ESTIMATING THE TOURISM POTENTIAL IN NAMIBIA

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Abstract

This paper investigates the determinants of tourism in Namibia for the period 1996 to 2012. The results indicate that an increase in trading partners' income, depreciation of the exchange rate, improvement in Namibia's infrastructure, sharing a border with Namibia are associated with an increase in tourist arrivals. Governance indicators such as rule of law, political stability and no violence are also associated with an increase in tourist arrivals to Namibia. The results show that there is unexploited tourism potential from Angola, Austria, Botswana, Germany and South Africa. This suggests that it is important to exploit the tourism potential as this would help to accelerate economic growth and generate the much needed employment.

Keywords: Tourism Potential, Panel Data, Fixed Effects, Unit Root

JEL classification: F170, C500, C230, C330, C590

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1. Introduction

Tourism is the largest export earner in the world as it generates foreign exchange. Foreign exchange generated by tourism exceeds those from sectors such as petroleum, motor vehicles, textiles and telecommunication equipment in recent years (Eita et al, 2011). The World Travel Tourism Council (2014) indicated that tourism is a labour intensive industry and employs 9 percent of world employment. The World Travel and Tourism Council (WTTC) also indicated that in 2013 tourism accounted for about 10 percent of world GDP. Tourism is an important sector in many economies as it generates foreign exchange that can be used to finance infrastructure and other projects that accelerate economic growth. It also promotes international peace through the provision of incentives for peacekeeping and closure of the gap between different cultures.

The WTTC estimates that tourism accounts for a significant proportion of the GDP and employment of developing countries and this indicates that it is important for economic development. According to WTTC (2014) the direct impact of tourism in the Namibian economy in 2013 is estimated at 3.7 percent of GDP and 4.5 percent of total employment. Since tourism touches all sectors of the economy its real impact is higher. The total direct and indirect impact of tourism is that it accounts for 19.4 percent of total employment and 15 percent of total GDP. The sector also accounts of 7.9 percent of the total exports of goods and services.

Before and after independence in 1990, Namibia has depended on the extraction of mineral resources, agriculture and fishing for growth and development but high unemployment remains a challenge facing the government. The tourism sector is now regarded as the sector with real opportunities for employment creation and economic growth. The government of Namibia recognizes the role of tourism in the economy and has recently identified it in Vision 2030 and the National Development Plans as a priority sector. Vision 2030 is a long-term national development framework reflecting the aspirations and objectives of the people of Namibia. The kernel of this is the desire to enhance the standard of living and improve the quality of life of the Namibian people. Vision 2030 calls for every Namibian to have the standard of living equal to those in the developed world. The development of the tourism sector is regarded as the key factor in the Broad Based Economic empowerment. Given its importance and role in the Namibian economy, it is important to investigate factors that determine tourism in Namibia. This will help to analyze if there is unexploited tourism potential among Namibia's trading partners. An econometric model is a useful tool in analyzing tourism arrivals in a country.

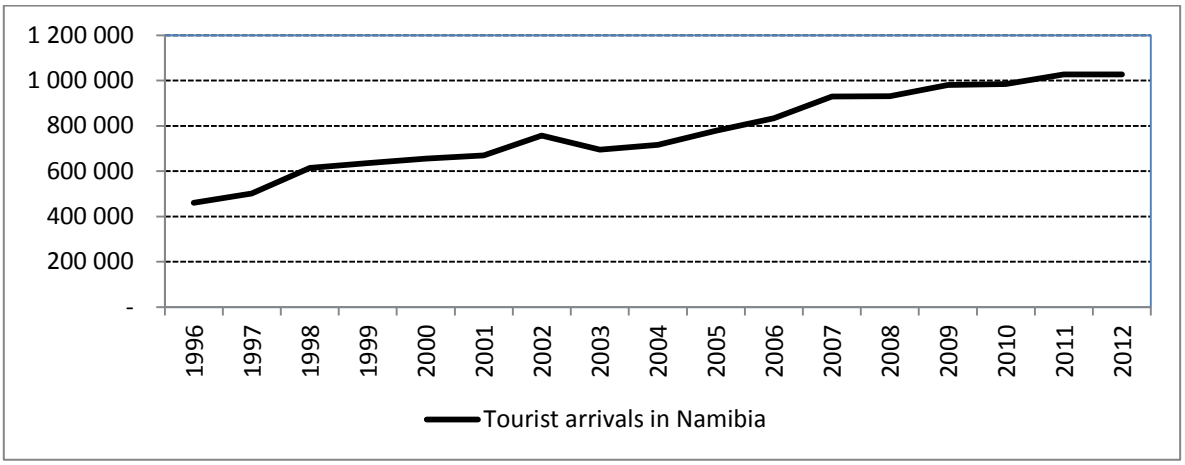
In light of the above discussion, the objective of this paper is to investigate factors which determine tourist arrivals in Namibia using an econometric model of international tourism. It then investigates whether there is unexploited tourism potential among Namibia's trading partners in this sector. The rest of

