

The Role of Monetary Factors in the Malaysian Tourism Industry: An ARDL Approach to Cointegration

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Abstract *The purpose of this research is to investigate the impact of monetary factors in the Malaysian tourism sector. Monetary considerations are expected to greatly impact economic activity as they affect consumer spending decisions. This study examines the impact of monetary policy on the tourism sector in Malaysia through monetary aspects such as the bank lending rate, exchange rate, inflation and interest rate by employing an autoregressive distributed lag (ARDL) approach. The result shows that tourists are not concerned about their spending but consider the quality of a tourist destination. The interest rate was significant and it implies a negative relationship with tourism revenue which concurrence with economic theory. It also confirms that there is no evidence for a tourism-related crowding-out effect due to the changes in the interest rate. The monetary policy is not significant enough to influence the tourism revenue in Malaysia. There is a long-run relationship exists between the variables but does not play an important role in determining the long-run behavior of Malaysian tourism revenues. The study findings confirm that tourists are not strongly interested in monetary factors, but they may be concerned about other external factors that influence their decision to visit Malaysia.*

Keywords: *Tourism Revenue, Monetary Policy, Exchange Rate, Inflation, Interest Rate, ARDL Approach*

INTRODUCTION

Tourism represents a major component of global economic and regional development and is considered a major industry worldwide. Tourism has grown and diversified into one of the largest and most rapidly growing economic sectors worldwide and contributing greatly to economic growth in recent decades. Over time, an increasing number of destinations have opened to tourism, turning tourism into a major driver of socioeconomic progress. The globalisation which has an effect on both the economy and the tourism industry, could give the opportunity to adapt monetary policy (Wagner, 2005). In the debate of monetary dimensions of globalization, the monetary and exchange rate policy cannot be ignored.

Malaysia's abundant and unique natural resources make it a suitable destination for sustainable tourism (Kusni,

Kadir & Nayan, 2013). Tourism expenditures not only contribute significantly to sectors of the economy that are directly related to tourism but also produce a ripple effect on other sectors of the economy (Guo, Robinson & Hite, 2017; Kadiyali & Kosová, 2013). According to World Travel and Tourism Council (WTTC), Malaysian tourism has contributed 11.5% of Malaysia's GDP in 2019 which is larger than banking, automotive manufacturing, chemical manufacturing, construction and financial services sectors. In 2019, Malaysia's tourism sector increased by 6.6% while GDP growth for the real economy grew by 4.4%. Malaysian tourism generated either directly or indirectly 14.7% of Malaysian employment in 2019. The industry is expected to grow with an annual average of 5.2% for next decade (Council, 2020). Malaysia's tourism sector reported growth which surpassed its 2019 targets with RM 93.1 billion in tourist receipts and RM 82.2 billion in revenues in Malaysia, with RM 69.1 billion in 2012. As monetary policy effectively

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changes the currency value and the exchange rate can influence various sectors of the economy, any variation in the exchange rate or the value of the currency will immediately influence the tourism sector, thereby impacting various activities related to it and, ultimately, economic growth. For example, a country's transportation, hospitality, and food shopping might become expensive or inexpensive relative to the country's exchange rate (Awad & Sirag, 2018; Forsyth, Dwyer & Spurr, 2014; Jena Nihar & Sethi, 2019; Onafowora & Owoye, 2012; D. Wang & Ap, 2013). (Apergis & Cooray, 2018) pointed out that depreciation of real exchange rates retains a greater influence than appreciation on poverty. The currency will strengthen as the business cycle stabilizes according to international economic theory. This may adversely affect the disposable income of households and thus budget decisions. Furthermore, remittances can adversely affect economic growth by means of various mechanisms, including depreciation rather than appreciation of the currency (Awad & Sirag, 2018). As tourism and its related services and goods are considered a more elastic good or at par with luxury goods, we can assume tourism and its sectors to be negatively affected.

