

DETERMINING TOURIST ARRIVALS IN UGANDA: THE IMPACT OF DISTANCE, TRADE AND ORIGIN-SPECIFIC FACTORS

Andrew Muhammad¹

Mississippi State University, USA

Email: muhammad@agecon.msstate.edu

Donald Andrews

Southern University, USA

Email: business@subr.edu

ABSTRACT

This study investigated the impact of origin-specific factors on Uganda's tourist arrivals. Of the countries with visitors to Uganda, tourist numbers were as low as 28 from the Czech Republic in 2000, and as high as 220,000 from Kenya in 2004. Using panel data (2000-2004) and the gravity trade model, we estimated Uganda's inbound tourist flows. According to results, Real GDP in the visitor's country, distance, trade with Uganda, and exchange rates explained 73 percent of the variation in tourist arrivals. The greatest impact on tourist arrivals was distance (negative impact). Neighboring countries had significantly more visitors to Uganda, *ceteris paribus*. The number of visitors was significantly greater for countries with higher GDP. A country's exports to Uganda (Uganda's imports) had a positive effect on tourist arrivals. The effect of Uganda's exports was smaller but still significantly positive. A relatively strong Ugandan shilling had a negative effect on tourist arrivals.

Keywords: Uganda, tourism, arrivals, distance, trade, gravity trade model

JEL Classification: L83, O55, O12

1. INTRODUCTION

Uganda has seen a dramatic increase in tourism due to economic and political reform. Tourism is a major export for the economy and is considered to have high potential as a major driver of economic growth and development [Government of

¹ Contact details: Mississippi State University, Department of Agricultural Economics, P.O. Box 5187, Mississippi State, MS 39762, USA, Phone: (662) 325-0200, Fax: (662) 325-8777. The authors acknowledge with appreciation the funding for this study that was received from the United Negro College Fund Special Programs (UNCFSP/IDP).

Uganda (2000); Ministry of Tourism, Trade and Industry (2003)]. A priority of the Ugandan government is to revive the tourist industry. This is explicitly outlined in the Ugandan Sustainable Tourism Development program (USTD) which is supported by the European Development fund. The USTD covers the period 2003 through 2007, and its aim is to contribute to the growth, development and diversification of the Ugandan economy through sustainable growth and development of the tourism sector (Ministry of Tourism, Trade and Industry, 2006).

The Ugandan economy has seen a major increase in the number of tourist arrivals for both business and vacation purposes. This has been due in part to political stability in Uganda and the unique natural resources in the country. From 2000 to 2004, the total number of arrivals increased from 192,755 to 512,379 (166 percent). Of the countries with visitors to Uganda, the number of arrivals was as low as 28 from the Czech Republic in 2000, and as high as 220,000 from Kenya in 2004, Uganda Bureau of Statistics (2005).

The factors that influence travel to Uganda are of particular importance to the Ugandan government and tourism industry. Understanding how factors influence the number of tourist arrivals will provide Ugandan policy makers with the information needed for further industry expansion. Given the difference in the number of visitors from each country, the purpose of this study is to estimate the impact of origin-specific factors on Uganda's tourist arrivals. Past tourism studies used the gravity trade model for empirical analysis. In this study, the gravity trade model is used in the estimation of Uganda's tourist inflows. The model is estimated with panel data (2000 to 2004). The dependent variable in the model is the number of arrivals from a particular country and the independent variables are the determining factors specific to the arrival's country: Real GDP, merchandise and commodity trade flows with Uganda, exchange rate, and distance. Estimates were obtained using ordinary least squares (OLS) and a one-way fixed effects (FE) regression.

II. BACKGROUND

In 1960, Uganda was the leading destination for African tourism. By 1970, tourism was the third largest source of foreign exchange for the country. During the 1970s and 1980s, the tourism industry was decimated as a result of despotic regimes Andersson, et al. (2005). In recent years, there has been an increase in the number of international visitors encouraged by political stability, economic growth, and a targeted campaign to protect and nurture prized wildlife populations, Business Wire (2005). Uganda is particularly unique among African countries because of the mountain gorillas in the Bwindi Impenetrable National Park (BNP) and the Mgahinga Gorilla National Park (MGNP). BNP is home to approximately 50 percent of the 650 mountain gorillas remaining in the world. Other parks inhabited by mountain gorillas include the Parc des Volcanos in Rwanda and Parc des Virunga in the Democratic Republic of Congo. Due to regional conflict, these parks are considered unsafe for tourists.

