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The Determinants of African Tourism

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The Determinants of African Tourism*

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Abstract

Using a standard panel gravity equation of 175 origin/destination countries between 1995 and 2008, 37 of which are African, we identify the factors that drive African-inbound (arrivals to Africa from other continents) and within-African tourism (arrivals from and to an African country). We find that the determinants of African-inbound and within-African tourism are not all that different from global tourism flows; repeat tourism, income, distance, land area and the standard dummy variables not only drives global or OECD tourism, but also tourism within Africa, disproving the belief that African tourists "differ substantially". Not only does the growth in tourism over the last decade provide encouraging signs for the continent, but these results show that policy makers can now play an active role in promoting African tourism, both from outside but especially from within the continent's borders.

Key words: sub-Saharan, Africa, gravity model, cause, trade, VFR

1 Introduction

Tourism is a rapidly growing segment of African countries' export baskets. Between 1995 and 2008, tourism receipts increased by 13.70% on average for 28 African countries.[1] This is higher than growth in the export of goods, for example, which increased by 11.97% over the period for the same sample of countries.

Tourism is often considered a catalyst for economic and social development; it tends to have a large trickle-down effect in terms of poverty alleviation, encouraging employment creation and small business entrepreneurship. These theoretical benefits have recently found empirical support; Fayissa, Nsiah and Tadasse (2008: 807) show that "receipts from the tourism industry contribute significantly both to the level of gross domestic product and to the economic growth of sub-Saharan African countries". Fayissa et al. (2008: 807) then conclude: "African economies could enhance their short-run economic growth by strengthening their tourism industries strategically".

The purpose of this paper is to identify the determinants of African-inbound and within-African tourism, and compare these determinants to those of OECD and global tourism flows. Building on a rich theoretical foundation, the paper empirically identifies the most critical sources that drive tourist arrivals. To do this, we define a standard gravity equation for a panel comprised of 175 origin/destination countries, of which 37 are African. Static and dynamic versions of a gravity

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[1] Data from United Nations World Tourism Organisation (UN-WTO). Our sample is determined by data availability, but includes the countries with the largest travel service exports.

model for tourist arrivals are defined. The dynamic panel data methodology adopted in this paper accounts for the possibility of endogeneity in tourism.

The paper is organised as follows. Section 2 presents an overview of African tourism trends. Section 3 presents the data and methodology used in the empirical analysis. Section 4 presents the main results where not only we measure the determinants of global tourist arrivals, but also we differentiate between tourists from different regions. While Africa is still a fragmented continent characterised by low levels of interregional trade, we show that the interregional movement of people is on the rise, driven by a largely similar set of determinants. Finally, some conclusions and policy implications are drawn in section 5.

2 African tourism

Tourism, defined as Mode-2 travel service exports[2], is increasingly viewed as an export sector with high growth potential. A number of African countries, in particular, have begun encouraging the tourism industry as a means to earn foreign revenues, diversify their export baskets, create jobs and, ultimately, improve economic growth and development. Such support seems to be paying dividends. African countries have experienced strong growth in tourist arrivals during our sample period of 1995 to 2008. This is reflected in Figure 1, which shows the number of tourist arrivals by country for 1996 and 2006.[3]

One striking feature of Figure 1 is the pervasive nature of tourism growth throughout the continent; the results are not dependent on the remarkable achievements by a select few countries. In fact, tourist arrivals increased in countries at both ends of the destination spectrum: South Africa – the largest tourism hub in sub-Saharan Africa – witnessed an average increase of 9.7% annually in tourism receipts between 1995 and 2008, as did many of the other large African countries, including Nigeria (21.42%), Ghana (21.03%), Angola (20.13%) and Ethiopia (15.74%). However, growth was not restricted to the larger countries; where data is available, tourism seems to have performed particularly well in the tiny African countries of Rwanda (35.21%), The Gambia (8.75%) and Cape Verde (23.09%).

The rapid and wide-spread growth in African tourism has naturally provoked interest in its causes. Following the tourist demand literature, standard factors that explain tourism flows include the income of the country of origin, price differentials, travel costs (including flights, visa's, insurance, etc.), exchange rate differences, competitor destinations, marketing expenditures, and various others (Lim 1997). While such demand-type analyses date back to the 1960s, it is only recently that Africa has received more than mere footnote attention.

Principally, it seems that supply-side constraints inhibit the growth of the tourism industry: at the micro-level, the safety and security of tourists (Gauci, Gerosa et al. 2002), the quality-price offering, especially of standardized tour packages (Christie and Crompton 2001), and the lack of tourism infrastructure, including availability of hotels and rental vehicles; while at the macro-level, the poor transport infrastructure, roads, railroads and airports (Kester 2003; Estache 2004), lack of development in the complimentary sectors of, for example, communications and finance (Cleverdon 2002), high levels of political risk (Eilat and Einav 2004) and a detrimental disease environment.

Of course, the direction of causality remains ambiguous: are these factors determinants of tourist arrivals or simply a consequence of tourism (or a lack thereof)? These questions can only be addressed through more precise empirical analysis, the most comprehensive of which – by Naudé and Saayman (2005) – use cross-section and panel methods to investigate the determinants of tourism to African countries. They find that tourism infrastructure, the level of a country's development and internet usage are significant explanatory variables, while political and social instability also undermines

[2] See Fourie (2011) for a discussion of tourism defined in the context of the service modes.

[3] We choose 1996 and 2006 because of data availability (in the absence of data for some countries, we use the most recent year available, see appendix) and to exclude the impact of the global economic recession beginning in 2008.

tourism growth, confirming the earlier hypotheses. They find little impact of price differentials, suggesting that tourism to Africa is not determined by exchange rate movements.

Moreover, Naudé and Saayman (2005) account for dynamics in their panel data regression. They argue that there are "persistence/reputation effects" that apply over time in the destination decision, for instance by tourists returning to a particular destination or recommending a country to friends and relatives – the word-of-mouth effect – after having a good experience. Their results shows that the lagged tourist arrival variable is significantly negative, suggesting that African destinations do not generate repeat visits. Khandaroo and Seetanah (2008) also obtain an insignificant lagged tourist arrival variable.