As economic theory suggests, changes in exchange rates can be influenced by monetary policy (Leeper & Leith, 2016; Levy Yeyati & Sturzenegger, 2010; Lowinger, 1978; Shokr Mohamed, Abdul Karim, & Zaidi Mohd Azlan, 2019). (Taylor, 2001) established a monetary policy rule that reacts directly to the exchange rate as well as inflation and output. As a country's currency depreciates, international tourism becomes less costly and leads to increased travel flows into that country, and vice versa (Aratuo David, Etienne Xiaoli, Gebremedhin & Fryson David, 2019; De Vita & Kyaw, 2013; Kim, Lee & Mjelde, 2018; Song, Dwyer, Li & Cao, 2012; Song, Wong & Chon, 2003; Wu, Li & Song, 2012). This mode of analysis implies an obvious relationship between monetary policy and tourism.

The focus of this research is to assess the impact of monetary policy in Malaysia on the tourism sector. Tourism will play a prominent role in achieving the goal for a country like Malaysia, which aims to become a developed country. The tourism sector needs to be taken seriously because of its importance and its potential. It is necessary to consider the arrivals and receipts associated with touristic development in Malaysia, to understand the impact of monetary policy on tourism. UNWTO reports that the global tourism arrivals in 2018 increased by 6% to 1.4 billion, which is substantially greater than the global economy's 3.7% growth.

According to the latest (UNWTO, 2020) World Tourism Barometer, international tourist arrivals worldwide increased by 6% in 2018, reaching a record 1,087 million arrivals, and the demand for international tourism was strongest for destinations in Asia and the Pacific (+6%), where the leading sub-region was South-East Asia (+10%). However,

The pandemic COVID-19 saw a 60% drop in arrivals for continents, Asia and the Pacific in January-May 2020 and that report did not focus explicitly on the strength or weakness of the currency, which was, in turn, influenced by monetary policy.

MONETARY FACTORS AND THEIR IMPACT ON TOURISM

Monetary policy can influence a number of indices, such as the country's exchange rate, inflation rate, and currency value; see (Abbassi & Linzert, 2012; Cioran, 2014; McCallum & Nelson, 2010; Taylor, 2001; Wagner, 2005). A variety of factors that produce currency fluctuations can influence tourism. Transportation costs, hospitality, food and shopping costs can be expensive or inexpensive relative to the monetary policy followed by the central bank of the country. For example, the depreciation of the currency might attract more international tourism because tourists have greater purchasing power than domestic residents, whereas the appreciation of the currency would give domestic tourists greater purchasing power than international tourists. In a sense, these possible responses mean that monetary policy has an influence on the value of the currency and therefore on tourism, international and domestic. (Blom, 2000) examined tourism's effect on the local economy, and found it obvious that, if depreciation and investment is taken into account, it is unlikely that a similar investment will provide viable private commercial financing.

Macroeconomic policies in ASEAN countries could have had an important impact on equal development and growth. (Sabir & Qamar, 2019). The tax policy aimed at facilitating exports of minerals from Australia, (Forsyth et al., 2014) argue, has a negative impact on other sectors of the economy and a crowding effect. Due to substantial capital investments in the mining industry, the interest rate is increasing and has raised overall commodity prices. This growth encourages a massive inflow of capital. The currency is boosted by higher interest rates, but it also makes Australia an important tourist destination. The increase in commodity prices would further tighten monetary policies in order to stabilize the economy, thus further increasing the rate of interest. This increase is not only unwanted for international tourists, but also attracts foreign destinations for domestic travelers, thereby adversely affecting tourism growth. In the tourism sector growth will be generated by rational, far-sighted development policies and a stable currency policy.

Changes in the exchange rate affect various industries in different ways. Although changes in the value of currency might not have strong effects on the travel plans of individuals with relatively high incomes, such changes most certainly affect the travel plans of middle-income groups in a negative fashion, consistent with explanations

based on Keynes' theory of consumption see (D'Orlando & Sanfilippo, 2010; Trimble, 1961). The negative relationship between exchange-rate volatility and touristic flows was indeed found (Agiomirgianakis, Serenis & Tsounis, 2015; De Vita & Kyaw, 2013). The depreciation of another country's currency can make that country an attractive destination for international tourists (Cheng, Kim & Thompson, 2013). While promoting avenues for development, tourism also provides more information about the country to the rest of the world, thus indirectly promoting tourism (Reza Jalilvand, Samiei, Dini & Yaghoobi Manzari, 2012).