Consequently, BNP and MGNP are the only safe parks in the region, Andersson, et al. (2005).

Table 1.

Arrivals to Uganda by Country of Residence: 2000-2004

Country	2000	2001	2002	2003	2004
Africa	132,240	144,257	192,891	234,643	406,744
Egypt	553	546	609	583	1,038
Ethiopia	1,300	1,348	1,509	1,813	2,482
Kenya	60,900	64,933	80,518	114,499	220,062
Rwanda	36,041	39,597	52,431	50,143	65,298
Sudan	760	2,994	3,969	5,607	5,536
Tanzania	14,375	16,863	23,584	30,534	67,885
Congo	7,957	5,974	7,586	5,915	3,998
Other Africa	10,354	12,002	22,685	25,549	40,445
America	11,947	12,919	14,785	16,414	23,438
Canada	2,053	1,870	2,216	2,507	3,669
USA	9,593	10,550	11,922	13,179	18,898
Asia	8,368	8,163	9,302	10,955	17,884
China	945	1,025	1,036	1,181	1,798
India	4,810	4,588	5,708	6,639	9,366
Japan	773	539	580	661	897
Pakistan	728	926	731	1,024	2,773
Other Asia	1,112	1,085	1,247	1,450	3,050
Europe	36,050	36,592	33,853	39,225	48,847
Austria	249	168	262	354	500
Belgium	1,446	1,407	1,438	1,748	1,914
Czechoslovakia	28	43	39	63	135
Denmark	1,654	1,401	1,499	1,643	1,891
Finland	178	133	227	224	354
France	1,320	1,351	1,353	3,022	2,079
Germany	2,497	2,920	3,280	3,522	4,241
Ireland	707	700	700	865	1,139
Italy	1,560	2,080	1,735	1,924	2,406
Netherlands	2,203	2,111	2,339	2,475	3,313
Norway	6,717	7,090	1,480	1,528	1,749
Russia	139	235	273	286	486
Sweden	1,496	1,257	1,637	1,845	2,471
Switzerland	891	1,085	1,216	1,134	1,568
UK	13,954	13,626	15,171	17,181	22,402
Yugoslavia	44	70	107	85	103
Other Europe	967	915	1,097	1,326	2096
Middle East	1,479	1,248	1,227	1,398	2,095
Australia	1,550	1,068	1,100	1,349	2,132
New Zealand	519	257	225	206	273
Total	192,755	205,287	254,219	305,720	512,379

Source: Immigration Department, Ministry of Internal Affairs, and Uganda Bureau of Statistics

Tourism in Uganda has increased considerably in the last two decades. From 1983 to 2003, the number of tourists increased from 12,786 to 305,720, an increase of 2,291 percent. In 2004, tourist arrivals increased to 512,379, an increase of 68 percent over the previous year, Uganda Bureau of Statistics (2005). The number of arrivals by country from 2000 to 2004 is presented in Table 1. The majority of visitors to Uganda were from African countries. Overall, African countries accounted for nearly 75 percent of all visitors during this period, Uganda Bureau of Statistics (2005).

From 2000 to 2003, Kenyan nationals accounted for about one-third of all visitors to Uganda. In 2004, Kenya accounted for 43 percent of all visitors. Points of entry for Kenyan residents include crossing the border at the Busia, Malaba and Suam River or air travel. Kenya accounts for about 15 percent of all arrivals by air [Euromonitor International (2007); Uganda Bureau of Statistics (2005)].

