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ASSESSING THE RELATIONSHIP BETWEEN EXCHANGE RATE AND TOURISM DEMAND IN BOTSWANA

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ABSTRACT

As understood in economics literature, the currency exchange rate affects both the supply and demand for goods and services domestically produced and internationally traded. The exchange rates also affect tourism demand. This study tries to know whether there is any relationship between exchange rates and tourism in the case of Botswana. To find the relationship, the study uses South African tourists to Botswana as South Africa uses a currency different from the local currency and has the highest number of tourist arrivals to Botswana. The main aim of the study is to assess the relationship between exchange rate and tourism demand: the case of Botswana. The study employs an Ordinary Least Square regression model to find the relationship that exists between the stronger BWP/weaker ZAR. The findings of the study reveal that exchange rate negatively affects tourist arrivals but it is statistically insignificant. The study uses time series data from 1997 to 2016. The study also found out that real Gross Domestic Price positively affects the number of tourist arrivals and by extension tourism demand.

1. BACKGROUND

Tourism has become one of the biggest and active sectors in the world over the past six decades. International tourist arrivals have continued to grow in number. The 25 million reported in 1950 jumped to 277 million in 1980 and an estimated 990 million in 2011 (Edwin & Jesper, 2013). In Botswana, the industry experienced an expansion in the 1990s after the adoption of the Tourism Policy of 1990 and of recent it is the second largest foreign exchange earner after diamond mining in the country. It is identified as a paramount sector in the economy, providing jobs, incomes and effecting contributions to government revenues. In the last two National Development plans tourism was classified as one of the fundamental sectors that could assist the economy apart from the diamond mining in Botswana. Because of this importance, the government decided to intensify the process of collecting tourism statistics and commence upon measure to analyze the economic contribution of tourism with a view to underpinning a series of forthcoming strategies and policies for the development

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of tourism in the country. Tourism in Botswana has been embraced to help diversify the economy and to advance environmental sustainable development (Duffy & Moore, 2010). The industry massively relies on wildlife resources and international leisure tourists (Stone, 2014).

1.1. BOTSWANA'S ECONOMY AND TOURSIM SECTOR

Botswana's economy was diversified from traditional sources such as diamonds and beef by the tourism sector, and in 2005 23000 jobs were created (Kajevu, 2008-04-08). The government of Botswana is willing to invest more money into the industry by strongly encouraging foreign investment in the country to develop the tourism industry as it has been suppressed by failure to invest in basic infrastructure projects, especially the road network which has made it difficult for tourist to access much of the country (Travel and Tourism in Botswana, October 2013)

It has been shown by studies including United Nations World Travel Organization (UNWTO,2002) that tourism can play an important role towards balanced sustainable development, and that it can be exploited to generate net benefits to the poor (Makochekanwa, 2013). The government's benefaction to tourism includes upgrading the top attraction areas that is Okavango Delta and Chobe, destination marketing, improving air access, broadening the range of tourism products, improving service quality, and establishing partnership.

According to World Travel and Tourism council, travel and tourism made a total contribution of BWP17 779.5 to Gross Domestic Product (GDP) and GDP was expected to rise by 6.5% in 2017. The contribution of travel and tourism in total employment is about 68 500 jobs (7.1% of total employment). This was expected to increase to 71000 jobs in 2017. Tourism and travel had made contributions to exports; visitor exports made BWP6 220 million (USD568.I) 5.8% of total exports in 2016. This is to grow by 11.6% in 2017 and grow by 4.9% pa from 2017 to 2027 (WTTC, 2017).

1.2. EXCHANGE RATES AND TOURISM

The exchange rate is simply the price of a given currency in terms of another currency. Because the study uses two currencies it will be appropriate to use the nominal exchange rate which is defined simply as the number of local currency used to buy or exchange for a foreign currency. A national currency is therefore the price of what a country exports relative to the price of what it imports. As such exchange rate affects both the supply and demand for goods and services domestically produced and internationally traded. The nominal exchange rate represents a two sided relationship between the currencies, when one currency strengthens the other currency weakens (Ruane, 2014). According to NDP 11 (National Development Plan 11) the performance of the external sector of the Botswana economy depends on the sector's competitiveness in the market and this competitiveness is dependent upon economic variables; nominal exchange rates, domestic price levels and foreign price levels. The country's

exports become less competitive when the nominal exchange rate increases, ceteris paribus, foreigners have to pay more for them in term of their foreign currencies. Again competitiveness of our goods is weakened when the domestic price increase relative to foreign prices. To capture the combined effects of changes in nominal exchange rates and changes in relative price levels between the economy and trading partners the real effective exchange rate (REER) is used and it is a measure of competitiveness.

