Study on the Relationship between Tourism and the Performance of the Zimbabwean Economy

Daniel Toindepi Mukonto[1*], Cheng Jian[2]

[1]International Economics and Trade, International Education School, Hebei University of Economics and Business, Shijiazhuang, P.R. China

[2]International Cooperation Department, International Education School, Hebei University of Economics and Business, Shijiazhuang, P.R. China

[*]*Corresponding Author: dtmukonto@hotmail.com, Tel.: +86-13290441017*

Abstract— The prospect of tourism growth as a tool for promoting economic resilience in developing economies, diversifying from dependence on extractive industries is interesting. The purpose of this study is to investigate the relationship between tourism and the economic performance of Zimbabwe. Using a bivariate unrestricted Vector Autoregressive model and granger causality, this study analyzed the short-run relationship between gross domestic product (GDP) and tourism receipts, using annual data from 1990-2018. The lagged values of GDP and tourism receipts were found to be significant in estimating GDP in the short-run. The results also show a unidirectional, positive causal relationship, where tourism receipts granger causes GDP. The study outlines the significance of the tourism sector in improving the economic performance of Zimbabwe, thus interventions to improve the sector will yield positive results in the short-run. Capital investment in tourist areas will lead to an improvement in the quality of service and infrastructure in these areas to boost tourism growth. Further studies are needed to investigate the multiple effects of tourism in Zimbabwe.

Keywords—Tourism Impact, VAR, Granger Causality, Zimbabwe

I. INTRODUCTION

Tourism is a powerful driver for economic growth, economic resilience, job creation, and the alleviation of poverty in less developed economies. According to World Travel & Tourism Council (WTTC), the tourism sector was directly and indirectly; responsible for 10% of the world's jobs (319 million jobs); 10.4 % of the world's GDP (US48.8 trillion); 6.5% of the world's exports (US$1.6 trillion); and 4.5% of the world's investment (US$652 billion) in 2018 [1]. Zimbabwe has struggled to take advantage of the growth in global tourism receipts to the fullest. Just as its political strife has directly affected industries like mining and agriculture, the tourism industry has not been spared by rampant corruption, neglect, and negative perception from the developed countries. Since 2009, the Zimbabwean tourism's percentage of the economy has not risen above 4%, according to the WTTC. The direct tourism factors such as accommodation and attractions contributed 3% to GDP in 2018 [2]. Considering indirect factors such as external suppliers or investment, the contribution grew to 6.3%. The WTTC predicts this will remain the same until 2028 [3]. The tourism sector contributes less to Zimbabwe's economic output than leading African economies and is far below the Sub-Saharan average contribution. The main objective of the study was to investigate the relationship between international tourist receipts and economic performance in Zimbabwe. Zimbabwe has a less diversified economy, heavily dependent on commodities and production sectors, thus vulnerable to commodity price fluctuations [4]. It is the realization that there is a need to develop a more diverse economic structure and reduce dependence on commodities and boost service sectors that prompted this research. This study attempted to outline the significance of tourism to the economic development of the Zimbabwean economy and draw the policymakers' attention to the promotion of the tourism industry.

The rest of the paper is organized as follows, Section I contains the introduction of the tourism contribution to the economy of Zimbabwe, and the purpose of the study, Section II contains related work of other scholars on the impact of tourism on the economy. Section III contains the methodology applied to investigate the causal relationship between the economy and tourism receipts in Zimbabwe. Section IV describes results and discussion from the Granger causality test and Section V contains the recommendations for boosting tourism receipts and concludes research work with future directions.

II. RELATED WORK

Tourism has numerous and well documented economic impacts. Previous studies have concluded that tourism contributes to revenue, employment, tax revenues, and income in an area. The most direct effects occur within the primary tourism sectors: lodging, restaurants,

transportation, amusements, and retail trade. Through secondary effects, tourism affects most sectors of the economy. Economic impact analysis of tourism activity normally focuses on changes in sales, income, and employment in a region resulting from tourism activity [5]. Tourism has a positive impact on the economy through foreign currency inflows, the creation of new employment opportunities, trade promotion, resulting in small business promotion and growth in the service sector. Tourism can fuel infrastructure development which will be also available for non-tourism uses, it can promote increased regional development in cases of remote areas, increased tax revenue leading to increased government spending or lower taxes in other sectors and the multiplier effect [6][7]. An empirical analysis in Korea indicates just a short-run equilibrium relation between tourism and GDP and a one-way causal relationship of economic growth contributing to tourism growth [8]. Empirical evidence from Australia and China show a bi-directional Granger causality between international trade and international travel [9][10]. Shun and Wilson (2001), discuss the endogeneity problem between the determinants of tourism demand and international trade, and that a Vector Autoregressive Model (VAR) is more reliable for estimation in this scenario [10].

III. METHODOLOGY

The study applies a univariate Vector Autoregressive Model to investigate the existence of a causal relationship between the Zimbabwean economy and tourism performance.