Of the non-African countries, the United Kingdom (UK), United State (US) and India had the most visitors to Uganda. In 2000, the UK accounted for 14,000 visitors to Uganda. This steadily increased to 22,402 visitors in 2004. In 2000, the number of visitors from the US was 9,600. In 2004, this increased to 19,000. India's relatively high numbers are in part due to the large Indian population in Uganda. In 2000, total visitors from India were 4,800. In 2004, visitors from India numbered nearly 9,400.

Uganda's tourist arrivals by purpose of visit and region are presented in Table 2. The reasons for visiting Uganda were the following: holiday and vacation, business and conferences, visiting friends and relatives, transit, and other reasons not stated. In 2004, arrivals from African countries were almost evenly split between vacationing, business, and visiting friends and relatives (60,067, 69,001, and 56,695 respectively). Since 2000, the largest increase for African arrivals was in the visiting friends and relatives category (270 percent). The increase in the number of visitors on vacation was 157 percent. The increase in business arrivals was 55 percent.

In 2000, visitors from Europe were evenly split between vacationing and business. By 2004, the number of European visitors on vacation was nearly three times the number of visitors on business. The same was true for American visitors. From 2000 to 2004, the number of American visitors on vacation or holiday increased from 2,545 to 6,145, while the number of visitors on business remained fairly steady at 2,800. The increase in visitors on vacation relative to visitors on business was also true for Asia, although not as extreme when compared to Europe or America.

Overall, the data indicates that Uganda has experienced a change in why people visited the country. While business was the primary reason for visiting Uganda in 2000, there has been a significant increase (quantity and percent) in the number of visitors on vacation and holiday. This does not imply that business opportunities have declined since 2000. Note that African visitors on business significantly increased during this period, and represented the largest specified category in 2004. What the data shows is that African, European, American and Asian residents are increasingly seeing Uganda as a vacation destination.

Table 2.
Arrivals to Uganda by Region and Purpose of Visit: 2000-2004

Region	2000	2001	2002	2003	2004
Holiday and Vacation					
Africa	23,401	28,933	47,444	54,833	60,067
Europe	6,823	9,279	12,254	12,981	15,038
America	2,545	4,023	5,002	5,095	6,145
Asia	1,371	1,948	2,749	2,558	3,342
Middle East	298	291	380	304	468
Oceania	851	567	552	627	824
Business and Conference					
Africa	41,441	41,192	48,245	55,577	69,001
Europe	6,800	6,254	5,891	6,129	5,728
America	2,811	3,029	2,571	2,504	2,763
Asia	1,944	1,686	1,697	1,954	2,461
Middle East	458	330	275	310	344
Oceania	299	193	205	218	229
Visiting Friends and Relatives					
Africa	15,354	21,526	22,932	40,090	56,695
Europe	3,740	4,326	5,114	6,898	7,439
America	1,624	1,839	2,571	3,127	4,182
Asia	693	876	1,070	1,540	2,391
Middle East	135	137	137	222	224
Oceania	157	115	138	172	216
Transit					
Africa	7,141	10,370	12,168	11,539	25,160
Europe	1,983	2,771	2,063	2,309	3,110
America	745	909	917	922	1,402
Asia	550	694	607	635	1,158
Middle East	99	88	83	87	143
Oceania	60	122	103	106	242
Other Reasons Not Stated					
Africa	50,644	48,322	62,117	72,624	195,820
Europe	10,963	7,761	8,537	10,912	17,532
America	4,222	3,119	3,724	4,766	8,946
Asia	3,810	2,957	3,180	4,268	8,532
Middle East	489	401	353	475	916
Oceania	701	328	327	432	894

Source: Immigration Department, Ministry of Internal Affairs, and Uganda Bureau of Statistics