This study will find if there is any relationship between exchange rates and tourism in the case of Botswana. To find the relationship, the study will use South African tourists to Botswana as South Africa uses a currency different from the local currency and has the highest number of tourist arrivals to Botswana. Time series data will be used to carry out the study for period of 19 years, that is, from 1997 to 2016 because of the availability of data, ideally the researcher wanted to start from 1990 to 2016 but there was a hindrance because there was not enough data. The number of tourist arrivals from South Africa to Botswana will determine the relationship between exchange rates and tourism demand; it will be the dependent variable in the study.

2. LITERATURE REVIEW

2.1. Theoretical Literature

Economic theory by Morley (1992) and Sakai (1988) suggested that income and price are likely to play a central role in determing tourism demand international tourism. Accoring to economic theory, more people are likely to travel as real income increases. But because tourism is an amalgam of goods and services, price is difficult to define as a funcion of the total mix consumed by each tourist therefore nominal exchange rate or real exchnage rate is used instead and the demand function becomes as follows

$$m_{ij} = f(IN_i, RP_{ij}, EX_{ij}, OF_{ij})$$

Where m_{ij} is the number of potential tourists from country origin i to a particular destination j. IN_i is the income of country of origin I, RP_{ij} is the relative price, $EXij$ is the currency exchange rate measured as units of destination j's currency per unit of country i s currency and QF_{ij} are the qualitative factors in country of origin i or in destination j. (Jaume, Eugeni, Antoni, & Riera, 2005).

2.2. Empirical Literature

Using monthly data from October 2003 to July 2013 and Ordinary Least Squares regression models, Ruane (2014) measured the effect of a stronger U.S dollar against a weaker Japanese Yen on the number of Japanese tourists visiting Guam given that Guam is heavily reliant on Japanese visitors. The empirical model confirmed that a stronger U.S dollar against the weaker Japanese Yen will discourage Japanese visitors to Guam. Multiple regressions were also performed in the study in order to identify the effect of the USD/JPY exchange rate of different lags (from one month to twelve months) on the Japanese Tourist arrival in Guam. The results showed a decline of between 4.25% and 6.27% in

the number of Japanese tourist who are expected to visit Guam from October 2012 to September 2013. On the other hand Gan (2015) used a different approach of finding the link between exchange rate and tourism. He investigated the influence of the exchange rate and the inflation rate on the tourism industry and 218 countries were observed over 8 years (1995-2012). The number of arrivals was modelled by a pooled Poisson regression for count data. The findings of the study were that exchange rate was negatively related to arrivals. This study was similar to that of Quadri & Zheng (2010) as both studies used panel data in examining exchange rates an tourism.

Quadri & Zheng (2010) carried out a study in Italy using monthly average foreign exchange rates and monthly numbers of foreign tourists to re-examine the relationship between exchange rates and international arrivals by quantifying the impact of the fluctuations of exchange rates on international tourism demand from nineteen separate nations and using monthly data from the 1st of February 2004 to July 31, 2009. The study used a regression approach to measure the relationship between exchange rate and international tourism demand. Nineteen regression analyses were performed and de-seasonalised monthly numbers of international tourist arrivals from nineteen countries was used as the dependent variable and the independent variable used was the monthly average currency exchange rates between the nineteen countries and Italy. The findings of the study showed that exchange rates do not affect tourism demand equally in various origin destinations when Italy is the destination.

Hsiao-I, Hui-Cheng, Wei-Yei, & Chun-Yuan (2009) examined the relationship between international tourism demand and exchange rate in eight Asian countries (Japan, China, Korea, Taiwan, Hong Kong, Singapore, Malaysia and Thailand), the paper applied the panel data models to examine the relationship. Monthly data over the period of January 2001 to july 2007 was used. Empirical results showed that there is an existence of persistence effect of seasonality for tourist arrivals change. Another finding indicated that currency of destination country depreciation relatively to currency of origin country is helpful to the international tourism business in destination country and vice versa. A panel unit root was used to examine if the international tourist arrivals and exchange rates data are stationary and the results were that, international tourist arrivals and exchange rates at first difference are stationary. Another finding was that the impact of previous exchange rate changes on change of tourist arrivals is outstanding and positive and statistical significance. This meant that previous exchange rate changes bring about large change of tourist arrivals.

Another study was conducted by Yap (March 18, 2011) to find out the effects of exchange rates on visits to Australia by tourists from nine origin countries, that is, to find out at what extend could exchange rates adversely affect Australia's inbound tourism, and whether changes in exchange rates could have an effect in the uncertainty of international tourist arrivals to Australia. The countries used under the study were China, India, New Zealand, South Korea, the UK, the USA, Singapore, Japan and Malaysia. Monthly data from January 1991 and January 2011 and multivariate conditional volatility regression models

were used and the findings were that tourists were sensitive to stronger Australia dollar; tourists from Malaysia and New Zealand were more sensitive to currency shocks than other countries. The study also found that tourists' memories of the currency changes could decline in the long run, "suggesting that the appreciation of Australian dollar will not have long-term negative impacts on Australia's inbound tourism".