A. Model Specification:
$$\ln GDP_t = \sigma + \sum^k \beta_i \ln GDP_{t-I} + \sum^k \varphi_j \ln Receipts_{j-1} + u_{1t} \quad (1)$$
$$\ln Receipts_t = \sigma + \sum^k \beta_i \ln GDP_{t-I} + \sum^k \varphi_j \ln Receipts_{j-1} + u_{1t} \quad (2)$$
Where:
$\ln GDP_t$ is the natural logarithm of the GDP
$\ln Receipts_t$ is the natural logarithm of the tourism receipts
σ is the constant
β_i and **φ_j** are the coefficients of the explanatory variables
$\ln GDP_{t-I}$ are the lagged values of GDP
$\ln Receipts_{j-1}$ are the lagged values of tourism receipts
u_{1t} is the error term

The dependent variable is a function of its lagged values and the lagged values of the other variable in the model and all variables have equal lags. This model has been constructed to examine the short-run dynamics of GDP and tourism receipts.

B. Types and Sources of Data
GDP was used as the proxy for the level of economic performance and tourism receipts for the tourism industry performance for the period 0f 28 years from 1990 to 2018. The tourism receipts data was obtained from the Zimbabwe Tourism Authority annual reports and the GDP data collected from the World Bank data portal.

C. Estimation Technique
The Augmented Dickey-Fuller test (ADF) unit root test and the Johansen cointegration test.

The ADF test, developed by Elliot Rothenberg and Stock (ERS) in 1992, is a root unit test for stationarity of a univariate time series [11][12]. The ADF is used to test for stationarity of the data if there is a mean reversion. The hypothesis follows:
> H_0: $\delta = 0$, non-stationary
> H_1: $\delta < 0$, reject

The Johansen Cointegration Test is also called the maximum eigenvalue test and the trace test is a test of the null hypothesis of no cointegration against the alternative of cointegration. If cointegration exists, a Vector Error Correction Model (VCEM) is estimated, the long-run model adjusts quickly to any shocks in the long-run. If there is no cointegration, then a VAR is used to explain the short-run interaction of the equations.
> H_0: no cointegrating equations
> H_1: H_0 is not true

The decision criteria are, H_0 is rejected if the trace and max statistic > critical values at 5% confidence interval. The AIC, HQIC, and SBIC values are used to obtain the number of lags in the model.

For a VAR model, the Granger causality test is applied to investigate the existence of causality between variables in a time series. It is a probabilistic account of causality; that probs for patterns of correlation in a given data set. The causal relationship between GDP and Tourism receipts is obtained from the t-statistics, that measure the significance of the coefficients in the model, and the Granger causality Wald tests. The hypothesis for the Granger test follows:
> H_0: no granger causality
> H_1: reject H_0

The rejection criteria, H_0 is rejected if $P \leq 0.05$, for t-statistic, the coefficient must be significant at 5% significant level. Lagrange-multiplier test, Jarque-Bera test, and Eigenvalue stability condition are applied to test the significance of the model and its stability. Lagrange-multiplier test tests if there is autocorrelation in the model, which may cause the model estimation to be insignificant. The Jarque-Bera test, tests for normal distribution in the model, and each equation. Eigenvalue stability condition examines if the eigenvalues lie inside the unit circle, to ascertain the stability of the VAR model.

IV. RESULTS AND DISCUSSION

Figure 1 presents the trend of international tourist receipts from 1990-2018, and Figure 2 shows the trends of GDP and International Tourist Receipts for the same period. Table 1 presents the results of ADF for GDP and Receipts and their first differences.
According to the ADF test, all variables considered in the study have unit roots at the level. The null hypothesis is

rejected at the first difference. This indicates that all variables are stationary to the first order (Table 1). Table 2 shows no cointegrating between the variables in the model.
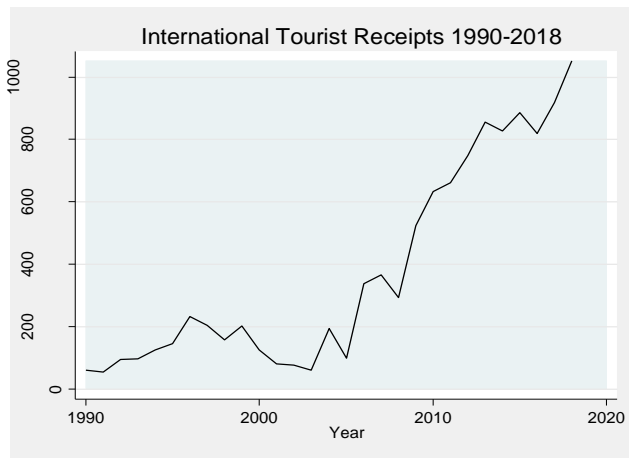

Figure 1: International Tourist Receipts 1990 -2018, Sources: World Bank, ZTA, WTTC, and own computations

Figure 2: Plot of GDP and Tourist Receipts 1990-2018, Source: World Bank and ZTA and own computations