III. OVERVIEW OF THE GRAVITY MODEL

The empirical success of the gravity model has long been recognized in economic research. It has been used to explain various flows between countries such as commodity trade, migration, and tourism (Bergstrand, 1985). Although empirically successful, gravity models have been criticized for being ad hoc. However, Anderson (1979) provides a theoretical framework for the gravity model. Bergstrand (1985) provides empirical evidence that the gravity model is a reduced form from a partial equilibrium subsystem. The reduced form subsystem is part of a general equilibrium system with products differentiated by country of origin. Past studies that used the gravity model to estimate tourism demand for a given country or region include (Durberry, 2000) and (Lundgren, 2004). Although a gravity model was not used, Moshirian (1993) and Patsouratis et al. (2005) give an overview of the variables that determine tourism demand. (Shan and Wilson, 2001) provide an empirical discussion of the causal relationship between international trade flows and tourism flows, where they suggest that estimates from past studies that ignored the linkage between trade and tourism were likely biased. Finally, (Naude and Sayman, 2005) investigated the factors that determine tourist arrivals in Africa where they look at destination specific factors that attracted visitors to African countries.

The gravity trade model is commonly specified as follows:

$$X_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} f(\mathbf{Z}_{ij}) u_{ij}. \quad (1)$$

X_{ij} is the trade flow of factor X from country i to country j ; Y_i and Y_j are measures of national income for country i and j respectively; D_{ij} is a measure of distance between country i and country j ; $f(\mathbf{Z}_{ij})$ is a function where \mathbf{Z} is a vector of variables that encourage or discourage flows between countries i and j ; $\alpha_0, \alpha_1, \alpha_2, \alpha_3$ and α_0 are parameters to be estimated; u_{ij} is a log-normally distributed error term.

Our specification of the gravity model is similar to the general functional form specified by (Mátyás, 1998). Given the large cross section relative to the number of years, the inclusion of Uganda's Real GDP caused a singularity problem. Consequently, Uganda's Real GDP was excluded from the model. Taking the log of equation (1) and assuming a log-linear functional form for $f(\mathbf{Z}_{ij})$, the gravity equation used in this study is as follows:

$$\log(X_{it}) = \log(\alpha_0) + \alpha_1 \log(Y_{it}) + \alpha_2 \log(D_i) + \sum_h \theta_h z_{iht} + \log(u_{it}). \quad (2)$$

X_{it} measures the number arrivals from county i to Uganda in year t . Y_{it} is Real GDP for country i in year t expressed in millions of dollars (US). D_i is the distance in miles between Uganda and country i . The variables contained in the vector \mathbf{Z} include: (1) the currency exchange rate between country i and Uganda, expressed as units of country i 's currency per Ugandan shilling, (2) the value of Uganda's total merchandise imports

from country i , (3) the value of Uganda's total merchandise exports to country i (imports and exports are expressed in US dollars), and (4) a dummy variable for all countries that share a border with Uganda (Kenya, Rwanda, Sudan, Tanzania and the Democratic Republic of the Congo). With the exception of the border dummy variable, all variables in Z were in logs. To account for additional relationships between the neighboring countries, equation (2) was estimated with two interaction terms, the border dummy variable times the value of exports, and the border dummy variable times GDP.

IV. DATA, VARIABLES AND EMPIRICAL RESULTS

Ugandan arrivals by country from 2000 to 2004 were provided by the Uganda Bureau of Statistics. See Table 1 for arrival data. Real GDP and exchange rate data for each country were provided by the World Bank-World Development Indicators online database. The distance between a visitor's country and Uganda was provided by the Travel Distance Calculator online. Import and export values were provided by the United Nations Commodity Trade Statistics Database. Descriptive statistics of model variables are in Table 3. From 2000 through 2004, the mean number of country-specific arrivals in Uganda was 8,796. The greatest number of arrivals from any country was 220,062 and the lowest was 28. The maximum distance between Uganda and the originating countries was 8,762 miles and the closet country was 345 miles. The mean distance for all countries was 3,823 miles. Mean exports from Uganda to originating countries were \$9.4 million. Maximum exports were \$82.1 million and minimum exports were \$0. Mean exports to Uganda (Ugandan imports) were \$30.2 million, maximum imports were \$357.2 million, and minimum imports were \$0. Mean Real GDP for the 30 countries was \$882.4 billion. The highest GDP was \$10.8 trillion and the lowest was \$1.8 billion. Lastly, the mean exchange rate for all countries was 0.04 units per Ugandan shilling. The minimum exchange rate was 0.0003, which indicated the highest value currency, and the maximum exchange rate was 0.60, which indicated the least valuable currency.

