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Benchmarking international tourism destinations

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Benchmarking international tourism destinations

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Industry productivity growth measures the contribution to the growth of the economy that an industry delivers. Benchmarking international tourism destinations in respect of their productivity is often avoided due to the difference in tourism characteristics between destinations. This paper introduces a novel approach to destination benchmarking that is theoretically motivated to account for this problem. The benchmarking framework proposed uses separate groups of countries with similar characteristics to construct a metafrontier that envelops these groups, and as such represents the world tourism industry. The paper confirms that ignoring heterogeneity (that is, differences in destination characteristics) can lead to bias in the productivity rankings of different countries. The results show that North American and European countries lead the world tourism industry in terms of productivity growth, while African countries lag behind. On average, most African countries are also not catching up with the world tourism industry. The outcome is development of a robust and comprehensive benchmarking methodology that can provide governments and national tourism offices with an accurate assessment of their international tourism performance.

Keywords: world tourism industry; benchmarking; metafrontier; Malmquist index; productivity

Tourism is one of the fastest growing industries, and has quickly grown in importance as a major economic driver for most of the world's economies. The importance of this rapid growth in tourism can be seen by the fact that tourism generated 5.5% of global GDP in 2008; spending on international tourism reaching US\$944 billion, with more than 80 countries earned over US\$1 billion as reported by the World Tourism Organization. The tourism industry is also

a strong contributor to employment, generating over 238 million jobs worldwide in 2009. With the effects of the global financial crisis (GFC) gradually fading in importance, stronger economic contribution from the industry is also predicted in the next 10 years, though the rate of growth might be slower than that which would otherwise have occurred (Global Travel and Tourism, 2009).

Over the past two decades, despite some hiccups, the world tourism industry has experienced rapid growth caused by strong economic growth in key origin countries, easing of travel restrictions, liberalization of air transport and focused marketing campaigns (Global Travel and Tourism, 2009). Policy and strategy issues in most leading tourism countries have also continuously focused on strengthening the position of tourism within the national economy, or improving the destination attractiveness and visitor structure by providing a better quality service. One area of particular emphasis is productivity benchmarking (Dwyer *et al.*, 2007a, 2007b). At its simplest, productivity refers to the ratio between output(s) produced and input(s) used). The more output a firm, industry or economy can produce from a given set of inputs, the more productive it is. Productivity measures can be estimated for the tourism industry as a whole, its major sub-sectors or individual enterprises. Productivity growth benchmarking compares the growth of the firm or industry productivity with that being achieved elsewhere, by other firms, by other industries or by the tourism industry in other countries or jurisdictions. Benchmarking tourism productivity is crucial to evaluating tourism sustainability and reshaping tourism activities. There is a direct link between productivity and profitability, as when productivity increases, the tourism industry's competitiveness in labour, capital and real estate markets also increases.

The present paper offers two important contributions to the literature on tourism productivity. First, focusing on cross-country comparisons, our aim is to provide each country with a more accurate assessment of the international standing of its tourism industry. This differentiates the study from most existing tourism benchmarking studies in the literature that are limited to one single country. By focusing on a range of countries we are also able to complement other international statistical releases published by organizations such the United Nations World Tourism Organization (UNWTO) or the World Travel and Tourism Council (WTTC). Second, the study takes a different and novel approach to productivity measurement across tourism destinations. We use here the Malmquist metafrontier methodology, which accounts for the heterogeneity between countries in measuring tourism productivity. Tourism industries in different regions might face different production opportunities (for example, number of hotels, access to markets), and thus ignoring this heterogeneity might lead to biased productivity estimates (O'Donnell *et al.*, 2008). Use of the metafrontier approach overcomes this problem.

The paper proceeds as follows. In the next section we provide an updated overview of the current trends facing the tourism industry, especially across leading tourism destinations. In the subsequent section we elaborate in more detail about the methodology used. We then, in the two sections that follow, present the data and the results. The discussion and our concluding remarks make up the last two sections of the paper.