More recently, and with the focus towards supply-side factors, geography has entered the fray. Saayman and Saayman (2008), looking only at South African tourist arrivals and in addition to the standard control variables, find that climate (measured as the number of sunny days in Cape Town) also contribute to tourist arrivals. Fourie (2009) also find proof that climate and environmental factors boost African countries' comparative advantage in travel service exports. But whereas environmental factors may of course explain the underlying reasons for tourist arrivals, being (relatively) constant, it cannot explain the rapid *growth* in tourist arrivals, except to the extent that other debilitating factors, acting as binding constraints, are now softened, enabling countries to realise their comparative advantage.

A trend that has escaped the discourse, though, is the stark growth of inter-African tourism. While most marketing and promotion campaigns focus on the lucrative markets of Europe, North America and, increasingly, East Asia, inter-African tourism has escaped attention of policy-makers, even though more than 20 million Africans travelled to other African countries in 2008, up from just over 9 million in 1995. The literature also seems to eschew the significance of inter-African trade.

In their contribution, Saayman and Saayman (2008) differentiate between international travellers to South Africa and travellers from African countries and then continue to only estimate the determinants of international tourists, reasoning that "previous research ... has shown that the spending of tourists from these markets is low compared to international markets and that the reasons for travelling to South Africa differ substantially from those of international travellers" (Saayman and Saayman 2008: 85). While it may be true that all movement across international borders in Africa is not strictly Mode-2 travel service exports – migrant labourers should be classified under Mode 4 – there is no denying that inter-African tourism is both significant and increasing.

Figure 2 provides a snapshot of African and non-African tourist arrivals in African countries in 2005. Visually, the large percentage of African tourists in especially central and southern Africa is striking, compared to the very small percentage of African tourists in the North African countries. These characteristics will reappear in the regression analysis in subsequent sections.

Table 1 provides a summary of changes in African tourist arrivals between 1995 and 2008. Although inter-African tourism dropped off significantly as a share of total tourists between 1995 and 2000, it has regained some of its lost ground leading up to 2008. More importantly, its growth was off a high base; even allowing for the strong growth of non-African tourists between 1995 and 2008, 36% of all tourists arriving in African countries in 2008 came from other African countries.

This must be seen as a positive sign. Africa remains a fragmented continent. Its low export diversity – which limit African countries' demand for their neighbours' produce – combined with poor transportation and communication infrastructure explain partly why African countries, relative to other regions, trade little with one-another. In addition, historical remnants such as idiosyncratic national boundaries drawn up during colonial rule, or the practice of slavery that inhibited trade and the free movement of people, create path dependent distortions that still impact African countries today (Nunn 2008). Export diversification into tourism services (and probably the de facto free labour market) may boost regional integration efforts, with spill-over effects into other service exports and goods.

The purpose of this paper is thus twofold: first, we aim to add to the literature on the determinants of inbound tourism by considering both a static and dynamic version of a tourism gravity model. Second, by using a dataset that includes tourist movements for 175 countries worldwide from 1995 to 2008, we hope to identify the factors driving inbound tourism to African countries. This will allow us to determine the extent to which tourism to Africa is "different" from world tourism. Thirdly, we hope to shed light on an enigma of African tourism: the determinants of within-African tourism.

3 Data and method of analysis

To analyse the determinants of African tourist arrivals, a gravity equation with tourism flow as dependent variable is estimated. In this section, we discuss the features of the gravity equation, describe the dataset used and present the empirical strategy.

The gravity model is a workhorse in a number of empirical issues addressed within international economics. The origin of this model is the Newton's Law of Universal Gravitation, and it was firstly proposed by Tinbergen (1962) to describe international bilateral trade. The main reason for its extensive use in empirical research is its goodness of fit, since international flows increase with the economic size of countries and decrease as the distance between them increases.

This type of specification has been used to estimate the effects of economic and non-economic events on international flows of goods (Armstrong 2007; Fratianni 2007), migrants (Karemera, Oguledo et al. 2000; Gil et al. 2006), foreign direct investment (Bergstrand and Egger 2007; Eichengreen and Tong 2007; Head and Ries 2008) and tourism (Durbarry 2000; Gil et al. 2007; Santana-Gallego et al. 2010a).

Indeed, this type of equations has been commonly used to investigate a number of empirical regularities, such as border effects (McCallum 1995; Fitzsimons et al. 1999), regional trading blocs (Matyas et al. 2004; Cheng and Wall 2005), currency unions (Rose 2000; Rose and van Wincoop 2001) and mega-events (Fourie and Santana-Gallego 2011a). Therefore, the following model is estimated:

$$
\begin{aligned}
LnTou_{ijt} &= \beta_0 + \beta_1 LnGDPpc_{it} + \beta_2 LnGDPpc_{jt} + \beta_3 LnDist_{ij} + \beta_4 LnTrade_{ijt} + \beta_5 LnComp_{ijt} \\
&+ \beta_6 CU_{ijt} + \beta_7 RTA_{ijt} + \beta_8 LnArea_i + \beta_9 Border_{ij} + \beta_{10} Coast_{ij} + \beta_{11} Lang_{ij} + \beta_{12} Colony_{ij} \\
&+ \beta_{13} Relig_{ij} + \beta_{14} PS_{it} + \beta_{15} GE_{it} + \beta_{16} LnLife_{it} + \gamma_i + \delta_j + \lambda_t + u_{ijt}
\end{aligned}
$$

where i indicates destination country, j origin country and t is time;$\beta_0$is a constant; Ln denotes natural logarithms;γ_i, δ_j and λ_t are origin, destination and year fixed effects, respectively and u_{ijt} is a well-behaved disturbance term. In the analysis, as well as the 1) standard gravity variables, the model is augmented using four different sets of factors: 2) economic relationship variables, 3) geographic variables, 4) cultural affinity variables and 5) development and stability variables. Table 2 below presents a brief description of variables included in the analysis.[4]

Empirical research on gravity equations commonly include estimations using pooled Ordinary Least Squares (OLS). However, if we assume that unobserved heterogeneity exists, this technique can provide inconsistent and inefficient estimates. In this sense, the panel fixed-effects (FE) estimator offers a more suitable estimation technique to control for individual heterogeneity. Nevertheless, the FE approach does not allow for estimating coefficients of time-invariant variables such as the distance, the common border or language dummies.