Equation 2 was estimated by OLS without the interaction dummy variables (model 1), by OLS with the interaction dummy variables (model 2), and by one-way fixed effects regression (FE) (model 3). All three models were estimated using SAS (version 9.1). Results are presented in Table 4. OLS estimates indicate that the independent variables explained 69 percent of the variation in tourism inflows in model 1, and 73 percent in model 2. All estimates except exports (in model 2) were significant at the 0.05 level or lower. Exports were significant at the 0.10 level.

Given that the gravity model is in double log form, the parameter estimates are elasticities. The elasticity values are due to differences across countries, and for a given country, they account for changes over time. Given the large cross-section and small number of years, it is more likely that the elasticity estimates describe the differences across countries.

Table 3.
Descriptive Statistics of all Variables

Variable	Mean	Standard Error	Median	Minimum	Maximum
Arrivals (persons)	8,796	1,967	1,640.00	28	220,062
Distance (miles)	3,828	187	3,714	345	8,762
Exports (\$US)	\$9,368,459	1,383,121	1,854,522	0	82,070,332
Imports (\$US)	\$30,170,192	4,914,446	8,848,932	0	357,194,208
Real GDP (\$US million)	\$882,416	160,672	215,862	1,811	10,763,860
Exchange Rate (per-shilling)	0.0451	0.0089	0.0033	0.0003	0.6017

As expected, Real GDP has a positive impact on the number of arrivals from a particular country. This suggests that wealthier countries had more visitors to Uganda (*ceteris paribus*). The GDP effect on origin-specific arrivals was 0.269 in model 1 and 0.296 in model 2 for non-neighboring countries. For neighboring countries, the impact of GDP was -0.567, which is the sum of the GDP estimate (0.296) and the border dummy/GDP interaction effect (-0.863). A statistical test indicated that this linear combination was significant at the 0.05 level. This negative estimate is due to Rwanda. Rwanda is the poorest of the five neighboring countries; however, Rwanda had the second largest number of visitors from 2000 to 2003. Real GDP in Rwanda was \$2.2 billion in 2004. GDP in the Sudan was seven times that amount. In Tanzania, GDP was five times that amount, and GDP in the Democratic Republic of the Congo was two times Rwanda's GDP. Although significantly smaller economically, the number of arrivals from Rwanda in 2004 (65,298) was relatively close to the number of arrivals from Tanzania (67,885), and significantly greater than the number of arrivals from the Congo and the Sudan.

As expected the impact of distance was negative. Distance in the gravity model reflects transportation and travel costs. The distance effect on arrivals was -0.76 in model 1 and -0.66 in model 2. If we express relative distance from Uganda as a percent (e.g. country *i*'s distance from Uganda is 10 percent less than country *j*), then for every percent difference in closeness, the number of arrivals from the closer country will increase by 0.76 percent (*ceteris paribus*).

Table 4.
Estimates of the Gravity Model for Ugandan Tourists Inflows

	Model 1	Model 2	Model 3 (Fixed Effects)
Variable	Estimate ^a	Estimate	Estimate
Constant	5.223 (1.75) ***	3.621 (1.77) **	-95.718 (15.43) ***
Log(Real GDP)	0.269 (0.09) ***	0.296 (0.09) ***	3.443 (0.52) ***
log(distance)	-0.760 (0.22) ***	-0.660 (0.22) ***	
log(exports)	0.053 (0.02) **	0.044 (0.03) *	-0.001 (0.01)
log(imports)	0.175 (0.04) ***	0.166 (0.04) ***	0.017 (0.02)
log(exchange rates)	-0.128 (0.05) **	-0.141 (0.05) ***	-0.265 (0.19)
D _{border}	2.690 (0.44) ***	21.706 (6.15) ***	
D _{border} × log(RGDP)		-0.826 (0.27) ***	
D _{border} × log(exports)		0.311 (0.10) ***	
	$R^2 = .69$	$R^2 = .73$	$R^2 = .99$
	$\bar{R}^2 = .68$	$\bar{R}^2 = .71$	

^a Standard errors are in parentheses.