Benchmarking productivity and destination competitiveness

A benchmark is a standard by which something is evaluated or measured. The main goal of benchmarking is to determine the industry leaders in respect of some indicator in comparison to other players in the industry. Few studies have so far provided benchmarking analysis in the tourism industry. Some studies benchmark tourism destinations by focusing on issues such as customer satisfaction (Milman and Pizam, 1995) competitiveness (Kozak and Rimmington, 1999), or some simple indicators such as tourism related expenditures, foreign exchange earnings or changes in market share (Dwyer and Kim, 2003). For tourism destinations all these issues are important, but the problem is that they lead to subjectivity in selecting the true benchmarking parameters.

An obvious benchmark is productivity. Productivity, simply defined as the ratio of input to output, reduces the subjectivity in benchmarking by providing quantitative evidence on industry leaders and benchmarking partners (Donthu *et al*, 2005; Blake *et al*, 2006). There is currently a substantial literature on tourism productivity, but mainly undertaken at the business level (Morey and Dittman, 1995; Anderson *et al*, 1999a, 1999b; Brown and Ragsdale, 2002; Hwang and Chang, 2003; Reynolds, 2003; Barros and Alves, 2004; Barros, 2005, 2006; Chiang *et al*, 2004; Sigala *et al*, 2004; Reynolds and Thompson, 2007; Assaf and Knežević, 2010). At the industry level, measures of tourism performance based on tourism satellite accounts (Frechtling, 2010), do not explicitly estimate the productivity of tourism, although tourism satellite accounts can be used for this purpose (Dwyer *et al*, 2007a, 2007b). Tourism productivity is also useful in indicating the economic value of the tourism industry given the links between productivity and profitability.

Productivity estimates play a key role in strategy formulation, helping 'to identify key strengths and weaknesses of a destination from the visitor perspective, highlighting opportunities for tourism development and strategies to counter possible threats to future tourism. Finally, productivity growth rates can be very valuable in forecasting – prices or competitiveness in the future will depend on productivity growth and changes in input prices' (Dwyer *et al*, 2007b, p 85).

For productivity measures to be even more useful and relevant to public policy and regulation, they need to relate to the overall tourism industry, and not just to particular sectors of the industry. Measures of tourism productivity at the industry level have had to confront substantial challenges in terms of finding data accurate enough to make such estimates meaningful. Some studies measure tourism productivity at the industry level but these are generally limited to one country or single destination (Fuchs, 2004; Wöber and Fesenmaier, 2004; Cracolici *et al*, 2006, 2007; Bosetti *et al*, 2007; Peypoch 2007).

In response to these issues, the present study aims to develop a productivity index that can be used to rank the performance of tourism destinations in an objective way. We aim to extend the present literature both in terms of scope and method. Instead of estimating the performance of a particular destination, the focus here is on comparing several international destinations, thus enabling application of the results at a macro-level. With an international focus, it is also possible to establish a better link with the annual tourism statistics on international countries published by several tourism associations, such as the

United Nations World Tourism Organization and the World Travel and Tourism Council.

The study also presents a methodological contribution. Studies in the tourism literature have used either the Malmquist index (MI) or stochastic frontier (SF) methods to estimate tourism productivity, but both methods have been used without taking into account the heterogeneity of tourism destinations – this is particularly problematic in our case as we are conducting a cross-country comparison. We propose a productivity index that takes into account the heterogeneity between the different destinations involved. As highlighted above, heterogeneity between tourism destinations might arise from different aspects such as location, regulation, industry, size and so on. Thus treating all tourism countries as homogenous in developing a productivity index might lead to misleading conclusions. Previous studies in the literature have relied on the simple data envelopment analysis (DEA) or SF methods to measure the productivity of the tourism industry. However, these methods assume that all units under analysis face a common or homogenous frontier. When the production possibilities are heterogeneous cross-section of countries, productivity measurement cannot be conducted under the assumption of common technology.

