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The role of tourism and exchange rate on economic growth:Evidence from the BIMP-EAGA countries

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Abstract

Developing economies as well as developed economies recognized appropriate tourism policies will be an important factor in promoting economic growth. BIMP-EAGA (Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area) was conceived with the objective to speed up economic development among the four countries and one of which is focused on tourism. Focusing on annual data, this paper utilized the bounds testing approach to cointegration and error-correction modeling to evaluate if tourism and exchange rates promote economic growth in BIMP-EAGA. The results revealed that Philippines is the only country that has a positive short and long impact from tourism's industry and exchange rates.

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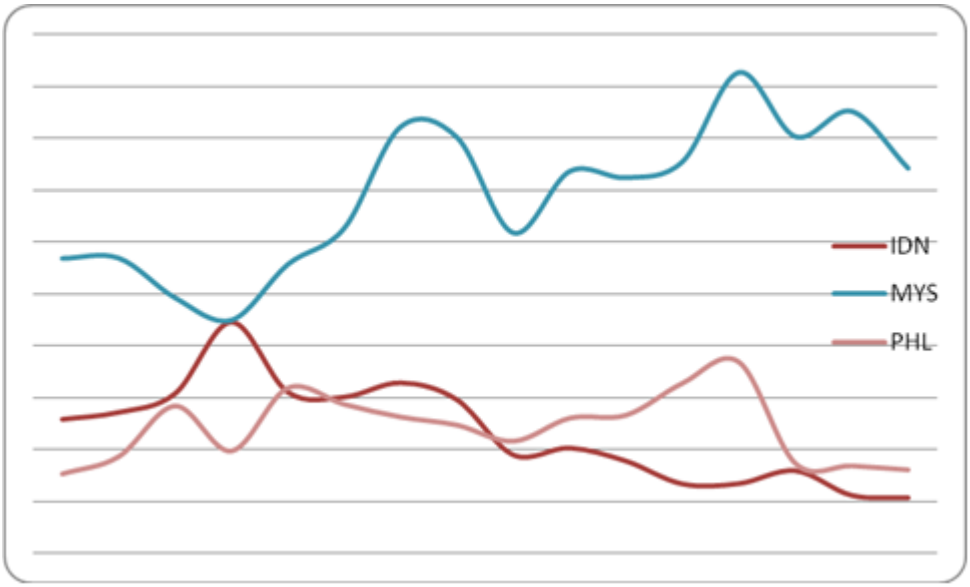
1. Introduction

There is general agreement among policymakers and economists that tourism industry will indirectly create jobs, foreign income and lead to economic growth. The BIMP-EAGA (Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area)[1] was conceived with the objective to promote economic development among these four countries. Besides investment and trade, tourism is an additional part to stimulate economic growth. Each country independently promotes its tourism industry and simultaneously tackles its own challenges such as politics and natural disasters. The shares of the international tourism receipts as a percentage of Gross Domestic Product (GDP) are depicted in Figure 1.

Figure 1: International tourism receipts as percent of GDP for BIMP-EAGA



Source: World Bank (2013)

International tourists' receipts for all three nations have been sensitive to both international and domestic events. Some of these major events are the epidemics of severe acute respiratory syndrome (SARS),[2] an outbreak of H1N1,[3] the Asian financial crisis in 1997,[4] the reverberation of September 11, 2001 in USA, domestic political instability, natural disaster,[5] and domestic terrorism.[6]

[1] ASEAN is an economic organization of ten countries located in Southeast Asia. Its members are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.
[2] SARS is a viral respiratory illness. It was established as a global threat in March 2003, when cases emerge in Southern China in November 2002.
[3] H1N1 is a flu virus detected in 2009. It was known as the swine flu because the virus was similar to those found in pigs. This flu virus caused a world-wide pandemic in 2009.
[4] Indonesia, Malaysia and Philippines are affected from the Asian financial crisis.
[5] 2004 Asian tsunami disaster
[6] Philippines has to confront with Abu Sayyaf militant organization in southern Philippines while in 2002 Indonesia has to deal with terrorist attack in Bali.

