0)** & -4.232335(6)** & -4.461766(9)** \\
\Delta \ln TA & -4.899100(0)** & -4.803629(0)** & -4.901103(2)** & -6.206108(2)** \\
\Delta \text{ER} & -5.711978(0)** & -5.759924(0)** & -5.785136(4)** & -6.209331(6)** \\
\hline
\end{array}
\]

Note *, ** and *** denote significant at 10 percent, 5 percent and 1 percent levels respectively. ADF stands for Augmented Dickey Fuller; PP for Philip Perron; \( \tau_\tau \) represents the most general model with drift and trend; and \( \tau_\mu \) is
the model with a drift and without trend. Numbers in brackets are numbers of lags used in the ADF and PP test in order to remove serial correlation in the residuals. Symbol \( \Delta \) represents the corresponding variable in first differences.

The result indicates that the null hypothesis cannot be rejected in levels form for all variables as the series contain a unit root or non-stationary. Since all variables found to be non-stationary at levels, then the first difference for whole models are taken and the results show that the null hypothesis of non-stationary is rejected and all of variables are integrated of order one, \( I(1) \). Thus the entire variable have the same order of integration allowed us to proceed with Johansen cointegration analysis, aiming at investigating whether there exist long run relationships among these variables.

### 4.2 Test results for cointegration

#### Table 2: The Johansen and Juselius Cointegration Test Results

<table>
<thead>
<tr>
<th>( H_0 )</th>
<th>( H_A )</th>
<th>Eigenvalues</th>
<th>( \lambda_{\text{max}} )</th>
<th>( \lambda_{\text{trace}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( r = 0 )</td>
<td>( r &gt; 0 )</td>
<td>0.774371</td>
<td>40.19928**</td>
<td>75.21468**</td>
</tr>
<tr>
<td>( r \leq 1 )</td>
<td>( r &gt; 1 )</td>
<td>0.634982</td>
<td>27.21082**</td>
<td>35.01540*</td>
</tr>
<tr>
<td>( r \leq 2 )</td>
<td>( r &gt; 2 )</td>
<td>0.237209</td>
<td>7.310822</td>
<td>7.804588</td>
</tr>
<tr>
<td>( r \leq 3 )</td>
<td>( r &gt; 3 )</td>
<td>0.018121</td>
<td>0.493767</td>
<td>0.493767</td>
</tr>
</tbody>
</table>

Note: *and ** denote significant at 10 percent and 5 percent levels respectively.

The Johansen and Juselius (1993) we deployed to test the presence of multiple cointegrating vectors. A recent study by Gonzalo (1994) provides the optimal lag length for the Vector Autoregressive (VAR) to support Johansen procedure’s relatively superior performance over other methods for testing the order of cointegration rank. The main idea behind cointegration is a specification of models that include beliefs about the movements of variables relative to each other in the long run. Based on the cointegration results, the computed test statistic value for both \( \lambda_{\text{max}} \) and \( \lambda_{\text{trace}} \) statistics, are greater than the critical value of both 90% and 95%. It is means that the null hypothesis of cointegrating vector was rejected at 10% and 5% significance level.

### 4.3 Test results for Granger-causality

#### Table 3: Granger Causality Results

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>LnHO</th>
<th>LnGDP</th>
<th>LnTA</th>
<th>ER</th>
<th>ECT(_{t-1})</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV</td>
<td>LnHO</td>
<td>LnGDP</td>
<td>LnTA</td>
<td>ER</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LnHO</td>
<td>-</td>
<td>1.002691</td>
<td>0.642937</td>
<td>0.717717</td>
<td>4.08E-10</td>
</tr>
<tr>
<td>LnGDP</td>
<td>1.042546</td>
<td>-</td>
<td>0.379572</td>
<td>1.132968</td>
<td>1.09E-09*</td>
</tr>
<tr>
<td>LnTA</td>
<td>4.690539**</td>
<td>1.076253</td>
<td>-</td>
<td>1.156098</td>
<td>6.30E-10</td>
</tr>
<tr>
<td>ER</td>
<td>1.136141</td>
<td>1.758569</td>
<td>0.040484</td>
<td>-</td>
<td>-1.69E-10</td>
</tr>
</tbody>
</table>

Note: *and ** denote significant at 10 percent and 5 percent levels respectively.

The results show that GDP appears to be the initial receiver of any exogenous shocks that disturb the equilibrium of the system. This is evidenced in the statistically significant error correction term (ECT) in the GDP equation. The coefficient of ECT in GDP equation is 0.256 indicating that about 25 percent of the adjustment is completed in a year. This means that Sarawak need approximately 4 years to reach long run equilibrium from the estimated results. Mean while, the causal relationship between the variables are presented in figure 1. The results show that HO, ER, TA and GE driven the economic growth in Sarawak. In the same manner, the result also indicates that GE is driven by TA. Hence, it may conclude there is one way causality relationship between the variables in the short run as illustrated in figure 1.

Figure 1. Direction of causal relationships
Note: LER → LGDP implies one-way causality relationship.

5. Conclusion

In this study the cointegration analysis results prove the existence of cointegration relationship between government expenditure (LGE), Hotels industry (LHO) and tourist arrival (LTA) towards economic growth (LGDP) which escalating the growth of tourism sector in long run. In contrast, the exchange rate shows a negative direction in relationship to economic growth. The effectiveness of the exchange rate and government expenditure toward Sarawak GDP present in the long-run period. The government spending for tourism sector and exchange rate does not have much ability to influence the economic development in the short-run as compared to tourist arrivals. Besides, the increment in the number of tourist arrival will lead to the expansion of hotels performance as well as contribute to the economic performance in Sarawak. As conclusion, the study infer that the significant impact of tourism sector and hotels industry in Sarawak’s economy justify the necessity of public intrusion aimed at promoting and increasing tourism demand as well as tourism industry. It is also an effort in providing and fostering the growth of tourism supply. The increasing demand of tourism sector as increasing of tourist arrival in Sarawak has obligated the government to invest more funds and incentives to upgrade the tourist infrastructure and attract more tourists to Sarawak.

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Department of Tourism. Malaysia Tourism (1995) Ranked No. 3 in Asia, 4-5.