Method

We use here the Malmquist metafrontier index (MMI) to benchmark the productivity of various tourism destinations. This index is an extension to the traditional MI, commonly used in the tourism and other related literatures. The MI is a bilateral index that can be used to identify productivity differences between two firms, or one firm over two-time periods (Caves *et al.*, 1982). The index is based on the concept of production function, and thus measures productivity based on the relationship between input and output. The advantage of the index over other productivity indexes is that it can divide productivity into measures of efficiency change and technological change:

$$MI = EC \times BPC, \quad (1)$$

where *EC* and *BPC* represent, respectively, the efficiency change and technological change between two time periods. $EC > 1$ implies efficiency progress; $EC < 1$ implies efficiency regress; $BPC > 1$ implies technological growth and $BPC < 1$ implies technological regress.

Oh and Lee (2010) have shown that MMI can be derived mathematically as an extension of MI. The underlying idea of the analysis is that when the productivity comparison involves heterogeneous groups, it is possible to address this problem by constructing, first, a separate benchmarking frontier for each group, and then estimate a metafrontier that envelops all these group frontiers. In this way, the comparison between heterogeneous groups can be made according to one homogenous frontier. Finally, in order to provide further validation to our method, the present paper also estimates a traditional MI and then checks and tests the consistency of productivity rankings. The metafrontier is a frontier function that envelops all frontiers of separate heterogeneous groups. Thus, the main difference between the MMI and the MI is that the

first accounts for heterogeneity when measuring productivity growth, while the latter assumes that all observations in the sample have homogenous characteristics.

To better understand the MMI, we start with some notations. We assume that we have a panel of $i = 1, \dots, K$ tourism destinations, and $t = 1, \dots, T$ periods, with each destination generating $y \in R_+^M$ outputs using $x \in R_+^N$ inputs. Further we assume that these destinations can be divided into J groups of different characteristics (that is, heterogeneous). A frontier can be defined using the technology set¹ T as:

$$T = \{(x, y): x \text{ can produce } y\} \text{ with } \lambda T = T, \lambda > 0. \quad (2)$$

In order to introduce MMI we need to define three frontiers in as similar fashion to Equation (2): a contemporaneous benchmark frontier, an intertemporal benchmark frontier, and a global benchmark frontier.

A contemporaneous frontier of group R_j can be simply defined as:

$$T_{R_j}^t = \{(x^t, y^t): x^t \text{ can produce } y^t\} \text{ with } \lambda T^t = T^t, \lambda > 0, t = 1, \dots, T, \quad (3)$$

which simply constructs a reference production set at each point in time t , from the observations made at that time only.

An intertemporal frontier set can be defined as:

$$T_{R_j}^t = \text{conv}\{T_{R_j}^1 \cup T_{R_j}^2 \cup \dots \cup T_{R_j}^T\}, \quad (4)$$

which represents a frontier from the observations made throughout the whole set of observations and whole time period for a specific group R_j . This means that we have J intertemporal frontiers, for each group of tourism destinations, with destinations in one group unable to gain access to the intertemporal frontiers for destinations belonging to another group.

Finally, a global benchmark frontier can then be defined as:

$$T^G = \text{conv}\{T_{R_1}^t \cup T_{R_2}^t \cup \dots \cup T_{R_J}^t\}, \quad (5)$$

which is the frontier for all set of observations and for the whole time period across all groups. This can also be described as the metafrontier since it envelops all the intertemporal frontiers. Note that T^G also satisfies the convexity axiom, since it is defined as the convex hull of all the intertemporal technologies. In Figure 1, we present a graphical illustration of the three frontiers described above. The superscript T represents the time period and the subscript T stands for the indicator of various groups. We represent the contemporaneous frontier with the interior of solid line, the intertemporal frontier with the broken line, and the global frontier with the thick and solid line. Thus, the intertemporal frontier envelops the contemporaneous frontier, and the global frontier envelops the intertemporal frontiers.