In the recent econometric literature, a way to overcome this problem is to introduce individual country fixed-effects for the importers and the exporters in the gravity model (Matyas et al. 2004; Cheng and Wall 2005; Kandogan 2008). Moreover, the inclusion of country fixed effects is proposed by Rose and Van Wincoop (2001) as a way to approximate the multilateral resistances defined in the well-founded approach of Anderson and Van Wincoop (2004). In other words, the estimation of

[4] Sources of data are presented in Table A.1 in the appendix. The full sample includes 175 countries as origin/destination of tourists – of which 37 are African countries – over the period 1995-2008. The list of countries considered in the analysis is reported in Table A.2 in the appendix.

country-specific effects is suitable not only from an econometric point of view, but also adheres to the theoretical foundations of the gravity specification.

According to Martínez-Zarzoso et al. (2009), most of the existing trade gravity models based on panel data ignore dynamic effects; for example, only a few papers take into account persistence effects (de Nardis and Vicarelli 2004; de Benedictis et al 2005 or Martínez-Zarzoso el al 2009). Dynamics is introduced into the trade gravity model since exports series tend to be highly persistent. Similarly, tourist arrivals can also present persistence or word-of-mouth effects. Moreover, tourist arrivals may be expected to change sluggishly due to supply constraints, such as shortages of accommodation, passenger transportation capacity or trained staff.

The introduction of dynamics into panel data models renders the OLS-FE estimator biased and inconsistent since the lagged endogenous variable correlates with the error term. The First Differences-Generalized Methods of Moments estimator (DIF-GMM) by Arellano and Bond (1991) is commonly used in the literature to estimate dynamic panel data models. However, with a highly persistent dependent variable, it is more appropriate to use the System-Generalized Methods of Moments (SYS-GMM) estimator proposed by Blundell and Bond (1998). Moreover, this method has the additional advantage that it allows us to obtain the estimates of time-invariant regressors included in the gravity model, i.e. distance, common language, contiguity or colonial ties.[5]

The SYS-GMM estimator is derived from the estimation of a system of two simultaneous equations, one in levels and the other in first differences. Where heteroscedasticity and serial correlation is a serious concern, the two-step System-GMM is asymptotically more efficient but standard errors tend to be severely downward biased. It is possible to solve this problem using the finite-sample correction to the two-step covariance matrix derived by Windmeijer.[6]

The SYS-GMM allows endogeneity in some of the explanatory variables. In our case, apart from the lagged dependent variable, the GDP per capita of the destination country, the trade flows between countries and the investment in the tourist sector are considered as endogenous. Lagged endogenous regressors are used as instruments in the estimation of the first-differenced equation while their lagged first-differences are instruments in the estimation of the level equation. Exogenous variables are used as standard instruments in both equations.

4 Results

The static version of the gravity model for tourist arrivals is estimated by OLS-FE where origin, destination and year fixed-effects are included. The dynamic version is estimated by two-step SYS-GMM. We first estimate the determinants of tourist arrivals for the full sample of countries (175x175) to study the factors that drive global tourism. Then, we split the sample into OECD destinations (34x175) and African destinations (37x175) to analyse similarities and differences between tourist arrivals to developed countries and to the African continent. The results of the OLS-FE and SYS-GMM estimates are reported in Table 3. Results are discussed for the dynamic version of the gravity equation while the results for the static model are presented for comparison.

The consistency of the SYS-GMM model requires autocorrelation of the first order and the lack of second-order autocorrelation. Arellano-Bond AR(1) and AR(2) report first- and second-order autocorrelation tests, respectively. The null hypothesis is that there is no first-order/second-order autocorrelation. Results from Table 3 supports these diagnostic tests for the three samples and show the consistency of the GMM estimator.

The results presented in Table 3 supports the notion that the determinants of tourism to Africa are not systematically different from factors that drive tourism to other regions. The importance of

[5] The Stata11 command "xtdpd" with the additional specifications of "twostep" and "vce(robust)" are used. Moreover, the "hascons" command is required to obtain the estimate of the time-invariant variables.

[6] The distribution of the Sargan test is not known when the disturbances are heteroscedastic, so Sargan's test for overidentifying restrictions is not available after specifying the "vce(robust)" command.

a lagged measure of tourism flows is reflected in the SYS-GMM specifications. The lagged dependent variable is positive and significant for the three sub-samples reflecting the importance of the repetition or the word-of-mouth effect. Moreover, the results show that the coefficient for African-bound tourism is larger than for world and OECD tourism. In contrast to the earlier results of Naudé and Saayman (2005) and Khandaroo and Seetanah (2008) where the lagged variables were either negative or insignificant, we find that repeat tourism is actually of more importance for African-inbound tourism than it is for tourism flows in other areas.

As expected, GDP per capita of both the destination ($\mathrm{LnGDPpc}_{it}$) and origin ($\mathrm{LnGDPpc}_{jt}$) are positive and significant across all three samples, with the coefficients for African-bound tourism consistently positioned between that of the world and OECD coefficient. The sizable coefficients on GDP per capita of the origin country confirm the importance of demand in explaining tourism flows. The distance variable is also consistently negative and significant, with the African coefficient reflecting that of the other two specifications. Distance, ceteris paribus, does not have a different impact for African countries compared to other regions.