the paper is organized as follows. Section 2 discusses the overview of tourism in Namibia. Section 3 discusses the literature and model. Section 4 discusses the methodology for estimation and Section 5 discusses data and unit root test. Section 6 presents the estimation results, while Section 7 discusses the tourism potential. The conclusion is presented in Section 8.

2. Overview of Tourism in Namibia

Namibia experienced a boom in the tourism sector between 1996 and 2012. The total number of tourist arrivals in Namibia between 1996 and 2012 is presented in Figure 1. Tourist arrivals in Namibia increased from 461310 in 1996 to 1027229 in 2012.

Figure 1. Total number of tourist arrivals in Namibia



Source: Data obtained from Namibia Tourism Board and Ministry of Environment and Tourism of Namibia

The composition of tourist arrivals in Namibia is presented in Table 1 and shows that African countries are the main source of tourists to Namibia. With the exception of Germany in third place in Namibia's overall tourist ranking, African countries occupy the top six positions. Angola and South Africa are leading source tourists for Namibia. Other European countries (United Kingdom, Netherlands, France, Italy, Switzerland, Scandinavia, and Austria) also account for a significant amount of tourist arrivals in Namibia. The United States of America is the eighth main source of tourists for Namibia.

Table 1. Top sources of tourist arrivals for Namibia in 2012

Market	Tourist arrivals
Angola	361480
South Africa	272930
Germany	79721
Zambia	61120
Zimbabwe	42945
Botswana	28658
United Kingdom	21584
United States of America	17946
Netherlands	12346
France	13729
Italy	11207
Switzerland	11433
Scandinavia	10115
Austria	6016
Australia	7633
Total including others	1027229

Source: Namibia Tourism Board and Ministry of Environment and Tourism of Namibia

According to the WTTC (2006; 2014), travel and tourism in Namibia is estimated to directly produce N$ (Namibia dollars) 3.1 billion or US$381.2 million and this is equivalent to 3.7 percent of the GDP in 2013. The broader travel and tourism (which include direct and indirect impact) is estimated to contribute N$ 15.3 billion or US$ 1.9 billion and this accounts for 15 percent of Namibia's GDP. The broader tourism and travel also generated about 103500 jobs (total of direct and indirect) in 2006. This represents 19.4 percent of the total employment in Namibia.

WTTC (2014) also indicated that the travel and tourism sector plays an important role in generating foreign exchange. It is estimated that this sector contributed N$6.6 billion or US$804 million in 2013. This accounts for 7.9 percent of total exports of Namibia.

3. Literature and the Model

There are two main groups of literature on the tourism industry. The first is international trade, which according to Eilat and Einav (2004) is a starting point because tourism is part of international trade. The second group is the empirical tourism literature.

The general starting point for theoretical and empirical literature on international trade is the Heckscher-Ohlin theory or pattern. It states that international trade depends on the relative factor endowments. This is important when factors of production are capital and labor as this makes it less necessary for tourism analysis. In the case of tourism, the most important factors of production are unique to the specific country and not easy to measure, evaluate or compute. Eilat and Einav (2004) gave examples of the Eiffel Tower, Pyramids and nice beaches. In Namibia, sand dunes of the Namib Desert are good examples of these unique factors of production, and it makes the investigation of the determinants of international tourists to the country less attractive theoretically. The ability of unique factors of production such as Sand Dunes of the Namib Desert to attract tourists to Namibia is best measured by the number of international visitors who visit them. An investigation of the variables that have an impact on the demand for tourism is very important when dealing with this sector of the economy. The variables that have an effect on tourism will be discussed later in this paper.