The MMI can be decomposed into three important components (for mathematical details refer to Oh and Lee, 2010), expressed as:

$$MMI = EC \times BPC \times TGC, \quad (6)$$

Figure 1. The concept of the metafrontier in the Malmquist productivity index framework.

where EC is the measure of efficiency change between t and $t+1$, $EC > 1$ implies efficiency progress, and $EC < 1$ implies efficiency regress), BPC is a measure of technological change and indicates whether a country has made strong investments in technology. $BPC > 1$ implies technological progress, and $BPC < 1$ implies technological regress. TGC is the change in the technology gap ratio which can be interpreted as the technological gap between the technology of the j th group. $TGC < 1$ indicates that a country moves further from the metafrontier. $TGC > 1$ indicates that a country gets closer to the metafrontier, while a technology gap ratio equal to 1 indicates the group frontier is located on the metafrontier. Such measures have an important interpretation. In fact, a group that is sitting on the metafrontier is a group that is highly innovative and investing in technology, while a group which is a further away from the metafrontier is a group that needs more serious investments in technologies. In our tourism context, this measure will also have important implications. For instance, if we treat the global tourism industry as our metafrontier, the technology gap ratio can highlight how far each tourism destination is from catching-up with the global tourism industry.

Table 1. Descriptive statistics of the input and output variables, 2008.

Variable	Mean	SD	Min	Max
Number of employees	724,532	1,192,583	38,653	5,477,000
Capital investments	21,957,194,213	52,598,922,439	2,230,000,000	261,000,000,000
Number of accommodation establishments	456,582	983,592	36,900	4,673,000
Number of international tourists	19,198,200	18,125,000	3,133,000	81,932,000
Number of domestic tourists	17,525,000	97,382,000	5,356,000	472,400,000
Length of stay of international tourists	5.68	4.71	1.63	24.80
Length of stay of domestic tourists	4.12	5.92	1.52	15.93

Notes: Data are compiled from the United Nations World Tourism Organization, Euromonitor database, tourism satellite accounts of some countries, as well as Eurostat database (Tourism Statistics (Eurostat), 2005–2008; Travel and Tourism Statistics – Euromonitor International, 2005–2008; International Tourism Statistics – UNWTO, 2005–2008).

Data and Results

The measurement of tourism productivity in this study requires detailed data on tourism inputs and outputs. We distinguish in this study between three types of input and four types of output. For inputs we use the number of employees working in the tourism industry, the capital investments made by governments on the tourism industry and the total number of accommodation establishments available in a particular country. For outputs, we use the total number of international tourists, the total number of domestic tourists, the average length of stay of international tourists and the average length of stay of domestic tourists.

All these variables have been selected in previous studies in the literature (Fuchs *et al.*, 2002; Cracolici *et al.*, 2006, 2007; Bosetti *et al.*, 2007). To construct the database, an extensive data development was necessary. The main sources of data are compiled from the United Nations World Tourism Organization, Euromonitor database, tourism satellite accounts of some countries, as well as the Eurostat database (Tourism Statistics (Eurostat), 2005–2008; Travel and Tourism Statistics – Euromonitor International, 2005–2008; International Tourism Statistics –UNWTO, 2005–2008). Our final sample consisted of 97 countries located in Africa, the Americas, Asia, Europe and Oceania, for the period 2005–2008 ($97 \times 4 = 388$ observations).² Table 1 provides descriptive statistics of the input and output variables for the year 2008.

Before proceeding with the estimation, it is essential to identify the number of groups. It is also imperative to decide which countries belong to each group, since the main goal is to ensure as much homogeneity in the grouping as possible. Some studies in other areas have used the geographical proximity of countries as the main criterion for groupings (Oh and Lee, 2010). However, countries with different geographical locations might not necessarily comprise heterogeneous tourism characteristics. In fact, there are more important factors that differentiate tourism destinations, such as tourism infrastructure and price

Table 2. Groupings of countries under analysis.