However Santana, Francisco and Jorge (december 2007) took if far and estimated the effect of a common currency on tourism flows they estimated a conventional gravity model. The gravity model recognizes that international tourism is increasing in GDP and population, and decreasing in the distance between countries. The time dimension in the panel used was a period of 10 years (1995-2004). The gravity equation used a conventional Pooled OLS in a balanced sample. The empirical research suggested that there was a big positive impact of a common currency on trade. They also analyzed the impact of several de facto exchange rate arrangements on international tourism. The findings were that more fixity in the exchange rate arrangements generates a positive effect on tourism and they discovered that the more fix the exchange regime is, the greater the impact on tourism.

3. DATA

Tourism data were obtained from Statistics Botswana Annual Reports. Data of GDP was obtained from World Development Indicators page and CPI (2010=100) data was obtained from the Federal Reserve Bank of St. Louis. GDP appears in millions of US$. The data is analysed using Eviews 9 software.

3.1. Techniques of Data Analysis

The Test Hypotheses

The empirical model will test the following hypotheses:

H_0: A stronger BWP/weaker ZAR does not negatively affect South African tourist arrivals in Botswana.

H_1: A stronger BWP/weaker ZAR negatively affect South African tourist arrivals in Botswana.

Time series data and an Ordinary Least Squares regression model will be used to quantify the effect of the significantly stronger BWP/weaker ZAR

4. MODEL SPECIFICATION

The study adopts the methodology by Yap (2011). The general equation is as follows:

$$y = (RGDP, CPI, ExchR)$$

The empirical model is as follows

$$y = \beta_0 + \beta_1 RGDP + \beta_2 CPI + \beta_3 ExchR + \varepsilon$$

Where:

y = number of tourists arriving in Botswana from South Africa

RGDP = South Africa's real gross domestic product

CPI = Consumer price index of South Africa

ExchR = exchange rates (BWP/ZAR)

ε = error term

4.1. Justification of Variables

Number of tourists- the total number of tourists from South Africa to Botswana which will be the dependent variable and the explanatory variables are as follows

RGDP: it is prefered to nominal GDP because it is adjusted for inflation.

Consumer Price Index: it is difficult to obtain the appropriate measure of prices that tourists pay because of the wide range of products involved. The consumer price index is a preferred proxy for tourism prices as it shows average consumer spending patterns and it is convenient. The CPI is adjusted by the exchange rate between the origin and local currencies price of overseas travel.

Exchange rates: Exchange rate is the value of origin countries' currency in the terms of the destination country's currency. Exchange rates are included as a variable because consumers are more aware of them than destination costs of living for tourists hence they determine the decision for tourists to travel and bring a change to tourist arrivals (Hsiao-I, Hui-Cheng, Wei-Yei, & Chun-Yuan, 2009).

5. EMPIRICAL RESULTS

5.1. Unit Root Test

A unit root test is done to find out if the variables are stationary or not. This is an essential element if one wants good and reliable results. The study uses the Augmented- Dickey Fuller (ADF) test to find the order of integration for each variable. If it turns out that the variables are not stationary, then the variables are differenced; first difference or second difference are used to eliminate the non-stationarity and make the variables stationary. For every test if the probability is less than 0.1 we reject the null hypothesis and accept the alternative which says that the variables are stationary. The table below shows a summary of the ADF test

Table 3
Augmented-Dickey Fuller test (ADF)

Variables	*ADF values*	*P-value*	*Order of Integration*
RGDP	-4.776609	0.0020	I(2)
CPI	-3.767969	0.0153	I(2)
ExchR	-3.826706	0.0113	I(2)

Source: computed by the researcher, 2018

The above table shows that all the variables are stationary at second difference. Which means for the variables to be stationary they were differenced twice.

5.2. Estimation of the Model

Table 4
Ordinary Least Squares Estimate

Dependent Variable: Y

Variable	*Coefficient*	*Std Error*	*t-Statistic*		*Prob*
CPI	-1747.875	489.8051	-3.568511		0.0026
EXCHR	-107412.1	146557.6	-0.732901		0.4742
GDP	4.26E-07	2.10E-07	2.029148		0.0594
C	237345.8	101607.3	2.335913		0.0328
R-squared	0.590015	Mean dependent var		108686.6	
Adjusted R-squared	0.513143	S.D. dependent var		30965.81	
S.E. of regression	21606.43	Akaike info criterion		22.97623	
Sum squared resid	7.47E+09	Schwarz criterion		23.17537	
Log likelihood	-225.7623	Hannan-Quinn		23.01510	
F-statistic	7.675286				
Prob (F-statistic)	0.002124	Durbin-Watson stat		1.422445	