Capital investment in the tourism sector seems to have no impact for African countries compared to other regions, where it has a positive impact. This is a perplexing result and may simply reflect the low level of tourism infrastructure on the continent. A revealing result is the large coefficient of trade flows in explaining tourism flows for OECD countries, compared to the world and African coefficients. Eilat and Einav (2004) suggest including trade, as the sum of exports and imports, in the gravity specification for tourism as a way to approximate for the intensity of the economic relationship between two countries. Moreover, tourism may either lead to an increase of domestic demand or an increase in the consumption of goods and services that are not produced in the tourist destination and as a consequence require being imported. The latter reason is a direct effect that can be illustrated by any international trade model in which consumers are allowed to consume abroad (see Santana-Gallego et al. 2010b). The evidence here suggests that trade flows only plays a minor role in explaining world and African tourism flows. The large, positive coefficient suggests that people move to OECD countries along trade routes, perhaps as business tourists.

The reported signs and size of coefficients for the competitiveness of the real exchange rate are not robust across the different specifications, suggesting that price competitiveness is not an important factor in explaining tourism flows into Africa. This confirms the earlier results of Naudé and Saayman (2005), Eilat and Einav (2004) and Crouch and Ritchie (2006), while contradicting the general belief that African tourism lags the rest of the world because of uncompetitive prices (Christie and Crompton 2001).

While the coefficients for the currency union dummy are significant in the fixed-effects specifications, the significance of both the OECD and African coefficients disappears in the SYS-GMM estimations. However, this may be because of high collinearity with the border regional trade agreement and border dummy, as is reflected when the CU-dummy is not included.[7] The relatively large coefficient on the regional trade agreement dummy for African-bound tourists suggests either that tourists tend to visit countries with which their country-of-origin has signed a regional trade agreement. The large economic significance of the RTA-dummy for Africa (in both the fixed-effects and SYS-GMM specifications) versus the small economic significance of the trade variable probably also reflect the well-known low interregional trade of African countries.

The variables related to geography also exhibit the same trends for African-bound tourism as it does for tourism to the world and OECD countries. Land area is positive and significant while sharing a border is a strong predictor of tourism flows. However, the coastal dummy variable reveals conflicting results depending on the sample used. It has a significantly positive effect for the world sample, a significantly negative effect for the OECD sample while it is insignificant for the African sample.

Regarding the "cultural affinity" variables, results are similar for the three samples. Sharing

[7] These results are available from the authors upon request.

a common language, sharing a common colonial link or sharing the same religion all reveal large, positive coefficients for African-bound tourism. The coefficients are generally larger than those for the OECD countries, but smaller than the coefficients in the world specification. That historical and cultural linkages are strong determinants of African-bound tourism may, potentially, have important policy implications; Fourie and Santana-Gallego (2011b), for example, discuss how cultural affinity and ethnic reunion are significant components of tourism flows worldwide through the path dependent nature of historical migration.

Table 3 also reveals that political stability is an important determinant of tourism flows, notably in the world and Africa specifications. Life expectancy, as a measure of health and the standard of living, yields conflicting results, being positive in the world sample, negative (but insignificant) in the OECD sample, and significantly negative for African countries. The lack of consistency across samples raises doubts about the applicability of including this variable.

While these results reflect only small differences between African-bound tourism and tourism to OECD countries and global tourism, our main concern is whether within-African tourism is significantly different from tourism to Africa. Table 4 provides the results. We again use two estimation methods, fixed-effects and SYS-GMM, and compare across two specifications, within-Africa tourism and African-bound tourism. Note that even though the sample size falls to only 4278 in the SYS-GMM estimation of the Africa-Africa specification, the Arellano-Bond first- and second-order autocorrelation tests again support the consistency of the SYS-GMM estimator.

Considering only the SYS-GMM results, a large share of within-African tourism is repeat tourism. The notion, therefore, that within-African tourism is fundamentally different from African-inbound tourism in registering repeat visits is certainly unfounded. The GDP per capita coefficients are also positive and significant in both samples. While the GDP per capita coefficient of the origin country for within-Africa tourism is smaller than the coefficient for African-bound tourism, there is no reason to suggest that poorer Africans travel, on average, to other richer countries in search of job opportunities or, as Saayman and Saayman (2011) posit, for retail purposes. Distance, tourism infrastructure, trade flows, regional trade agreements, land area, coastline, the language dummy, and political stability for both within-Africa and Africa-bound tourism are similar in sign and significance.[8] In other words, these determinants have no different impact for African tourists visiting other African countries than they have for foreign visitors to African countries.

Yet some minor differences do exist. The SYS-GMM estimation suggests that African-inbound tourists are to some extent price sensitive, while the same is not true for within-Africa tourism. As with the full sample, currency unions (in the presence of regional trade agreements and border effects) explain little within-African tourism while border effects explain a significant component of within-African tourism movements. The relatively poor infrastructure in Africa (with especially exorbitant air transport costs), may explain the reason why African tourists would rather choose to visit neighbouring countries (using mostly road infrastructure) than other African countries on the continent, without having to cross too many borders. Even in the absence of a land border with Europe, the large coefficient on distance and its proximity to Europe explain why three of the top four markets in Africa are located in North Africa. The large coefficient on the colonial dummy for African-inbound dummy also suggests that colonial ties still explain a significant proportion of African-inbound tourism, even when controlling for language and trade flows.

The coefficient on the religion dummy captures an important difference between within-Africa and African-inbound determinants of tourism. Controlling for other factors, within-Africa tourists tend to travel relatively more to countries sharing the same religion than other tourists would, although we would argue that this variable probably proxies for a broader measure of cultural characteristics. The large coefficient of the colonial dummy is perhaps best explained by African tourists visiting friends and relatives (VFR) across national borders (and across regional trade agreements) to a greater degree than what is found in the rest of the world, although this is certainly an area for

[8] Again, the large variation in the life expectancy coefficients again raises doubts about the applicability of using this measure as a proxy for health or living standards.

future research.