There are two groups in the empirical literature of tourism. The first group comprises of studies that use time series and cointegration econometric techniques to investigate the determinants of tourism demand and forecast the future tourist arrivals (among others, Katafono and Gounder, 2004; Narajan, 2005; Durbarry, 2002; Divisekera, 2003; Cheung and Law, 2001). The second group involves studies that deal with determinants of tourism using panel data econometric techniques (such as Eilat and Einav, 2004; Luzzi and Flückiger, 2003; Walsh, 1997; Roselló *et al*. 2005; Naude and Saayman, 2004; Eita et al. 2011). This current study falls within the second group of the empirical tourism literature. Following the review of the second group of the empirical tourism literature and theory, the demand for tourism from country *i* to country *j* is specified as:

(1):

$$T_{ij} = f(Y_i, P_j, ER_{ij}, TC_{ij}, INFRA_j, A_{ij})$$

where T_{ij} is the number of tourist arrivals in country *i* from country *j*, Y_i is the income of country *i*, P_j is price or cost of living in country *j*, ER_{ij} is the exchange rate measured as units of country *j*'s currency per unit of country *i*'s currency, TC_{ij} is the transport costs between country *i* and country *j*, $INFRA_j$ is the measure of infrastructure in country *j*, and A_{ij} represents any other factor that determines the arrival of tourists from country *i* to country *j*. Equation (1) is specified in log form as for estimation purpose as:

(2):

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln Y_i + \gamma_2 \ln P_j + \gamma_3 \ln ER_{ij} + \gamma_4 \ln TC_{ij} + \gamma_5 \ln INFRA_j + \gamma_6 \ln A_{ij} + \varepsilon_{ij}$$

The income of the source of tourism country is the most widely used variable. As Lim (1997) states, travelling to another country is generally expensive and is regarded as a luxury good and therefore disposable income is an appropriate variable as it affects the ability of tourists to travel. Since disposable income data are hard to find, many studies uses real GDP per capita, nominal or real GDP or GNP. This study uses GDP of the tourism country as a proxy for income. An increase in income is positively related to the number of tourist arrivals, and hence γ_1 is expected to be positive.

The price of tourism is another most commonly used explanatory variable for tourism arrivals in many studies (such as Naude and Saayman, 2004; Katafono and Gounder, 2004; Walsh, 1997; Luzzi & Flückiger, 2003). It is the cost of tourism services which tourists pay at their destinations. A tourist price index which comprises of goods purchased by tourists is appropriate, but since this index is not available, most studies use the consumer price index as a proxy for price of tourism services. A rise in price at destination means that the cost of tourism service is increasing & this discourages tourist arrivals ($\gamma_2 < 0$).

The exchange rate variable is added to the list of explanatory variables in addition to the price. This is the nominal exchange rate defined as the currency of the tourist destination country per currency of tourist source country. A depreciation of the exchange rate makes tourism goods and services cheaper and encourages tourist arrivals ($\gamma_3 > 0$).

The cost of transport between the source and destination countries can be an important part of the cost of tourism goods and services. According to Luzzi and Flückiger (2003), the cost of transport should take into account the costs of an air ticket and the cost of the whole journey. The cost of transport should comprise all components of costs to the destination. The cost of transport to the destination could probably be measured as weighted average

price of air, sea and land. It is difficult to get data on all components of transport costs between the source and destination countries, and most studies have used distance in kilometers between the tourism source and tourism destination countries. This current study follows Eita *et al.* (2011) and also uses distance in kilometers between the source and destination countries as a proxy for transport costs. An increase in transport costs causes a decrease in the number of tourist arrivals, and this means that $\gamma_4 < 0$.

Infrastructure is also another variable that has the potential to determine tourist arrivals in a country. Studies such as Naude and Saayman (2004) used the number of hotel rooms in the country as an indicator of tourism infrastructure. The number of hotel rooms available in the country is an appropriate indicator of the capacity of the tourism sector in the country. According to Naude and Sayman, the higher the number of rooms the greater the capacity of the tourism sector and this implies that the country is highly competitive. The other measure of infrastructure used by Naude and Sayman is the number of telephone lines per employees. An increase or improvement in infrastructure in both the destination and source countries attracts the number of tourist arrivals, hence $\gamma_5 > 0$.