The Malaysian tourism department has been promoting international tourism since 1972. The 'Malaysia, Truly Asia' campaign of 1999 changed the face and scope of Malaysian tourism. The Asia-Pacific region is visited by 7% of all tourists. This percentage may be compared with the 3% increase in international tourism in 2013 (Ramli, 2014). "In 2017, Malaysia received a total of 25,948,459 international tourists and recorded a 0.1% growth in tourist receipts" (Mansor, 2018). Malaysia's new economic transformation program has accorded due importance to tourism by especially incorporating the Malaysia Tourism Transportation Plan [MMTP]. The MMTP expects to earn RM 68 billion from 36 million international tourists. This amount is an increase of almost an RM 3 billion increase in revenue every week, a threefold increase in foreign exchange. This information highlights the importance of putting monetary policy into effect. Unless the appropriate monetary policy does not help such an ambitious plan, otherwise the plan will never achieve its objectives.

The appreciation or depreciation of currency is expected to influence various sectors of the economy. When a central bank takes precautionary actions to stabilize the fluctuations of the business cycle during the recessionary period, the money supply in the market is expected to increase to reduce the pressure on the interest rate. Therefore, the interest rate may decrease, producing increases in consumption, investment and net exports. This monetary action, for example, may cause the currency to depreciate. Tourists from abroad may then consider that it is less expensive to visit the country because its currency has become less expensive than that of their own country. This action directly affects tourism because tourism is considered one of the main engines of growth (Chatziantoniou, Filis, Eeckels & Apostolakis, 2013; del P. Pablo-Romero & Molina, 2013; Pokharel, Poudel, & Grala, 2018; Wang, 2009; Wang, 2014). The present study is the first to address the possible influence of monetary policy on tourism. Numerous literature reviews have investigated the ways that various levels of policy influence the tourism industry.

Previous studies have underscored the role of tourism in fostering economic growth. Several studies have shown that these factors positively influence each other, but other studies

have found no significant influence of these factors on each other (Albaladejo, González-Martínez, & Martínez-García, 2014; Chou, 2013; del P. Pablo-Romero & Molina, 2013; Jalil, Mahmood, & Idrees, 2013; Jayaraman, Lin, Haron & Ong, 2011; Lawal, Nwanji, Asaleye & Ahmed, 2016; Lee & Chang, 2008; Lee & Brahmašrene, 2013; Pan, Liu & Wu, 2014; Tugcu, 2014).

Investing in a specific industry may negatively influence other industries, producing a crowding-out effect. The high level of government investment in the Australian mining industry may be negatively related to the tourism industry and may produce a crowding-out effect in the economy (Forsyth et al., 2014). (Su, Lin & Liu, 2012) have indicated that Taiwan's openness policy may produce a crowding-out effect. The country's capacity to absorb tourism and the implementation of the openness policy may negatively influence tourism. The demand and supply sides of the market may influence the tourism industry. (Chatziantoniou et al., 2013) found that aggregate demand positively influences tourism, whereas the supply side does not. The financial crisis has also had a negative impact on certain countries and was directly linked with consumption (Eugenio-Martin & Campos-Soria, 2014). Consumers may look ahead and may therefore reduce their consumption when they consider the decrease in their disposable income and its negative influence on aggregate demand. In this situation, most countries may fine-tune their policy, especially their monetary policy. This approach may have either a positive or a negative influence on the dependence of tourism on monetary policy. Few studies have evaluated the influence of monetary policy on tourism. However, non-economic factors also play a noteworthy role in the demand for tourism (Eugenio-Martin & Campos-Soria, 2014; Onafowora & Owoye, 2012; Sussmuth & Woitek, 2013; Taecharungroj & Tansitpong, 2017; Tica & Kozić, 2015; Vinh & Phuong, 2017). Tourism usually increases with increases in income. However, increased income may also negatively influence tourism. Consumers might continue to be concerned about the performance of the economy, and they may not gain sufficient confidence to make a choice to increase spending when their disposable income increases. In the UK and Germany, people prefer to travel abroad if their income increases, whereas people in France and Italy prefer to travel domestically if their income increases (Alegre, Mateo & Pou, 2010, 2013).