Based on Figure 1, Malaysia is the only nation that shows a positive trend in its international tourism receipts as compared to Philippines and Indonesia. Based on these trends, we assessed whether tourism and exchange rates plays significant role in promoting economic growth in BIMP-EAGA[7]. Following introduction, this paper is arranged as follows: Section II, literature review on tourism's industry and exchange rates. Section III outlines empirical methodology. Section IV and IV are the empirical results and conclusion, respectively. Data and sources are presented in the Appendix A.

2. Literature Review

Tourist industry is one of the important components in promoting economic growth. There are various empirical studies investigating the relationship between tourism development, economic growth and exchange rates. This hypothetical relationship between growth and tourism is known as the "tourism-led growth" hypothesis. For example, Oh (2005) using quarterly data (1973-2001) examined the relationship between tourism and economic development in South Korea. He utilized the Engle and Granger two-stage approach and a bivariate Vector Autoregression (VAR) model and concluded that tourism-led economic growth did not hold in South Korea.

In addition, Othman and Salleh (2008) evaluate the relationship between tourism development and economic growth in the four ASEAN countries[8] using the Johansen cointegration test and the Granger causality test. Their findings revealed that there is a long-run cointegrating relationship between development and tourism in all these four ASEAN countries. They found two different results. In the case of Malaysia and Singapore, there is a unilateral causality between tourism development and economic growth. However, in the case of Indonesia and Thailand, economic development leads to tourism development. Kreishan (2010) examined the relationship between tourism revenues and economic development in Jordan for the period of 1970-2009. Using the unit root test, the Johansen cointegration test and the Granger causality test, he showed that there is a positive relationship between tourism development and economic development in the long-run. In addition, Kasimati (2011) tested the tourism-led growth hypothesis using Greece as a case study. Using annual data (1960-2010) and utilized similar methodology as Kreishnan (2010), he found evidence of the cointegrating relationship between economic growth and tourism development. However, he did not find any evidence of a direct relationship between tourism development and economic growth in Greece.

Tang and Abosedra (2012) analyzed the relationship between economic growth and tourism development for the period of 1990-2005 by using the unit root test, the ARDL cointegration test and the Granger causality test. They found evidence of cointegrating relationship between economic development and tourism development. More importantly, there is a unilateral long-run causality from tourism development to economic growth in line with the tourism-led growth hypothesis. Brida et al. (2009) conduct an empirical research on a relationship between the exchange rate and international tourist expenditure in Chile. They utilized the Johansen cointegration test and found confirmation for cointegration relationship between the exchange rate and tourist expenditure. Their findings support the tourism-led economic growth hypothesis. Furthermore, Ghartey (2010) conducted empirical research on the relationship between the exchange rate and international tourist arrivals in Jamaica. He utilized the Johansen cointegation test and the autoregressive distributed lag. He found that there is no long-run cointegration relationship between international tourist arrivals and the exchange rate. In addition, he did not find any evidence showing exchange rate promote tourist arrivals. Dritsakis (2012), using panel data, employed the Fully Modified Ordinary Least Squares (FMOLS) test and a panel cointegration test on

[7]Since Brunei did not have sufficient data, our analysis focused on Indonesia, Malaysia and Philippines.
[8] Indonesia, Malaysia, Singapore and Thailand.

the exchange rate and international tourist arrivals for seven Mediterranean countries.[9] He found evidence that there are the cointegration relationship between tourism development and GDP in all these countries. In addition, the real exchange rate showed significant effects on economic growth.