This study adds some additional variables that have a potential to explain variation in tourism arrivals in Namibia. These are governance indicators and a dummy variable to represent countries that border Namibia. After introducing these variables, Equation (2) is re-specified as:

(3):

$$\ln T_{ij} = \gamma_0 + \gamma_1 \ln Y_i + \gamma_2 \ln P_j + \gamma_3 \ln ER_{ij} + \gamma_4 \ln DIS_{ij} + \gamma_5 \ln INFRA_j + \gamma_6 BORDER + \gamma_7 \ln RULELAW_j + \gamma_8 \ln POLSTABILITY_j + \varepsilon_{ij}$$

where DIS_{ij} is the distance in kilometers between Namibia and its trading partners and is a proxy for transport costs, $RULELAW_j$ is the rule of law, and $POLSTABILITY_j$ is political stability. Countries which border Namibia are given the value of 1 and 0 for otherwise. It is expected that being a neighbor to Namibia is associated with an increase in tourist arrivals. That means the coefficient of γ_6 is expected to be positive. It is expected that tourists will be attracted to the visit countries that respect and have rule of law and politically stable. This implies that γ_7 and γ_8 are expected to have positive signs.

4. Estimation Procedure

Panel data models can be estimated using pooled, fixed and random effects. The pooled model makes assumption that cross-sections are similar or homogeneous. Fixed and random effects reject homogeneity of the cross-sections and bring in variation in the estimation of the panel data models. It is important to determine whether random or fixed effects model is the appropriate model. If the model is estimated using randomly selected sample of cross sections from a large group (population or large group of cross-sections), then random effects would be the appropriate model. However, if the estimation is between pre-determined selections of cross-sections, then fixed effects model will be appropriate (Egger, 2000). This suggests that in the fixed effects model is appropriate in this current study. That is because it deals with tourism arrivals in Namibia from 11 selected trading partners in the tourism sector. The top 11 trading partners were selected based on the tourism data for the period 1996 to 2012. In addition, the study uses the Hausman test in order to determine whether fixed effects model is more suitable than the random effects model. If the null hypothesis of no correlation between individual effects and the regressors is rejected, then the fixed effects model will be appropriate to estimate panel data model.

Random effects and pooled models can estimate a model with variables that do not change with respect to time. However, fixed effects model cannot estimate a model with variables that are time invariant. Studies such as Martinez-Zarzoso and Nowak-Lehmann (2001) suggest that a second step is required to estimate these time invariant variables.

5. Data and Unit Root Test

5.1 Data

The study uses annual data and the estimation covers the period 1996 to 2012. Eleven countries are included in the estimation. The number of tourist arrivals in Namibia ($\ln T_{ij}$) is used as a dependent variable. These data were obtained from the Namibia Tourism Board and Ministry of Environment and Tourism of Namibia.

GDP per capita ($\ln Y_i$) of Namibia's trading partners in the tourism sector is taken as a proxy for income of the tourist source country. The data for this variable in USA$ were obtained from the World Bank Development Indicators and the IMF's International Financial Statistics. The Namibia dollar/US$ exchange rate ($\ln ER_{ij}$) was obtained from various issues of the Quarterly Bulletin of the Bank of Namibia. Namibia's inflation rate ($\ln P_j$) is used as proxy for prices in Namibia. Data for this variable were obtained from the Bank of Namibia.

The study also attempted to include a proxy of the infrastructure variables ($\ln INFRA_j$). Consistent data for appropriate variables such as tourism capacity proxied by the number of hotel beds, the number of roads, railways, building completed are not available for trading partners. This study acknowledges that there are consistent data on hotel accommodation capacity in the last few years (2008 -2011), but since

this study covers the period 1996 to 2012 this variable could not be included in the estimation. This study uses air transport passengers carried in and out of Namibia as a proxy for infrastructure. The data for this variable were obtained from the World Bank Development Indicators. Distance in kilometers (DIS_{ij}) between Windhoek (capital city of Namibia) and capital cities of trading partners in the tourism sector is used as a proxy for transport costs and were obtained from http://www.timeanddate.com.