In support of the argument that depreciation promotes tourism (Fish & Gibbons, 1987), (Cheng et al., 2013) found that depreciation in the US currency increases export revenue, implying that tourism demand responds to elasticity in US prices. Foreign visitors to the US are sensitive to the exchange rate. Foreign tourists rely on their income when they travel in the US, and wealthy tourists use their wealth to participate in tourism. These findings strengthen the Permanent Income Hypothesis (Engsted, 2002).

The relationship between tourism receipts, real income and the exchange rate in Malaysia was investigated by (Tang, 2013), who found a long-run relationship between these variables but no short-run relationship. (Tang, 2011) asked whether tourism produced economic growth in Malaysia and noted that not all international markets produce economic growth. No previous studies have investigated the possible influence of monetary policies on tourism.

The present study aims to investigate to what extent monetary policy is a factor affecting tourism in Malaysia. This area has not been extensively studied, although tourism is considered to have a prominent role in the hopes for development in Malaysia (Camelia, Nuno Carlos & Surugiu, 2011; Hall, 2001; Horng & Tsai, 2010; Kusni et al., 2013).

METHODOLOGY-ARDL BOUNDS TESTING PROCEDURE

For this study, The sample covers 38 years of annual data for 1980-2018 were collected from the World Development Indicators database (Bank, 2019) and the data collected from various issues of Malaysia Economics Statistics by the Department of Statistics Malaysia. To avoid the seasonality problems, annual data were used. A number of studies in this area have pointed out that the interbank interest rate affects significantly the economy's economic activities and this option requires a strong mechanism for the transfer of interest rates. To analyze monetary policy, we can use the interbank interest rate as a proxy for monetary policy, as this choice of a proxy is the common practice in the literature on the topic (Abuka, Alinda, Minoiu, Peydró & Presbitero, 2019; Freixas & Jorge, 2008; Gomez-Gonzalez, Kutun, Ojeda & Ortiz, 2020; Md Yusuf & Md Zain, 2020). Where as, the total tourism receipts are also used as the proxies for tourism revenue (Belloumi, 2010; Ohlan, 2017; Taizeng, Can, Paramati, Fang & Wu, 2019). It is a gathered variable which the aggregate nominal tourism receipts are deflated by CPI. For the purposes of our analysis, total tourism receipts expressed as the natural logarithm and INF is inflation rate, where as CPI is the Consumer Price Index (2005 prices). EXCH is exchange rate that is defined as number of units of domestic currency per US likelihood that the variables

will not cause problems with the data analysis due to non-normality.

The tightening of monetary policy by the central bank to stabilize the business cycle may increase the real interest rate if the central bank follows the Taylor principle of increasing the nominal interest rate to the expected level of inflation. This process of appreciation may affect all sectors of the economy, especially the exchange rate. The appreciation of the currency may affect tourism, making it more expensive for the international tourist. However, this process is good news for the domestic tourist because travelling outside the country is less expensive. In the same way, the easing of monetary policy produces a decrease in the real interest rate, and the currency may depreciate, making tourism more affordable for the international tourist and more expensive for the domestic tourist. Banka Nagera has not adopted Taylors principle for interest rate decision, but they have given consideration to current or future information, which is one of the important part of element of Taylors principle (Abdul Karim, Zaidi & Azman-Saini, 2016; Hasni Shaari, 2008).

In an economy, different factors can influence the economic variables. Structural breaks or disturbances can occur due to political, economic and social changes. As a result, we need to examine short-run and long-run dynamic interactions among tourism revenue, monetary policy, inflation and the exchange rate. Past studies in tourism have examined structural changes and the ways in which they influence the development of tourism. It is believed that the usual unit root test may have little power if the actual data generating process of a known linear trend is stationary. (Perron, 1997) stated that a known structural break in a time series makes the series non-stationary.