Group 1

Australia, Austria, Canada, Denmark, Finland, France, Germany, Hong Kong, Malaysia, Netherlands, Norway, Portugal, Portugal, Singapore, South Korea, Sweden, Switzerland, UK, USA

Group 2

Argentina, Bahrain, Barbados, Belgium, Brazil, Chile, China, Costa Rica, Croatia, Cyprus, Czech Republic, Egypt, Estonia, Greece, Hungary, India, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Latvia, Lithuania, Luxembourg, Mauritius, Mexico, New Zealand, Oman, Panama, Poland, Puerto-Rico, Qatar, Russia, Slovakia, Slovenia, South Africa, Taiwan, Thailand, Tunisia, Turkey, UAE

Group 3

Armenia, Azerbaijan, Benin, Bolivia, Bosnia, Cambodia, Cameroon, Chad, Columbia, Gambia, Ghana, Honduras, Kenya, Kuwait, Libya, Macedonia, Madagascar, Malawi, Mali, Morocco, Namibia, Nicaragua, Paraguay, Peru, Philippines, Salvador, Saudi Arabia, Senegal, Syria, Tanzania, Uganda, Ukraine, Venezuela, Zambia, Zimbabwe

competitiveness. Since these differentiating characteristics are independent of destination location, what is needed is a criterion for groupings that takes this into account.

Here, we achieve this by grouping the countries based on their worldwide travel and tourism competitiveness index, published annually by the ‘World Economic Forum’ (Blanke and Chiesa, 2009). The index is widely adopted and ranks countries based on their tourism competitiveness on several essential criteria, such as tourism and transportation infrastructure, price competitiveness, human resources, environmental sustainability, natural resources, cultural resources, policy rules and regulations, and safety and security.

In Table 2, we show the number of groups used in this study, along with the countries belonging to each group. The countries in group 1 are those that have consistently achieved top tier ranking on their tourism competitive index over the period of study. Countries in group 1 include those ranked in the top third of the 133 countries ranked by the travel and tourism competitiveness index (TTCI). They each have an index close to 5 and over (out of 7). The second group includes those countries that have achieved middle ranking on their tourism competitive index over the period of study, while the third group includes those countries that have achieved the lowest ranking on their tourism competitive index. Group 3 countries fall into the bottom third of the countries ranked by TTCI with ratings under 4. This is consistent with other sources such as the WTTC and UNWTO that most countries in the third groups have the poorest tourism infrastructure, and have only achieved modest tourism growth over the last few years.

The results of the metafrontier productivity decomposition obtained from Equation (6) are listed in Table 3.³ The first column in Table 3 presents the ranking of the countries according to their productivity change, the second column presents the productivity change, the third column presents the efficiency change (that is, measure how far an observation is from maximum potential production), the fourth column presents the technical progress or

Table 3. Average productivity change, efficiency change, best practice gap change, and technical gap ratio change, selected countries, 2005–2008.