A dummy variable (BORDER) is generated for countries that share borders with Namibia. It takes the value of 1 for countries that have borders with Namibia and 0 otherwise. The rule of law ($RULELAW_j$) variable reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights. The data for this variable were obtained from the World Bank's Worldwide Governance Indicators website.

Data for political stability, absence of violence and no terrorism in Namibia ($POLSTABILITY_j$) reflects perceptions that there is no likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. The data for this variable were also obtained from the World Bank's Worldwide Governance Indicators.

5.2 Unit Root Test

Unit root is the first step before the estimation of Equation (3). Unit root test helps in determining whether there is cointegration between variables in the model. Rejection of the unit root in variables suggests that the panel data model can be estimated using traditional econometric methods. Failure to reject the null of unit root suggests that it is important to test for cointegration between variables in the panel data model.

This study uses LLC (Levin, Lin and Liu, 2002) and the IPS (Im, Pesaran and Shin, 2003) to test for unit root. The results for unit root test are presented in Table 2. According to the IPS test statistic exchange rate, Namibia's infrastructure, rule of law and inflation rate are stationary. The remaining variables are nonstationary. The LLC test statistic rejects the null hypothesis unit root for all variables, suggesting that all variables are stationary. This study uses rejection of the null of unit root by one test to assume that the variable is stationary. That is because the two test statistics yield conflicting results for some variables. Equation (3) can now be estimated using traditional econometric methods. There is no need to test if the variables are cointegrated.

Table 2. Panel Unit root test

Variable	IPS test statistic	LLC test statistic
$\ln Y_i$	0.707 (0.760)	-2.685 (0.004)***
$\ln ER_{ij}$	-5.146 (0.986)***	-5.762 (0.000)***
$\ln T_{ij}$	-0.78 (0.217)	-1.52 (0.004)***
$\ln INFRA_j$	-2.719 (0.023)**	-2.154 (0.015)**
$\ln RULELAW_j$	-2.626 (0.000)***	-3.632 (0.000)***
$\ln POLSTABILITY_j$	-1.385 (0.675)	-2.085 (0.018)**
$\ln P_j$	-4.885 (0.000)***	-4.813 (0.000)***
	-4.885 (0.000)***	-4.184 (0.000)***

*Notes: ***/**/* significant 1%/5%/10% level.*
Probabilities are in parentheses.

6. Estimation Results

The results for the pooled, fixed effects and random effects models are presented in Table 3. The results in the second Column are those of the pooled model. The pooled model assumes that there is no heterogeneity among countries and no fixed effects are estimated. It therefore assumes homogeneity for all countries. It is a restricted model because it assumes that the intercept and other parameters are the same across all trading partners.

The results of the fixed effects model are in the third Column. The fixed effects model assumes that countries are not homogeneous, and introduces heterogeneity by estimating country specific effects. It is an unrestricted model as it allows for an intercept and other parameters to vary across trading partners. The F-test is performed to test for homogeneity or poolability of countries. It rejects homogeneity of countries even at 1 percent significance level and this means that a model with individual effects must be selected.

The results of the random effects model are in Column 4. This model also acknowledges heterogeneity among countries, but it differs from the fixed effects model because it assumes that the effects are generated by a specific distribution. It does not explicitly model each effect, and this avoids the loss of degrees of freedom which happens in the fixed effects model. The LM test is applied to the null

hypothesis of no heterogeneity. The LM test also rejects the null hypothesis of no heterogeneity in favour of random specification.

The Hausman specification test is used in order in order to determine whether fixed effects or random effects are the appropriate model. The results of the Hausman test indicate that fixed effects model is appropriate. Therefore interpretation and analysis of the results will only focus on the fixed effects model. That is because the pooled and random effects models are rejected in favour of fixed effects models.