3. Methodology

Following a similar approach to Kasimati (2011), our model is specified using the following log linear form as in equation (1):

$$LnY_j = a + \mathrm{b}\, Ln\, TRM_j + c\, LnREX_j + \varepsilon_t \qquad (1)$$

As specified in equation 1, Y_j is measure of country's *j* economic growth, TRM_j is the tourist arrivals, and REX_j is the real exchange rate.[10]

Since tourist arrivals and devaluation or depreciation of real exchange rate will promote economic growth, we would expect both *b* and *c* to be positive.

It is recognized that equation (1) outlines the variables of long-run relationship among economic growth. To evaluate the impact in the short-run, we follow a modeling from Persaran et al. (2001), error-correction model version of Autoregressive Distributed lag (ARDL), replaced equation (1) with equation (2).

The error-correction model of the ARDL in relation to (1) is as follows:

$$\begin{aligned}\Delta LnY_j = \quad & \mathrm{a} + \sum_{i=1}^{n} b_i \,\Delta\, Ln\, Y_{j,t-i} \;+\; \sum_{i=0}^{n} c_i \Delta\, Ln\, TRMj_{,t-i} \;+\; \sum_{i=0}^{n} d_i \,\Delta\, Ln\, REX_{j,t-i} \\ & + \lambda_1 Ln\, Yj_{,t-1} + \lambda_2 LnTRMj_{,\,t-1} + \lambda_3 Ln\; REX_{j,t-1} + \theta_t \qquad (2)\end{aligned}$$

where *n* stands for the lag length.

Pesaran et. al. (2001) proposed using the F-test with new calculated critical F-values. If the calculated F statistics lies above the upper bound critical value, then lagged level variable are jointly significant entail cointegration. If calculated F statistics falls below the lower bound, then there is no cointegration. If F-statistics is in between the two bounds, then these results are not definite. The main advantage of using Pesaran et al. (2001) model is that, despite these variables are I(1), I(0), or combination of both, there is no pre testing for unit roots. The long run effect of real depreciation from devaluation is estimated indirectly from λ_3 normalized on λ_1.[11] As such, we use an alternative test. Kremer et al. (1992) recommended using error correction model (ECM) as a method to establish cointegration.

[9] Cyprus, France, Greece, Italy, Spain, Tunisia and Turkey.

[10] We are using real exchange rate rather than real effective exchange rate as defined by Kasimati (2011). Furthermore, we are taking a nation's competitiveness form into account.

[11] Refer to Bahmani-Oskooee et al. (2006) for detailed explanation.

4. EMPIRICAL RESULTS

Our model outlined by equation (2) was utilized to estimate the three nations using annual data (1995-2010). As explained in section II, the first step is to perform the F-test to determine cointegration. Bahmani-Oskooee and Harvey (2009) showed that the F-test is sensitive to the number of lags imposed on each of the first difference variable. A maximum of 2 lags was imposed on each of the first differenced variables utilizing the Akaike Information Criteria (AIC) to determine the optimal number of lags. In table 1 (A and B), we report each optimal model its short-run and long-run coefficient estimates of the real exchange rate and tourist arrivals. In addition, we have included diagnostics tests in Table 1 (C).

Table 1:

A. Short-run coefficient Estimates and Diagnostics

	Indonesia	Malaysia	Philippines
Δ Log TRMj	0.33(2.31)	-0.49(0.93)	0.20(3.07)
Δ Log $TRMj_{t-1}$	0.27(1.66)		
Δ Log REX	-0.06(1.05)	-0.75(2.10)	0.16(2.69)
Δ Log REX_{t-1}	-0.16(3.63)	-0.93(2.18)	

B. Estimated Long Run Coefficient of Bilateral Trade Balance Model

	Indonesia	**Malaysia**	**Philippines**
Constant	8.29(0.09)	-10.49(1.19)	-11.43(4.95)
Log TRMj	0.34(0.07)	1.16(2.25)	0.88(6.94)
Log REX	-0.24(0.15)	-0.44(0.73)	0.69(4.04)