Country	Rank	PC	EC	BPC	TGC
Senegal	97	0.8378	0.9087	1.0220	0.9021
Madagascar	96	0.8554	1.0310	0.9028	0.9190
Chad	95	0.8764	1.0148	0.9408	0.9180
Kenya	94	0.8846	0.8900	1.0070	0.9870
Poland	93	0.9150	0.9389	0.9791	0.9954
Gambia	92	0.9174	1.0000	0.8821	1.0400
Latvia	91	0.9302	1.0000	0.9399	0.9897
Cyprus	90	0.9319	0.9611	0.9220	1.0517
Panama	89	0.9365	1.0000	0.9559	0.9797
Columbia	88	0.9448	0.9590	0.9949	0.9902
Mauritius	87	0.9498	1.0059	0.9917	0.9521
Ukraine	86	0.9514	0.9439	0.9788	1.0298
Peru	85	0.9572	0.9869	0.9959	0.9739
South Africa	84	0.9616	0.9849	0.9758	1.0006
Venezuela	83	0.9637	1.0311	1.0368	0.9015
Croatia	82	0.9646	0.9580	1.0049	1.0020
Libya	81	0.9682	1.0058	1.0009	0.9618
Taiwan	80	0.9740	1.0000	0.9739	1.0001
Thailand	79	0.9743	0.9001	1.0823	1.0001
Bolivia	78	0.9748	0.9982	0.9397	1.0392
Namibia	77	0.9758	1.0000	0.9761	0.9997
Brazil	76	0.9763	1.0000	0.9763	1.0000
Jordan	75	0.9796	0.9890	1.0225	0.9687
Mexico	74	0.9807	0.9878	0.9928	1.0000
Benin	73	0.9820	1.0428	0.9248	1.0183
Singapore	72	0.9821	1.0000	0.9620	1.0209
Slovakia	71	0.9841	0.9671	0.9838	1.0343
Macedonia	70	0.9843	0.9560	0.9823	1.0482
Zambia	69	0.9851	1.0190	0.9821	0.9844
Russia	68	0.9871	1.0148	0.9721	1.0006
Slovenia	67	0.9892	1.0132	0.9721	1.0043
Honduras	66	0.9896	1.0088	1.0015	0.9795
Uganda	65	0.9905	1.0342	0.9578	0.9999
Armenia	64	0.9906	1.0057	0.9528	1.0338
Tanzania	63	0.9910	0.9868	0.9962	1.0081
Barbados	62	0.9915	1.0000	1.0123	0.9795
Bosnia	61	0.9918	1.0611	0.9721	0.9615
Cameroon	60	0.9920	0.9542	1.0578	0.9828
Morocco	59	0.9946	1.0187	0.9839	0.9923
Lithuania	58	0.9954	1.0000	0.9933	1.0021
Zimbabwe	57	0.9963	1.0000	0.9935	1.0028
Salvador	56	0.9971	1.0720	0.9125	1.0193
Malawi	55	0.9984	0.9548	1.0390	1.0064
Qatar	54	0.9994	1.0139	0.9618	1.0248
Egypt	53	1.0001	1.0000	1.0001	1.0000
Paraguay	52	1.0004	1.1300	0.8920	0.9925
Syria	51	1.0010	0.9980	1.0028	1.0002
Mali	50	1.0010	1.0000	0.9982	1.0028