Table 3. Estimation results

Variables	Pooled Model	Fixed Effects model	Random Effects model
Constant	-59.873 (-9.109)***	3.867 (3.149)***	-17.639 (-1.091)
$\ln Y_i$	1.394 (11.775)***	0.141 (1.993)**	0.166 (2.373)**
$\ln ER_{ij}$	0.088 (0.231)	0.532 (4.093)***	0.523 (4.031)***
$\ln INFRA_j$	-0.532 (-1.612)	0.324 (2.761)***	0.307 (2.618)***
$\ln P_j$	-0.006 (-0.124)	-0.022 (-1.291)	-0.022 (-1.272)
$\ln RULELAW_j$	0.361 (0.338)	0.252 (0.703)	0.253 (0.707)
$\ln POLSTABILITY_j$	-0.128 (-0.534)	0.088 (1.083)	0.083 (1.027)
EU	4.674 (10.696)***		1.544 (1.108)
BORDER	21.750 (13.070)***		7.306 (1.722)*
DIS	6.345 (11.504)***		2.128 (1.276)
Adjusted R-squared	0.677	0.965	0.546
F-test statistic		137.262***	
LM test statistic			430.592***
Hausman test statistic		104.26***	

*Note: ***/**/* significant at 1%/5%/10% significant level t-statistics are in parentheses*

The results of the fixed effects model shows that an increase in trading partner's GDP per capita income causes tourist arrivals to Namibia to increase. An increase (depreciation) in the Namibia dollar/USA$ exchange rate attract tourist to Namibia. Improvement in Namibia's infrastructure is associated with an increase in tourist arrivals. This means that it is important to improve infrastructure in order to increase tourist arrivals. Improvement in governance indicators such as rule of law, political stability and no violence is also associated with an increase in tourist arrivals. However, the coefficients of these variables are not statistically significant. As expected, a rise in Namibian prices discourages tourist arrivals in Namibia. These results compares favorably with other tourism studies in the literature.

Table 4 presents country specific effects. The country specific effects show the effects that are unique to each country but not included in the estimation. They show that tourist arrivals in Namibia differ from country to country and each country is unique. There are unique features in some countries which promote tourist arrivals in Namibia from countries such as Angola, Germany, South Africa, Zambia and Zimbabwe. These are countries with positive effects and as presented in Table 4. The country specific effects also show that there are countries' characteristics (unobservable) that discourage tourist arrivals in Namibia from countries with negative fixed effects and not shaded in Table 4. An investigation of the factors which discourage tourist arrivals in Namibia from countries with negative fixed effects is important for policy making, as this would help to identify constraints to the tourism sector.