This paper uses the autoregressive distributed lag (ARDL) approach developed by (Pesaran, Shin & Smith, 2001) to determine the short-run and long-run dynamics governing the variables of interest. The ARDL approach utilizes a single reduced form and allows regressors to have the form of an I(0) or I(1) processor both or mixtures of both to establish the long-run relationships between variables. This model can adapt relatively well to finite samples of data. The ARDL model applied in this study is as follows:

$$\begin{aligned} \Delta \ln(TTR)_t = & \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta \ln(TTR)_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta(MONP)_{t-i} + \sum_{i=0}^p \alpha_{3i} \Delta(EXCH)_{t-i} \\ & + \sum_{i=0}^p \alpha_{4i} \Delta(INFL)_{t-i} + \sum_{i=0}^p \alpha_{5i} \Delta(INT)_{t-i} + \epsilon_t \end{aligned} \quad (1)$$

where Δ is the first difference operator, p is the optimal lag length, ϵ_t is a white noise disturbance term, and the variables are tourism revenue (TTR), monetary policy (MONP), exchange rate (EXCH), inflation (INFL) and interest rate (INT), respectively.

Cointegration between tourism revenue and monetary variables is examined through an OLS estimation of (1) and by estimating an F statistic for the joint significance of the coefficients of the lagged levels. To test for the presence of a long-run relationship between variables, we can use an F test (Wald test) under the null hypothesis of no cointegration. This null hypothesis may be written in the form $H_0: \alpha_{1i} = \alpha_{2i} = \alpha_{3i} = \alpha_{4i} = \alpha_{5i} = 0$ and tested against the alternative hypothesis. Under this procedure, the two critical values are given by (Pesaran et al., 2001) for the cointegration test.

$$\begin{aligned} \ln(TTR)_t = & \alpha_1 + \sum_{i=1}^p \phi_{1i} \ln(TTR)_{t-i} + \sum_{i=0}^p \theta_{2i} (MONP)_{t-i} + \sum_{i=0}^p \beta_{3i} (EXCH)_{t-i} \\ & + \sum_{i=0}^p \delta_{4i} (INFL)_{t-i} + \sum_{i=0}^p \vartheta_{5i} (INT)_{t-i} + \epsilon_t \end{aligned} \quad (2)$$

After the issue of causation is examined, the short-run dynamics of the variable can be determined based on an error correction model (ECM) based on equation (1). The ECM is based on the assumption that the time s

The lower bound assumes that all variables are integrated of order zero, while upper bound assumed that all variable integrated of order one. The null hypothesis that all variables are not cointegrated can be rejected if the tabulated F value is greater than the critical value given by the upper bound. We cannot reject the null hypothesis if the tabulated F value is lower than the critical value given by the lower bound. No conclusion can be reached about the cointegration of a variable if the tabulated F value falls between the upper and lower bounds. The optimal selection of a lag length (k) of 2 is made based on the general-to-specific model selection approach furnished by the Schwarz (Bayes) Criterion (SBC). The following long-run model is estimated if there is any evidence of a long-run relationship between the tourism and monetary variables:

eries variables show a relationship that determine the short-run behavior (Granger & Newbold, 1974). The ECM can be estimated with a two-step procedure as follows:

$$\begin{aligned} \Delta \ln(TTR)_t = & \alpha_0 + \sum_{i=1}^p \theta_{1i} \Delta \ln(TTR)_{t-1} + \sum_{i=0}^p \phi_{2i} \Delta (MONP)_{t-1} + \sum_{i=0}^p \gamma_{3i} \Delta (EXCH)_{t-1} \\ & + \sum_{i=0}^p \delta_{4i} \Delta (INFL)_{t-1} + \sum_{i=0}^p \psi_{5i} \Delta (INT)_{t-1} + \varphi ECT_{t-1} \\ & + \vartheta_t . \end{aligned} \quad (3)$$

The coefficients of the short-run equation are associated with the short-run dynamics and φ represents the speed of adjustment.

There is a need to test the constancy of regression relationships over time when regression analysis is applied to time series data. The CUSUM test is based on the examination of plots that serve to reveal departures of the means of the variables from zero as one progresses along the series through time. The coefficient estimates are static if the plots of the CUSUM and the CUSUM Sum of Squares remain within a 5% significance level (represented by two straight lines, which are based on equations developed by (Brown, Durbin & Evans, 1975).

ANALYSIS AND DISCUSSION

The ARDL framework does not require the pre-testing of each variable at order one, although we performed a test of the order of integration of each variable with the augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) test procedures to confirm that the ARDL approach could be used. The ARDL approach for cointegration is determined by the order of integration of the variable and may be mixture integrated, first-order, $I(1)$ or $I(0)$.