Table 3 continued

Country	Rank	PC	EC	BPC	TGC
Nicaragua	49	1.0022	0.9850	1.0178	0.9997
Japan	48	1.0050	1.0011	1.0030	1.0009
Ghana	47	1.0055	0.9272	1.0611	1.0220
Luxembourg	46	1.0066	1.0022	1.0007	1.0037
New Zealand	45	1.0075	1.0000	0.9918	1.0158
Netherlands	44	1.0083	1.0002	1.0048	1.0033
Puerto-Rico	43	1.0089	1.0348	0.9770	0.9979
UAE	42	1.0089	0.9990	1.0079	1.0020
Saudi-Arabia	41	1.0102	1.0000	1.0081	1.0021
Canada	40	1.0116	0.9538	1.0168	1.0431
Czech Republic	39	1.0130	1.0038	1.0001	1.0091
Ireland	38	1.0155	1.0000	0.9938	1.0218
Philippines	37	1.0161	1.0602	0.9580	1.0004
Tunisia	36	1.0173	0.9980	1.0130	1.0063
Argentina	35	1.0189	0.9860	1.0182	1.0149
Denmark	34	1.0196	1.0000	0.9928	1.0270
Cambodia	33	1.0202	0.9442	1.0078	1.0721
Azerbaijan	32	1.0202	1.0021	1.0127	1.0053
Norway	31	1.0196	1.0242	0.9818	1.0140
Bahrain	30	1.0217	1.0000	1.0260	0.9958
Portugal	29	1.0220	1.0610	0.9820	0.9809
Estonia	28	1.0232	1.0300	0.9931	1.0003
Italy	27	1.0250	1.0520	0.9750	0.9993
Greece	20	1.0426	1.0118	1.0318	0.9987
Belgium	25	1.0293	1.0148	1.0090	1.0052
Hong Kong	24	1.0294	1.0442	0.9800	1.0059
Sweden	23	1.0323	1.0070	1.0241	1.0010
China	22	1.0327	1.0630	0.9720	0.9995
Costa Rica	21	1.0353	0.9839	1.0178	1.0338
Kuwait	26	1.0262	1.0050	1.0370	0.9847
Portugal	19	1.0455	1.0628	0.9837	1.0000
Jamaica	18	1.0473	1.0139	0.9597	1.0763
South Korea	17	1.0473	1.0162	1.0215	1.0089
Austria	16	1.0474	1.0458	1.0010	1.0005
Chile	15	1.0605	1.0000	1.0321	1.0275
Germany	14	1.0649	1.2738	0.8392	0.9962
Israel	13	1.0709	1.0322	1.0065	1.0308
Malaysia	12	1.0763	1.0300	1.0227	1.0218
Hungary	11	1.0819	1.0000	1.0796	1.0021
USA	10	1.1013	1.0000	1.1013	1.0000
Australia	9	1.1043	1.0231	1.0010	1.0783
Oman	8	1.1053	0.9850	0.9830	1.1415
India	7	1.1061	1.0000	1.0720	1.0318
Finland	6	1.1064	1.0000	1.0053	1.1006
United Kingdom	5	1.1250	1.1268	0.9982	1.0002
Turkey	4	1.1442	1.1457	0.9890	1.0098
Switzerland	3	1.1478	1.0013	1.1118	1.0310
France	2	1.1526	1.1501	1.0049	0.9973
Spain	1	1.1665	1.0001	1.1379	1.0250
<i>Average all countries</i>		<i>1.0077</i>	<i>1.0087</i>	<i>0.9945</i>	<i>1.0056</i>

degree of innovation (measures the degree of innovation, that is, investment in technology) and the fifth column shows the technology gap ratio change (measures how close a country is moving to the metafrontier (that is, world tourism industry).

From the productivity results, it is clear that 44 countries from our sample achieved a productivity growth, and the remaining 53 countries suffered a productivity decline. Countries with the highest productivity growth include Switzerland, Australia, the UK, the USA, Portugal, Germany, India, Turkey and Spain, while countries with the highest productivity decline include Chad, Kenya, Senegal, Gambia and Panama.

The average efficiency change for the whole sample is 1.0087 (that is, countries in our sample have on average achieved a slight increase in efficiency). In total, 47 countries have experienced an efficiency growth, while 28 have experienced an efficiency decline. The remaining 22 countries had no change in their efficiency. Some examples of countries with the highest efficiency growth include Switzerland, China, Portugal, while countries with the highest efficiency decline include Ghana, Senegal and Kenya. The measure of technical change, denoted as *BPC*, averages less than unity, which indicates that countries in our sample have not technologically progressed on average. Looking at individual countries, it is also clear that more countries have achieved efficiency growth than technological growth. Such findings might be in line with the current economic climates where most countries are focusing on squeezing their endowed inputs as efficiently as possible, without investing heavily in new technologies or capital investments.

Another measure of importance in the productivity decomposition is the *TGC*, which measures how much one country gets closer to or further away from the world frontier technology, which in our context is the world tourism industry. $TGC < 1$ indicates that a country moves further from the metafrontier, while $TGC > 1$ indicates that a country gets closer. Across the whole sample, the *TGC* averages more than unity, indicating that most countries in our sample are attempting to catch up with the world tourism industry. Importantly, some countries have maintained a *TGC* measure of unity over the period under analysis, especially those located in Europe, North America, Asia Pacific and South East Asia. A likely reason for this phenomenon is that it is countries from this region as world leaders in the tourism industry play an important role in determining the location of the global frontier.