5 Conclusions

Understanding the determinants of tourist arrivals to African countries is an important first step in alleviating the binding constraints that may inhibit further take-off of the fast-growing tourism industry in many African countries. This paper uses a dynamic gravity model specification to identify these determinants. The results suggest that most of the standard explanatory factors that explain global tourism are also significant in explaining African-inbound and within-African tourism. The estimation technique we use finds strong evidence that repeat tourism, in contrast to earlier evidence, is an important determinant of African tourism. Furthermore, the incomes of both the origin and destination countries, land size, partnering in a regional trade agreement and sharing a common border, language, religion or former colonial ties all increase tourist arrival to Africa, as it does for global tourism, while the greater the distance between two countries, the lower the tourism flows between them.

There are, however, factors that explain tourism to Africa but do not also explain global tourism flows. Tourism infrastructure does not drive inbound-African nor within-African tourism, although it is positively correlated with OECD and global tourism flows. A tentative explanation for this might be that African tourism is less dependent on the standard "sun, sea and sand" tourism offering than other regions, with more focus on the natural and cultural resources of the continent. It may also reflect the growing VFR-component of within-African tourism flows, an area that calls for further research attention.

The results also show that the determinants of within-African tourism are not systematically different from tourism to African-inbound tourism. While African-inbound tourists may value price competitiveness, colonial ties and political stability more than within-African tourists, our results suggest no reason to presume that the reasons for travelling within Africa "differ substantially" from those of international tourists.

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Table 1: Origin of tourists to African countries

Region	1995	2000	2004	2008	1995	2000	2004	2008
	Nº of tourist arrivals (in thousands)				**Percentage of total**			
Africa	9039	11239	14428	20410	40.01%	34.75%	35.53%	36.06%
Americas	844	1377	1275	1921	3.73%	4.26%	3.14%	3.39%
East Asia	671	933	1062	1852	2.97%	2.88%	2.61%	3.27%
Europe	8540	14362	17090	23759	37.80%	44.41%	42.08%	41.97%
Middle East	1554	1805	3026	3857	6.88%	5.58%	7.45%	6.81%
South Asia	127	208	266	481	0.56%	0.64%	0.65%	0.85%
Not specified	1821	2417	3456	4324	8.06%	7.47%	8.51%	7.64%
Total	**22596**	**32341**	**40610**	**56605**				

Source: own elaboration of UN-WTO

Table 2: Summary of variables used in the model

Variable	Definition
$LnTou_{ijt}$	Log of tourist arrivals to destination country from the origin one
	1) Standard gravity variables
$LnGDPpc_{it}$	Log of gross domestic product per capita of the destination country
$LnGDPpc_{jt}$	Log of gross domestic product per capita of the origin country
$LnDist_{ij}$	Log of the distance between countries in the pair as a proxy of transport costs
	2) Economic relationship
$TouInv_{it}$	Capital investment in the tourism sector of the destination country as a percentage of GDP
$LnTrade_{ijt}$	Log of bilateral trade as the sum of exports and imports between country pairs
CU_{ijt}	Dummy variable: both countries in the pair share a common currency
RTA_{ijt}	Dummy variable: both countries in the pair belong to the same regional trade agreement (different from the monetary agreement)
$LnComp_{ijt}$	Relative real exchange rate as a measure of the relative price competitiveness of the destination country to the origin
	3) Geography
$LnArea_{i}$	Log of surface area of the destination country (square kilometres)
$Border_{ij}$	Dummy variable: both countries in the pair share a common land border
$Coast_{i}$	Dummy variable: the destination country has a sea coast
	4) Cultural affinity
$Lang_{ij}$	Dummy variable: both countries in the pair speak a common language
$Colony_{ij}$	Dummy variable: both countries in the pair have ever had a colonial link
$Relig_{ij}$	More than 60% of the population of both countries are from the same religion
	5) Development and stability
PS_{it}	Political stability is measured in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes.
$Lnlife_{it}$	Life expectancy index in the destination country (life expectancy at birth)

Table 3. Gravity Equation for Tourist Arrivals- Full Sample,

Variable	World	OLS-FE OECD	Africa	World	SYS-GMM OECD	Africa
$LnTou_{ijt-1}$				0.173*	0.259*	0.408*
				(6.94)	(6.68)	(10.78)
$LnGDPpc_{it}$	0.238*	0.015	0.238*	0.118***	0.470*	0.193*
	(8.04)	(0.17)	(3.94)	(1.78)	(3.06)	(3.09)
$LnGDPpc_{jt}$	0.135*	0.205*	0.136**	0.889*	0.431*	0.558*
	(4.65)	(4.38)	(2.23)	(22.43)	(8.42)	(10.37)
$LnDist_{ij}$	-1.400*	-1.248*	-1.513*	-0.780*	-0.456*	-0.661*
	(-195.49)	(-92.46)	(-71.90)	(-19.28)	(-9.22)	(-8.57)
$LnTouInv_{ijt}$	0.035*	0.016	-0.015	0.030*	0.126*	-0.001
	(6.99)	(0.87)	(-1.41)	(3.77)	(2.95)	(-0.12)
$LnTrade_{ijt}$	0.088*	0.127*	0.038*	0.030*	0.412*	0.026**
	(56.85)	(28.47)	(13.46)	(3.320)	(11.26)	(2.35)
$LnComp_{ijt}$	-0.007*	-0.001	-0.008	-0.009***	0.005	0.031*
	(-2.61)	(-0.170)	(-1.07)	(-1.65)	(0.63)	(2.85)
CU_{ijt}	0.110*	0.119*	0.344*	0.539*	0.129	-0.082
	(3.27)	(3.19)	(4.22)	(4.10)	(1.07)	(-0.25)
RTA_{ijt}	0.262*	0.158*	0.368*	0.461*	0.153**	0.536*
	(19.98)	(7.69)	(12.15)	(8.23)	(2.37)	(5.82)
$LnArea_{i}$	0.428*	0.637*	0.049	0.258*	0.142*	0.194*
	(11.02)	(17.80)	(1.45)	(16.06)	(6.59)	(7.76)
$Border_{ij}$	1.133*	0.499*	1.444*	1.705*	0.387***	0.986*
	(38.47)	(9.60)	(23.15)	(12.46)	(1.75)	(3.88)
$Coast_{i}$	1.079*	-0.359	4.266*	0.629*	-0.316*	-0.003
	(7.12)	(-1.24)	(14.06)	(8.48)	(-3.23)	(-0.03)
$Lang_{ij}$	0.999*	0.704*	1.119*	0.476*	0.195**	0.413*
	(69.34)	(27.52)	(36.38)	(6.93)	(2.02)	(4.19)
$Colony_{ij}$	0.783*	0.594*	0.683	1.629*	0.768	1.226*
	(25.60)	(14.41)	(9.61)	(11.30)	(3.97)	(5.18)
$Relig_{ij}$	0.617*	0.531*	0.454	0.117**	0.172**	0.199***
	(45.55)	(22.75)	(11.98)	(1.97)	(2.39)	(1.70)
PS_{it}	0.230*	0.399*	0.156*	0.291*	-0.314*	0.168*
	(13.92)	(10.59)	(4.31)	(7.76)	(-5.93)	(2.97)
$Lnlife_{it}$	1.982*	-0.116	1.756*	0.920*	-2.038	-0.864**
	(6.34)	(-0.07)	(5.11)	(2.39)	(-1.32)	(-2.55)
cons	-2.373	6.904	2.216	-4.535*	1.406	3.828*
	(-1.51)	(0.01)	(1.250)	(-3.60)	(0.25)	(2.59)
Nº Observations	97628	26828	16961	83154	23594	14359
R^2	0.8508	0.9074	0.8173			
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Orig/Dest fixed effects	Yes	Yes	Yes	No	No	No
Nº Instruments				189	139	145
				-16.153	-10.062	-11.326
Arellano-Bond test AR(1)				0.000	0.000	0.000
				0.078	1.237	0.218
Arellano-Bond test AR(2)				0.938	0.216	0.827