C. Diagnostics

	Indonesia	**Malaysia**	**Philippines**
ECM_{t-1}	-0.04(0.51)	0.32(0.84)	-0.23(3.85)
Adj. R^2	0.79	0.19	0.23
LM(χ^2,4)	0.19	2.21	0.03
RESET(χ^2,1)	6.37	0.15	1.43
F-test	6.52	2.63	3.88
CUSUM	S	S	S
CUSUMSQ	S	S	S

Notes:

- ***a) LM: Lagrange multiplier test of residual serial correlation. It is distributed as $\chi^2(4)$***
- ***b) RESET: Ramsey's test for functional form. It is distributed as χ^2 (1)***
- ***c) CUSUM: Cumulative Sum of Recursive Residuals (S-Stable; US-Unstable).***
- ***d) CUSUMSQ: Cumulative Sum of Squares of Recursive Residuals (S-Stable; US-Unstable).***
- ***e) Number inside the parenthesis next to a coefficient is absolute value of the t-ratio.***

As indicated earlier, Kremers et al. (1992) showed that a significant lagged error correction model is more effective to established integration. As such, the lagged error correction term, $ECM_{t-1,}$ is utilized to estimates from λ_1-λ_3. Subsequent to replacing lagged level variables in equation (2) by ECM_{t-1}, the model is re-estimated using the same lag structure. A negative and significant coefficient ECM_{t-1} is another vigorous justification for cointegration. As shown in Table 1(C), only the Philippines ECM_{t-1} carries a negative and significant coefficient. It further implies that these variables are converging to

their long-run equilibrium. In the short-run, tourist arrivals are an important factor in promoting economic growth in Indonesia and Philippines. Does this lead to a long run effect? Our results show that only in the case of the Philippines leads to a long run effect. In real exchange rates[12], in the short-run, all three countries are significant. However, the Philippines is the only country that has a long run impact on economic growth from depreciation of real exchange rate. We further include diagnostics in Table 1(C). Lagrange Multiplier (LM) statistics and Ramsey's RESET test show that serial correlation and functional misspecification do not create problems in most cases. The models are further tested for stability both in the short run and long run. Bahmani-Oskooee and Bohl (2000) maintains that the existence of cointegration among variables does not mean that the estimated coefficients are stable. As such, following Brown et. al. (1975), we apply stability test i.e. CUSUM and CUSUMSQ test on the residuals in equation (2). The stability test is based on two statistics plotted on a straight line which constrained by 5% significance level. The plots must stay within the 5% significance level for stability. All the coefficients appeared to be stable. In addition, the size of adjusted R^2 in most cases is reasonable signifying a good fit.

5. Conclusion

BIMP-EAGA (Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area) was conceived with the cooperation to promote trade, tourism and investments among these four countries. Since tourism can improve economic growth, this paper utilized the bounds testing approach to cointegration and error-correction modeling (ARDL) to evaluate if tourist arrival and real exchange rate played a significant role in development among these countries of interest. Empirical evidence from Philippines supports both in the short run and long run effect. In addition, this result shows that Philippines macroeconomic policies have benefited its economic growth from tourism and its exchange rate policy.

Appendix A
Data, Definitions and Sources

Data:

Annual data (1995-2010) originate from the following sources:

1) World Bank
2) International financial Statistics of IMF.

Variables:

Y_j = Real GDP of country j. (Data are collected from source (2)).

TRM_j = Annual international tourist arrivals (Data are collected from source (1)).

NEX_j = Nominal exchange rate defined as the number of a country's per unit of US dollar. (Data are collected from source (2)

REX_j = It is defined as $(P_{US} \bullet NEX_j)/P_j$, where P_j is CPI in the country j; P_{US} is CPI in the United States. An increase in REX is a reflection of real appreciation of USD or depreciation of country's j exchange rate.

[12] Both Malaysia and Indonesia implemented managed float while Philippines employ free float.

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