Table 1: Augmented Dickey-Fuller test for unit root

Variable	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
lnGDP	-1.277	-4.362	-3.592	-3.235
lnReceipts	-1.598	-4.362	-3.592	-3.235
dlnGDP	**-3.129**	*-2.500*	*-1.714*	*-1.319*
dlnReceipts	*-3.583*	*-2.500*	*-1.714*	*-1.319*

Table 2: Johansen tests for cointegration

Max Rank	Eigen Value	Trace Statistic	5% Critical Value
0	.	11.5951*	15.41
1	0.33551	0.5591	3.76
2	0.02049		

Max Rank	Eigen Value	Max Statistic	5% Critical Value
0	.	11.0360	14.07
1	0.33551	0.5591	3.76
2	0.02049		

Table 3: Vector autoregression Results

Variables	Coefficient	P>|z|
lnGDP		
lnGDP (L1.)	0.8374959	0.000
lnReceipts (L1.)	0.1135907	0.008
Constant	0.1340225	0.444
lnReceipts		
lnGDP (L1.)	0.0836202	0.767
lnReceipts (L1.)	0.8718543	0.000
Constant	0.0852946	0.863

Table 4: Granger causality Wald tests

Equation	Excluded	P>chi^2
lnGDP	lnReceipts	0.008
lnGDP	All	0.008
lnReceipts	lnGDP	0.767
lnReceipts	All	0.767

Table 5: Jarque-Bera test

Equation	Chi^2	Prob> Chi^2
dlnGDP	56.471	0.00002
dlnReceipts	0.842	0.04755
All	57.313	0.00001

Discussion

Figure 1 shows exponential growth in tourism income, from 2009 to date, this has been attributed to the political and economic stability that was birthed by the Government of National Unity, which saw the dollarization of the Zimbabwe economy. Between 2009 and 2017, there has been economic stability and growth, this has benefited the industry greatly. It has to be noted that whenever there are elections in the country, there is a decline in tourism income as evidenced by the dips in revenue in the years 1999, 2002, 2007, and 2012. From 1999, these elections have been marred with violence which saw most western countries issuing travel warnings and disruptions in business operations. The direct contribution of tourism to GDP in 2017 was USD512.3million (3.0% of GDP). This is forecast to rise by 3.5% to USD530.5million in 2018. The direct contribution of tourism to GDP in 2017 was USD512.3million (3.0% of GDP). This is forecast to rise by 3.5% to USD530.5million in 2018. Figure 2 shows the trends of GDP and tourism receipts moving in almost the same direction. The dips in points marked 1 and 2 show a significant shock that hit the economy at the height of the hyperinflation period. This dip may be misleading in explaining the relationship between receipts and GDP, as all sectors of the economy were impacted by the crisis.

The ADF test, the differenced lnGDP and lnReceipts, dlnGDP, and dlnReceipts showed stationarity at 1% confidence interval as highlighted in table 1 hence they the variables are stationary. The Johansen test for cointegration shows that there is no cointegration between the GDP and Tourism receipts. The trace statistics and max statistics were less than the critical values at 95% interval for both equations, we fail to reject the H$_0$. This shows the existence of a short-term relationship only, between the variables. Since there is no cointegration, an unrestricted VAR model

is used with one lag as per selection order criteria. The two-variable model shows that the lag for lnReceipts has a causal effect on lnGDP, showing impact at a 1% significance level on average ceteris Paribas. This, however, is not true for the second variable. The t-statistic for lnGDP, 0.767>0.05, hence it does not have an impact on lnReceipts at 5% significance on average ceteris Paribas. This shows a unidirectional causal effect, further proved by the Granger causality Wald tests. The Jarque-Bera test showed normal distribution in the model. The Chi2 >probability for each equation, hence the model is normally distributed. The eigenvalue stability condition shows that the model is stable, as the VAR specification imposes a unit modulus. This model can be used to forecast GDP using tourism receipts in the short run.

V. CONCLUSION AND FUTURE SCOPE

Utilising annual time series data over the period 1990-2018, this study analyses the effects of tourism on the economic performance of Zimbabwe. The cointegration test shows that tourism has no long-run relationship with economic performance. In the short run, tourism has a unidirectional, positive causal relationship with GDP. Efforts to improve the tourism sector will result in the growth of the economy in the short-run. Following Butler's Tourism Area Life Cycle Model, Zimbabwe is in the development stage, it is now a known and popular destination, with investors and tourist companies seizing opportunities in the sector. The government must prioritize the capital investment in designated Tourism Development Zones (TDZs) and Special Economic Zones (SEZs) in the country to improve the quality of service in these areas to compete in the global market. Further studies should explore the tourism impact and multiplier effects in Zimbabwe.

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AUTHORS PROFILE

Mukonto, Daniel Toindepi holds a BTech Honours in Financial Engineering from the Harare Institute of Technology and is currently a Graduate Student, at the Hebei University of Economics and Business, his research interests, are in International Trade, Development Economics, Quantitative Finance and investments.

Cheng, Jian (1963-), is a professor at the Hebei University of Economics and Trade, and is the Director of International Cooperation Department, with research interests: international trade and world economy, international business management research.