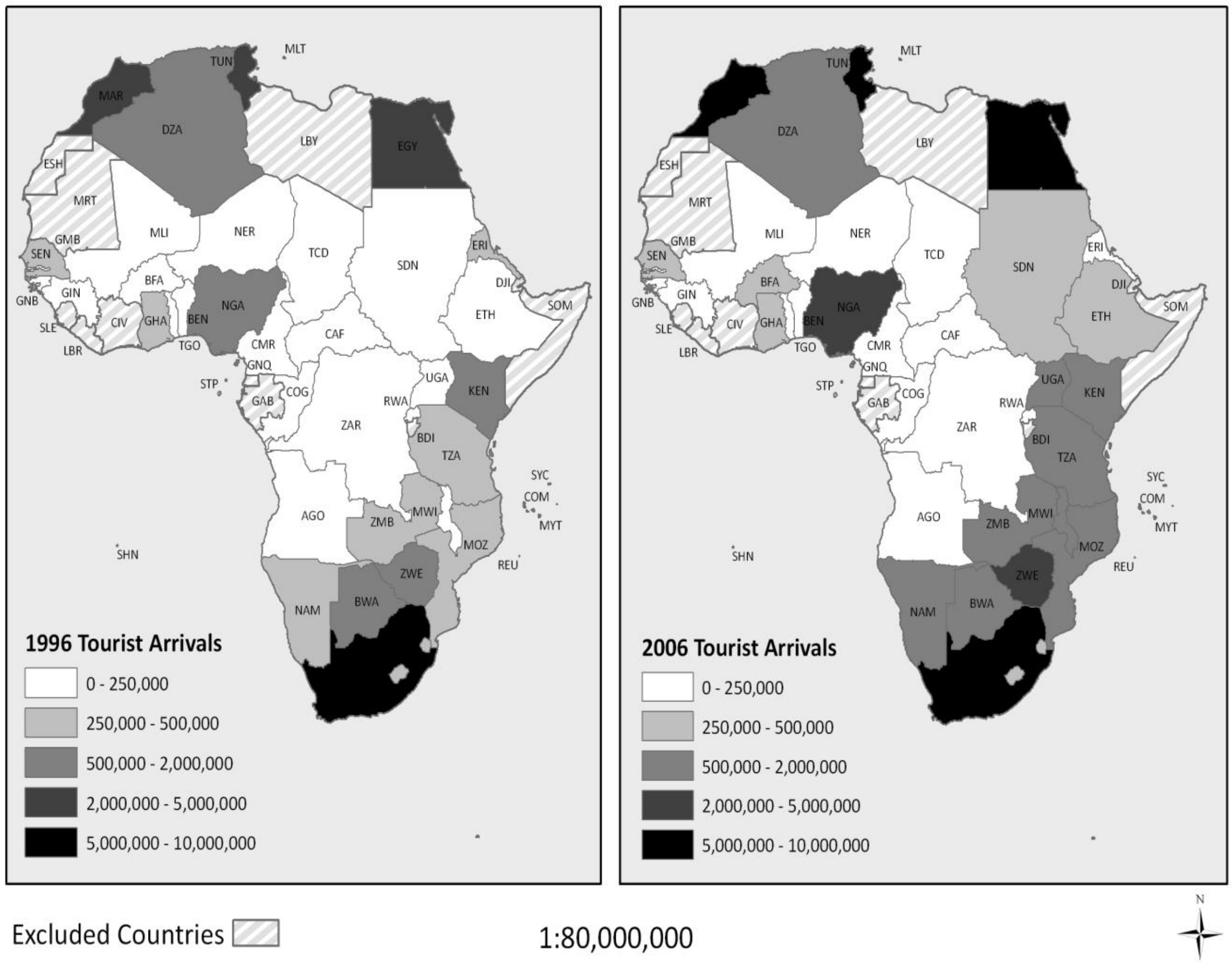
Notes: Origin, destination and year fixed effect are not reported.
Windmeijer bias-corrected (WC) estimator for the robust two-step GMM model is used
Significance at 1% (*), 5% (**) and at 10% (***) level, respectively