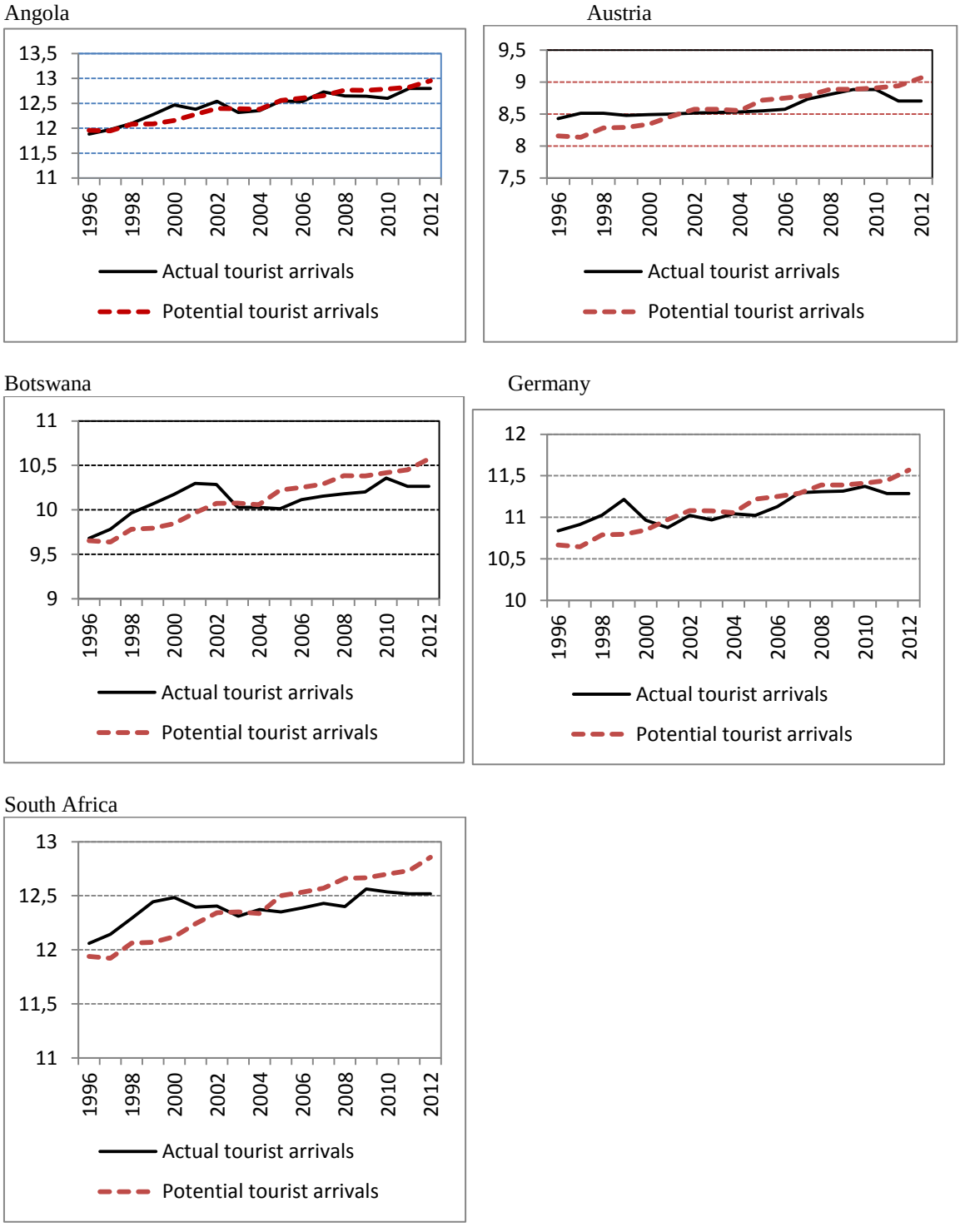
Table 4. Country specific effects

Angola	2.482321
Austria	-1.806728
Botswana	-0.016571
France	-1.142328
Germany	0.708145
Italy	-1.358909
South Africa	2.265614
UK	-0.526647
USA	-0.941508
Zambia	0.209882
Zimbabwe	0.165722

7. Tourism Potential

The fixed effects model estimated in Equation (3) is simulated in order to determine the within sample tourism potential. The actual tourist arrivals are then compared to the potential tourist arrivals in order to see if there are countries with unexploited tourism potential (at least from 2007 onwards). The trade potential results are presented in Figure 2. Figure 2 shows that among others, Angola, Austria, Botswana, Germany, South Africa have unexploited trade potential. It is important to promote Namibia tourism to these countries in order to exploit the unexploited tourism potential. A further analysis of each country to identify possible constraints to Namibia's tourism is required.

Figure 2. Trade Potential (in logs)



8. Conclusion

This paper investigates the determinants of tourist arrivals in Namibia for the period 1996 to 2012 using a model of international tourism and analyzed if there are some markets with unexploited tourism potential. The study revealed that the main source of tourist arrivals in Namibia is African countries, mainly neighboring countries. Neighboring countries account for the largest number of tourists followed by Germany, USA and other European countries.

The model was estimated for 11 main trading partners in the tourism sector. The estimation results show that trading partners' income has a positive effect on tourist arrivals in Namibia. A depreciation of the Namibia dollar/USA$ exchange rate and improvement in Namibia's infrastructure attract tourists. Having a border with Namibia is associated with an increase in tourism arrivals in Namibia. An increase in Namibian prices discourages tourist arrivals to Namibia. Governance indicators such as rule of law and political stability have a positive effect on tourist arrivals in the country (although statistically insignificant). The estimated model was simulated to determine if there is unexploited tourism potential. The results revealed that there is unexploited tourism potential in Angola, Austria, Botswana, Germany and South Africa. The results suggest that it is important to promote tourism to markets where there is unexploited trade potential. Factors which inhibit the tourism sector in Namibia need to be investigated. This can contribute to increase in economic growth and employment generation.

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