The main assumption of the ARDL methodology is that the errors in equation (1) are serially independent. Accordingly,

prior to conducting the cointegration test, we determined the order of integration of the variables with an ADF test and a PP test.

Even though the ARDL framework does not assume that the variables were previously tested for the presence of a unit root, unit root tests can show us whether the ARDL model should be used. The ADF and PP unit root tests were applied to the level and to the first difference of each variable to determine stationarity. The results of the ADF and PP tests are illustrated in Tables 1 and 2. The variable inflation, the

hypothesis of a unit root at a constant level was rejected. For the variables like, bank lending, which is proxy for monetary policy, tourism revenue exchange rate and interest rate, the hypotheses of a unit root at a constant level or stationarity were not rejected. Therefore, we needed to test the first difference to reject the hypothesis of a unit root. Otherwise, we would have reason to believe that the variables are stationary. The results indicated that integration of order I(1) and I(0) was present. Therefore, ARDL testing could be performed.

Table 1: ADF Unit Root Test for Stationarity

Variables	Level		First Difference	
	Constant	Constant with Trend	Constant	Constant with Trend
Log (TTR)	-1.376 (0.308)	-1.389 (0.185)	-7.527 (0.000)***	-6.261 (0.001)***
(MONP)	-0.956 (0.756)	-2.678 (0.285)	-4.352 (0.002)***	-4.255 (0.010)***
(EXCH)	-1.734 (0.401)	-1.845 (0.673)	-6.889 (0.000)***	-6.754 (0.000)***
(INFL)	-3.865 (0.008)***	-3.671 (0.037)**	-8.154 (0.000)***	-8.745 (0.000)***
(INT)	-1.765 (0.498)	-2.865 (0.189)	-5.089 (0.000)***	-4.923 (0.001)***

Notes: ***, **, * imply significance at the 1%, 5%, 10% level, respectively. The numbers within parentheses for the ADF (Dickey-Fuller 1979) statistics represent the lag length of the dependent variable used to obtain white noise residuals. The lag length for the ADF was selected using the Schwarz Information Criterion (SIC).

Table 2: PP Unit Root Test for Stationarity

Variables	Level		First Difference	
	Constant	Constant with Trend	Constant	Constant with Trend
Log (TTR)	-4.978 (0.000)***	-5.995 (0.000)***	-8.176 (0.000)***	-17.372 (0.000)***
(MONP)	-1.032 (0.772)	-2.643 (0.332)	-4.053 (0.004)***	-3.918 (0.029)**
(EXCH)	-1.797 (0.424)	-1.821 (0.673)	-6.767 (0.000)***	-6.546 (0.000)***
(INFL)	-3.559 (0.0076)***	-3.753 (0.037)***	-8.756 (0.000)***	-8.435 (0.000)***
(INT)	-1.568 (0.567)	-2.987 (0.176)	-7.967 (0.000)***	-8.489 (0.000)***

Notes: ***, **, * imply significance at the 1%, 5%, 10% level, respectively. The numbers within parentheses for the ADF (Dickey-Fuller 1979) statistics represent the lag length of the dependent variable used to obtain white noise residuals. The lag length for the ADF was selected using the Schwarz Information Criterion (SIC).

The unit root test indicated that the tested variables had an I(0) and I(1) order of integration and that we should use the F-test with the upper and lower bounds given by (Pesaran et al., 2001) to analyze the long-run cointegration of equation 1. The lag length to be used for estimating the bounds for the F-test was selected based on the AIC. The

bounds given in (Narayan, 2004) were used for the F statistic because they are suitable for use as critical values with small samples. (Narayan, 2004) stated that the critical values given by (Pesaran et al., 2001) differ substantially from those to be used when the sample size is small. Table 3 shows that the calculated F statistics 13.435,

exceeded the critical value of the upper bound, thus the null hypothesis is rejected at 1% significance level. This result

indicates that cointegration of the relationship between the variables is present.