Table 4. Gravity Equation for Tourist Arrivals- African Sample (37 destinations)

	OLS-FE		SYS-GMM	
Variable	**Africa-Africa**	**World-Africa**	**Africa-Africa**	**World-Africa**
$LnTou_{ijt-1}$			0.468*	0.429*
			(8.86)	(10.64)
$LnGDPpc_{it}$	0.268*	0.224*	0.326*	0.180*
	(2.51)	(3.21)	(3.77)	(2.67)
$LnGDPpc_{jt}$	0.012	0.282*	0.167**	0.614*
	(0.15)	(3.45)	(2.33)	(7.30)
$LnDist_{ij}$	-1.407*	-1.026*	-0.664*	-0.580*
	(-36.02)	(-36.51)	(-6.11)	(-5.50)
$LnTouInv_{ijt}$	-0.037***	-0.005	-0.015	0.014
	(-1.75)	(-0.50)	(-0.78)	(1.39)
$LnTrade_{ijt}$	0.043*	0.031*	0.019**	0.024**
	(8.95)	(9.68)	(1.96)	(2.29)
$LnComp_{ijt}$	-0.004	-0.008	0.006	0.026**
	(-0.22)	(-1.04)	(0.40)	(2.14)
CU_{ijt}	-0.139		-0.319	
	(-1.59)		(-1.14)	
RTA_{ijt}	0.511*	0.259*	0.543*	0.510*
	(10.72)	(6.83)	(4.01)	(3.82)
$LnArea_{i}$	-0.139*	0.046	0.216*	0.198*
	(-3.510)	(1.23)	(5.40)	(6.22)
$Border_{ij}$	1.021*		0.765*	
	(14.22)		(3.13)	
$Coast_{i}$	0.984*	0.240	0.076	-0.042
	(2.40)	(1.04)	(0.44)	(-0.33)
$Lang_{ij}$	1.194*	1.110*	0.590*	0.405*
	(27.30)	(27.24)	(4.69)	(2.83)
$Colony_{ij}$	0.577*	0.856*	-2.379	1.102*
	(3.38)	(12.12)	(-0.72)	(4.69)
$Relig_{ij}$	0.724*	0.390*	0.390**	0.156
	(9.77)	(8.11)	(2.35)	(1.06)
PS_{it}	-0.071	0.259*	0.191**	0.206*
	(-1.13)	(6.24)	(2.51)	(3.42)
$Lnlife_{it}$	1.584*	1.673*	-1.674*	-0.587
	(2.420)	(4.35)	(-3.59)	(-1.42)
cons	6.064*	-5.079**	8.323*	1.488
	(2.04)	(-2.43)	(4.51)	(0.64)
Nº Observations	5046	11915	4278	10081
R^2	0.8143	0.8524		
Year fixed effects	Yes	Yes	Yes	Yes
Orig/Dest fixed effects	Yes	Yes	No	No
Nº Instruments			127	177
			-7.251	-9.513
Arellano-Bond test AR(1)			0.000	0.000
			-0.280	0.720
Arellano-Bond test AR(2)			0.779	0.472

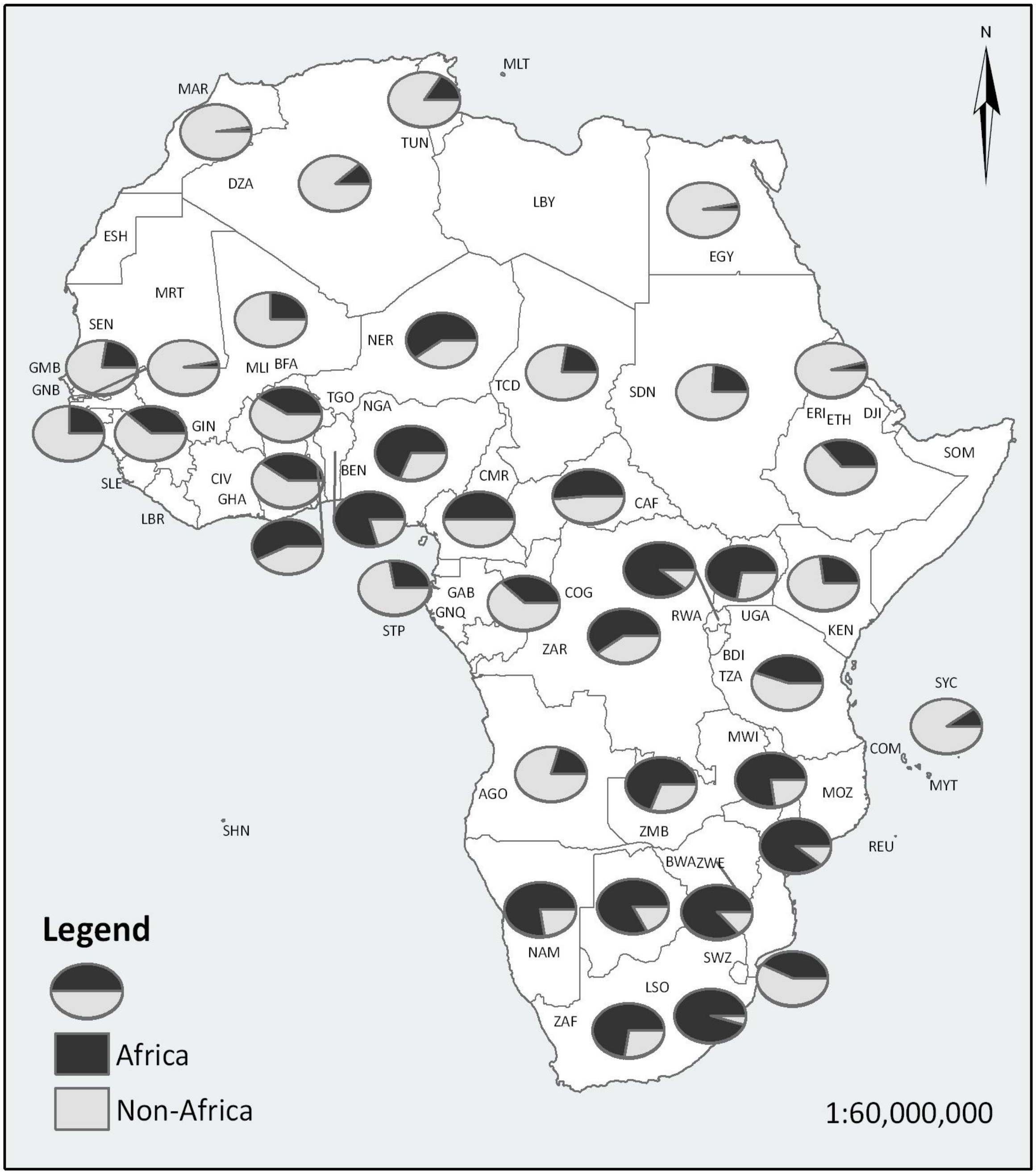
Notes: Origin, destination and year fixed effect are not reported.
Windmeijer bias-corrected (WC) estimator for the robust two-step GMM model is used.
Significance at 1% (*), 5% (**) and at 10% (***) level, respectively