*** indicates 1% significance.

** indicates 5% significance.

* indicates 10% significance.

We expect that international trade would have a positive impact on the number of arrivals from any given country. The OLS estimates suggest that this is the case. Results show that Uganda's imports (visitor's exports to Uganda) had a larger impact than exports (visitor's imports from Uganda). This is to be expected since Uganda had an estimated trade deficit of \$423 million in 2006 (Central Intelligence Agency, 2007). The impact of Uganda's imports was 0.175 and 0.166 for models 1 and 2 respectively. The impact of Uganda's exports was 0.053 (model 1) and 0.044 for non-border countries (model 2). For neighboring countries, the impact of Uganda's exports was significantly greater (0.355). The arrivals due to trade are likely foreign businessmen visiting contacts. These businessmen are more likely to be foreign exporters visiting importers/buyers in Uganda than foreign importers visiting Ugandan

exporters/suppliers. For neighboring countries, these businessmen are more likely the latter.

Exchange rates are defined such that the larger the exchange rate value, the weaker the currency relative to the Ugandan shilling. This suggests that exchange rates should be inversely related to the number of arrivals because a weaker currency make visiting Uganda more expensive. Results show that a percentage increase in the exchange rate will cause arrival numbers to decrease by 0.128 percent.

The largest impact on tourist arrivals was being a neighboring country. These countries included Kenya, Rwanda, Democratic Republic of the Congo, Tanzania and the Sudan. The number of arrivals from border countries was 269 percent higher on average when compared to non-border countries (*ceteris paribus*). For model 2, the border dummy estimate was significantly larger (21.71 or 2,171 percent). Consider that the average number of visitors by country was 8,796 and that arrivals from Kenya were 220,062. The difference between Kenya and the average is 2,402 percent.

FE estimation results are also presented in Table 4. Due to singularity, the distance and the border dummy variable were excluded from the FE model. The fixed/country effects captured the impact of country differences. These differences include the excluded variables, distance and the border dummy, as well as other factors not considered in the OLS models. Once the fixed effects were accounted for, the only significant variable was Real GDP. The impact of GDP was 3.44, which is 12 to 13 times the impact in the OLS models. This suggests that a percentage difference in GDP between countries results in a percentage difference in arrivals of 3.4 percent. The impacts of trade and exchange rates were insignificant when the fixed/country effects were considered, indicating that the fixed/country effects are also explaining the differences in trade volume and exchange rates across countries.

V. SUMMARY AND CONCLUSIONS

This study investigated the impact of origin-specific factors across countries on tourist arrivals in Uganda. OLS results suggested that 73 percent of the variation in Ugandan tourist inflows could be explained by Real GDP, distance, Ugandan exports by country, Ugandan imports by country and exchange rates. All of the independent variables were significant in the OLS models. Overall, the greatest determinant of Uganda's tourist arrivals is distance. To increase the number of visitors, the impact of distance on arrivals must be considered by policy makers in Uganda. Distance is a proxy for the cost of transporting goods from one country to another and the cost of travel. With rising fuel prices, increased travel costs will likely have a negative impact on travel to Uganda. A significant percent of travelers from neighboring countries (Kenya, Rwanda, Sudan, Tanzania and the Democratic Republic of the Congo) are able to avoid air travel costs. According to the Uganda Bureau of Statistics, visitors from non-borders countries primarily entered Uganda by air, while a significant number of travelers from neighboring countries entered from their connecting border.

Improvements in ground transportation, road quality and the establishment of new roads would likely increase the number of visitors from neighboring countries.

The Ugandan tourist industry has an opportunity for increased growth given the natural attractions that Uganda has to offer. A stable political environment, modernization of the transportation system, and improvements in infrastructure are needed for the country to take full advantage of its tourism potential, Ministry of Tourism, Trade and Industry (2003). Given the increasing trend in vacationers, improvements in the marketing of natural attractions will also help in attracting more tourists, especially from the United States and Europe.

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