Table 3: Bound Test Result - Cointegration Hypothesis. Dependent Variable: Tourism Revenue

Test Statistic	Value	Significance Level	Bound Critical Values* (Restricted Intercept and No Trend)		Bound Critical Values* (Restricted Intercept and Trend)	
			I(0)	I(1)	I(0)	I(1)
F-statistic	13.435	1%	4.093	5.532	4.710	6.406
		5%	2.957	4.117	3.276	4.648
		10%	2.465	3.472	2.692	3.902

Note: * the critical values are based on (Narayan, 2004) ***, **, * imply significance at the 1%, 5%, 10% level, respectively.

The second step in the procedure is to estimate the long-run relationships for the coefficients identified in equation 1. Given the long-run relationship among tourism revenue, monetary policy, exchange rate, inflation and interest rate, we can estimate the ARDL (l, m, n, o, p, q), equation 2. The lag length, l, m, n, o, p and q are determined by the SBC. Based on the suggestions of (Narayan, 2004; Pesaran et al., 2001), a maximum of 2 was used.

Table 4 shows the long-run relationship between the variables. These findings imply that the 1% increase in lagged variable of tourism revenue will increase tourism revenue 0.66%. This result is statistically significant at the 1% level. This relationship may be a result of several factors, e.g., that tourists found Malaysia an attractive place to visit and that tourism in Malaysia may also have been inexpensive compared with other countries. Note also that a 1% increase in the exchange rate produces an 0.22% increase in tourism revenue but that this relationship is not statistically significant. This finding contradicts the economic theory that appreciation negatively affects a country's exports. Moreover, this result shows that the tourists did not give substantial consideration to the exchange rate. Therefore, the

exchange rate is not directly linked to the choice of a place to visit. The inflation, interest rate and trend were significant at the 10% level. Accordingly, a 1% increase in inflation and inflation would produce a 0.12% and 0.09% increase in tourism revenue, respectively. This relationship contradicts economic theory. It further confirms that tourists are not concerned about their spending, but consider the quality of a tourist destination. The finding that the interest rate was significant at the 10% level implies a negative relationship with tourism revenue. This finding is supported by economic theory. Note also that monetary policy (MONP) was not significant. A 1% increase in this variable would produce only a 0.02% increase in tourism revenue. This result is similar to that involving the exchange rate coefficient, further confirming that decision by tourists to visit Malaysia do not depend on monetary factors. Importantly, the finding that a 1% increases in trend produces an 0.01% increase in tourism revenue is statistically significant. This result may reflect other factors, e.g., the lower cost of travel, the relative price of hotels, and the quality of the attractions, which influence the decisions of tourists to visit Malaysia. This finding yields the conclusion that tourists are not strongly concerned about monetary factors.

Table 4: Estimated Long-Run Coefficients ARDL (1,0,1,0,0). Dependent Variable: TTR

Model	Coefficient	Standard Error	T-Ratio [prob]
Panel 1. Estimated Long-Run Coefficients			
CONSTANT	.092	.437	.213[.833]
L TTR (-1)	.656	.081	7.888[.000]***
EXCH	.218	.368	.538[.595]
INFL	.098	.065	1.336[.194]**
INFL(-1)	.125	.065	1.750[.092]**
INT	-.362	.222	-1.631[.116]**
MONP	.024	.431	.058[.954]
TREND	.017	.010	1.70[.102]**
Panel 2 Diagnostic Tests			
R-Bar-Squared	.984		
DW statistic	2.279		
S.E. of regression	.103		
Lagrange multiplier test for serial (1)	2.000[.157]		
Ramsey's RESET test (1)	1.621[.203]		
Normality (2)	2.015[.365]		
Heteroscedasticity (1,24)	1.751[.186]		

Notes: selected based on Schwarz (Bayes) Criterion. ***, **, * imply significance at the 1%, 5%, 10% level, respectively.

After identifying the long-run relationships, it was necessary to investigate the short-run dynamic coefficients obtained from equation 3. These coefficients are shown in Table 5. The signs and statistical significance of the short-term dynamic results are consistent with the long-run model. The short-run results could include deviations from the long-run results, but the two models vary together. The most important feature of an ECM correction model is that ECM (-1) should be significant. A value of -5.632 was found for the t ratio in the ECM, implying that the rate of adjustment to equilibrium is high. As much as approximately 35.5% of the deviation resulting from disequilibrium in the previous year is damped, returning to the long-run equilibrium in the current year.