Figure 1: Number of tourist arrivals, 1996 and 2006



Source: own elaboration of UN-WTO data

Figure 2: Percentage of tourist arrivals by continent of origin, 2005



Source: own elaboration of UN-WTO data

Appendix

Table A.1 Source of data

Variable	Source
$LnTou_{ijt}$	The source of tourism data is the *United Nations-World Tourism Organisation (UNWTO)* and includes annual international arrivals by country of origin
$LnGDPpc_{it}$ $LnGDPpc_{jt}$	*World Development Indicators* of the *World Bank.* The variable used is GDP per capita (constant 2000 US$),
$LnArea_{i}$	*World Development Indicators* of the *World Bank.* The variable used is Land Area (sq. km)
$LnDist_{ij}$ $Border_{ij}$ $Lang_{ij}$ $Colony_{ij}$	*Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)* dataset
$Coast_{ij}$	Data obtained from A.K. *Rose web:* http://faculty.haas.berkeley.edu/arose/.
$TouInv_{it}$	Calculated as the ratio of capital investment on the tourism sector of the destination country over GDP. Capital investment is obtained from the *World Travel and Tourism Council (WTTC)* database while GDP is obtained from the *World Development Indicators* of the *World Bank*
$LnTrade_{ijt}$	Bilateral exports and imports are obtained from the *International Monetary Fund Direction of Trade Statistics*
CU_{ijt}	Data obtained from *Andrew K. Rose website* and *CIA World Factbook*
FTA_{ijt}	Data obtained from the *Regional Trade Agreement Database* from the *World Trade Organisation*
$LnComp_{ijt}$	Relative Real Exchange Rate calculated using consume price index from the *International Labour Organisation* and nominal exchange rate obtained from the *International Monetary Fund Financial Statistics*
PS	*The Worldwide Governance Indicators (WGI) project* produced by Kaufmann et al (2010) -Political Stability
$Relig_{ij}$	*CIA World Factbook*-Percentage of the population that declare a particular religion
$Lnlife_{it}$	*United Nations Population Division*-Life expectancy at birth

Table A.2 List of countries used in the analysis

Afganistan	Czech Rep.	Kyrgyzstan	Rwanda
Albania	Denmark	Laos	Samoa
Algeria	Dominica	Latvia	Sao Tome & Principe
Angola	Dominican Rep.	Lebanon	Saudi Arabia
Argentina	Ecuador	Lesotho	Senegal
Armenia	Egypt	Libya	Seychelles
Aruba	El Salvador	Lithuania	Singapore
Australia	Eritrea	Luxembourg	Slovakia
Austria	Estonia	Macao	Slovenia
Azerbaijan	Ethiopia	Macedonia	Solomon Islands
Bahamas	Fiji	Madagascar	South Africa
Bahrain	Finland	Malawi	Spain
Bangladesh	France	Malaysia	Sri Lanka
Barbados	French Polynesia	Maldives	St. Kitts & Nevis
Belarus	Gambia	Mali	St. Lucia
Belgium	Georgia	Malta	St. Vincent & Grenadines
Belize	Germany	Mauritius	Sudan
Benin	Ghana	Mexico	Suriname
Bermuda	Greece	Moldova	Swaziland
Bhutan	Grenada	Monaco	Sweden
Bolivia	Guam	Morocco	Switzerland
Bosnia-Herzegovina	Guatemala	Mozambique	Syria
Botswana	Guiana, French	Myanmar	Tajikistan
Brazil	Guinea	Namibia	Tanzania
Brunei	Guinea-Bissau	Nepal	Thailand
Bulgaria	Haiti	Netherlands	Togo
Burkina Faso	Honduras	New Caledonia	Tonga
Cambodia	Hong Kong	New Zealand	Trinidad & Tobago
Cameroon	Hungary	Nicaragua	Tunisia
Canada	Iceland	Niger	Turkey
Cape Verde	India	Nigeria	Turkmenistan
Central African Rep.	Indonesia	Norway	Uganda
Chad	Iran	Oman	Ukraine
Chile	Iraq	Pakistan	United Arab Emirates
China	Ireland	Palau	United Kingdom
Colombia	Israel	Panama	United States
Comoros	Italy	Papua New Guinea	Uruguay
Congo, Dem. Rep.	Jamaica	Paraguay	Vanuatu
Congo, Rep. Of	Japan	Peru	Venezuela
Costa Rica	Jordan	Philippines	Vietnam
Cote D'Ivoire	Kazakhstan	Poland	Yemen
Croatia	Kenya	Portugal	Zambia
Cuba	Korea, Rep. Of	Romania	Zimbabwe
Cyprus	Kuwait	Russia	