5.3. Statistical Significance

The results obtained from the model above indicates that the overall coefficient of determination (R-Squared) shows that the equation has a good fit with 59.00% of the number of tourist arrivals explained by the variables in the equation. The R-squared and the Adjusted R-squared are highly significant. The R-squared is above the 50% bench mark. The Durbin-Watson is below 2 which imply that there is serial correlation in the data. Serial correlation is not needed as it gives false results. I carried out a serial correlation LM test to find out if really the data has serial correlation. The table below shows the result and that the data is not serially correlated. The null hypothesis that there is no serial correlation is accepted if the observed p-value is greater than 5% significance level. The table below shows a p-value 0f 0.8561 which is greater than 5% hence the null hypothesis of no serial correlation is accepted meaning that there is no autocorrelation.

5.4. Interpretation of Coefficients

Exchange Rate (Exchr)

The coefficient carries a negative sign meaning that there is a negative relationship between exchange rates and tourist arrivals, and by extension tourism demand. This basically means that when the ratio between the two currencies that is when the pula strengthens against the rand this reduces the number of tourists coming to Botswana from South Africa, in other words a stronger BWP/weaker ZAR reduces the number of South African tourists arriving in Botswana. The variable is important but not significant.

Table 3
Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.157076	Prob. F(2,14)	0.8561
Obs*R-squared	0.438940	Prob. Chi-Square(2)	0.8029

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 05/04/18 Time: 11:29
Sample: 1997 2016
Included observations: 20
Presample missing value lagged residuals set to zero.

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
CPI	4.850935	579.4127	0.008372	0.9934
EXCHR	25475.03	193099.1	0.131927	0.8969
GDP	-2.15E-08	2.65E-07	-0.080857	0.9367
C	-15471.06	131740.1	-0.117436	0.9082
RESID(-1)	0.168435	0.307029	0.548596	0.5919
RESID(-2)	0.016230	0.366445	0.044289	0.9653
R-squared	0.021947	Mean dependent var		-9.82E-12
Adjusted R-squared	-0.327358	S.D. dependent var		19827.42
S.E. of regression	22843.37	Akaike info criterion		23.15403
Sum squared resid	7.31E+09	Schwarz criterion		23.45275
Log likelihood	-225.5403	Hannan-Quinn criter.		23.21235
F-statistic	0.062831	Durbin-Watson stat		1.672221
Prob (F-statistic)	0.996763			

Real Gross Domestic Product (RGDP)

The variable has a positive relationship with the number of tourist arrivals from South Africa to Botswana and the variable is statistically significant. The logic behind this will be that as the GDP of South Africa increases, it will mean an increase in economic growth hence the people will have money to spend and have the capacity to come to Botswana thus the number of tourist arrivals increases.

Consumer Price Index (CPI)

The coefficient carries a negative sign simply implying that there is a negative relationship between the consumer price index of South Africa and number of tourist arrivals from South Africa to Botswana. The variable is statistically significant at 5% level of significance. If the CPI increases it means prices have increases and thereby as price in South Africa increases it limits consumers from increasing their consumption and thereby reduces the number of tourists travelling out of the country.

6. CONCLUSION

The aim of the study was to find out the relationship between exchange rate and tourism demand in the case of Botswana. The empirical model of the study proves that exchange rates is negatively related to number of tourist arrivals

coming to Botswana from South African and by extension it is negatively related to tourism demand, that is, the fact that the Pula is stronger than the Rand discourages tourists from coming to Botswana in large numbers. The study further shows that exchange rate is not significant like all the findings in the previous studies for example Quadri & Zheng (2010) also found exchange rate to be insignificant. That is some visitors may consider exchange rate to affect their travel decision to Botswana, but this is not significant. The study also found out other that the GDP of the country also has an effect in the travel decisions of the country. A low GDP discourages travellers from travelling to other countries. The study met the expectations as most of the previous studies carried out in other countries found that exchange rate was negatively related to tourism demand, the same has been identified in the case of Botswana.

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APPENDIX

Descriptive Statistics

	Y	*CPI*	*EXCHR*	*RGDP*
Mean	108686.6	87.26664	0.796945	2.57E+11
Median	110086.5	79.03372	0.797000	2.79E+11
Maximum	147479.0	138.8593	0.936000	4.17E+11
Minimum	10989.00	50.58141	0.602300	1.16E+11
Std. Dev.	30965.81	26.83683	0.092027	9.99E+10
Skewness	-1.512410	0.432569	-0.271821	-0.057955
Kurtosis	6.052351	2.001249	2.412897	1.668024
Jarque-Bera	15.38866	1.454974	0.533530	1.489662
Probability	0.000455	0.483122	0.765853	0.474815
Sum	2173731.	1745.333	15.93890	5.14E+12
Sum Sq. Dev.	1.82E+10	13684.10	0.160909	1.89E+23
Observations	20	20	20	20