Table 5: Error Correction Representation for the Selected ARDL Model ARDL (1,0,1,0,0), Selected based on Schwarz (Bayes) Criterion. Dependent Variable: TTR

Regressor	Coefficient	Standard Error	T-ratio [Prob]
Model 2. Estimated Error Correction Representation			
Constant	.261	1.270	.206[.839]
dLEXCH	.198	.368	.538[.595]
dLINF	.088	.066	1.335[.193]**
dLINT	-.362	.222	-1.630[.115]**
dLMONP	.0249	.431	.057[.954]
dTREND	.018	.010	1.699[.101]**
ecm(-1)	-.356	.082	-5.632[.000]***

Notes: selected based on Schwarz (Bayes) Criterion. ***, **, * imply significance at the 1%, 5%, 10% level, respectively.

The last step of the analysis was to examine the stability and the goodness of fit of the ARDL models. Various diagnostic tests were applied to the model (panel B, Table 4). Diagnostic tests were performed to analyze serial correlation and other aspects of the model. A Lagrange multiplier (LM) test was applied to evaluate the serial correlation of the residuals. A functional form of Ramsey's RESET test was applied to the square of the fitted values. Heteroscedasticity was evaluated based on a regression of the squared residuals on the squared fitted values. The Rbar2 and DW statistics were used to evaluate the goodness of fit of the model. The null hypothesis of homoscedasticity was not rejected. The LM test failed to reject the null hypothesis of no serial correlation among residuals. A Jarque-Bera normality test of regression residuals showed that the model was consistent with a normal distribution. The model was also acceptable according to a Ramsey's RESET test for the misspecification of a model's functional form. The stability of the regression coefficients was measured using a cumulative sum (CUSUM) test, and a cumulative sum of squares (CUSUMSQ) test was used to

evaluate structural stability, based on (Brown et al., 1975). Fig. 1 and 2 show that the estimated coefficients were stable. The stability of the coefficients may be inferred if the CUSUM and CUSUMSQ test statistics were within the bounds specified by a 5% significance level. Both the CUSUM and the CUSUMSQ test statistics did not exceed the bounds at the 5% level of significance, implying that the regression equation appeared to be stable.

CONCLUSIONS

This paper examined the relationship between tourism revenue and monetary factors such as the bank lending rate, exchange rate, inflation and interest in Malaysia based on the autoregressive distributed lag (ARDL) approach. The results of the study show that monetary factors are cointegrated with tourism revenue in Malaysia. A bounds test confirmed the presence of cointegration between tourism revenue and monetary factors such as the monetary policy, interest rate, inflation and exchange rate.

The results offer the strong evidence that lagged tourism revenue, inflation, exchange rate; monetary policy and trend do not play an important role in determining the long-run behavior of Malaysian tourism revenue. These findings imply that tourists do not consider monetary factors to a great extent when they decide about the tourist destination that they will visit in the near future. The result also shows that the short-run rate of adjustment rapidly restores the long-run equilibrium. The model implies that 355% of the disequilibrium of the previous year is adjusted, returning to the long-run equilibrium in the current year. This finding shows that tourists may not consider monetary factors on a short-run basis or on a long-run basis when they decide to visit Malaysia. Ministry of Tourism in Malaysia should improve tourists' experience by offering improving safety parameters in tourist venues, the lowering the cost of travel and the reducing relative price of hotels, which influence the decisions of tourists to visit Malaysia. Finally, decision by tourists to visit Malaysia do not depends on monetary factors but the quality of life in Malaysia. It also confirms that there is no evidence for a tourism-related crowding-out effect due to the changes in the interest rate. The chief policy implication of this study is that monetary factors do not slow the pace of tourism in Malaysia; rather, they contribute to the development of tourism. Therefore, it is preferable to maintain a stable business cycle, which yields a clear picture of the monetary factors. This approach can avoid the inconsistency problem, which has been widely discussed in macroeconomics. The important policy implication from the finding of the study confirms that tourists are not strongly concerned about the monetary factors but they may concern about the other external factors that influence their decision to visit Malaysia. This area can be investigated further in future studies.

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