Finally, in order to confirm the advantage of our metafrontier approach, we present in Table 4 the ranking of selected countries according to the traditional MI, commonly used in tourism research. We included the ranking from this index for comparison only, as this index assumes no heterogeneity between the countries identified. Thus, it would be useful to check whether or not ignoring heterogeneity can have an impact on the ranking. Comparing the results of Table 3 with Table 4 it is clear that the ranking of the presented countries is different between the two methodologies. Switzerland, for example, is ranked third according to the MMI and eighth according to the MI, while Australia is ranked 15th according to the MI and ninth according to the MMI. Such results confirm previous findings by Oh and Lee (2010) who indicated that the MI can lead to biased results when the ranking involves heterogeneous units.⁴

Table 4. Ranking of selected countries according to the Malmquist index, 2005–2008.

Country	Ranking
Australia	15
Austria	24
Netherlands	52
Portugal	31
Switzerland	8
UK	7

Highly productive destinations in this study included Switzerland, Austria, Spain, France, Germany, the USA, the UK and Australia. Generally, all of these countries are characterized by a high competitive tourism industry (Blanke and Chiesa, 2009). They also rank high in terms of tourism arrivals and receipts. They have also transparent policymaking, and are highly active in promoting and advertising their tourism. Most of these characteristics are generally absent in low productivity countries such as Chad, Cameroon, Ghana, Uganda, Malawi and Mali. While these countries have a good climate and some nice topographical features, they generally suffer a lack of funding for development of their tourism facilities, and the absence of sound tourism policies. The political and security situation in some of these countries is usually volatile, and characterized by recurring violence and tensions. The inferior quality of transportation, poor quality service in hotels, poor destination image, low tourist spending, economic challenges and strict regulations all further inhibit growth. On their tourism competitive index, these countries also consistently suffer from low ranking (Travel and Tourism – Mali, 2009).

Conclusion

The main objective of this study was to provide a global benchmarking of some of the world’s leading tourism destinations. For the first time in the tourism productivity research literature, we have introduced the metafrontier benchmarking approach that make it simple to incorporate the heterogeneity between different destinations in the estimation of destination productivity. More importantly, the metafrontier allows the construction of a world tourism frontier technology, which can be used to provide useful insights into the level of tourism catch-up required of different groups of countries. Dividing the countries under analysis into three different heterogeneous groups, it was clear from the results that the tourism productivity of most African countries lags behind that of North American and European countries. On average, most African countries lag behind the world tourism industry in general. A comparison between the efficiency and technology components of productivity further indicated that more countries experienced efficiency growth than technology growth. We argued that such finding might be related to the recent market trends, where most countries have tried to squeeze their endowed inputs as much as possible rather than investing in new projects. Undoubtedly, there are many other characteristics that affect the tourism industry in the countries

under analysis, but these require more in-depth analysis of each destination. While the drivers of and impediments to destination competitiveness can be highlighted using indexes, such as the TICI as noted above, the metafrontier approach advocated herein is not intended to be a substitute for other indexes since the latter do not purport to measure tourism productivity. Considered as complementary to the other indexes the metafrontier approach can provide useful benchmarks of destination productivity that the other indexes cannot provide. Destination managers can use both approaches to inform policy development and implementation.

The main objective of this study was to develop a more robust and comprehensive benchmarking methodology that can provide governments and national tourism offices with an accurate international assessment of their tourism industry. Most benchmarking methodologies currently used in the literature suffer from major statistical weaknesses and fail also to account for the heterogeneity between international destinations. Destination managers have an interest in tourism benchmarking as it is integral to the development of a systematic approach to tourism policy (Kozak and Rimmington, 1999; Bosetti *et al*, 2007). Benchmarking also helps countries understand where they have strengths and weaknesses. Through comparison with others they can determine what and how much improvement can be achieved. Unfortunately, benchmarking is made more difficult given that the statistics published by tourism authorities or statistical agencies in some of the countries involved are limited to a narrow set of indicators and do not have an international or regional focus. We expect the results from this study to benefit directly the countries involved, especially as most of the available tourism benchmarking methodologies are based on simplistic assumptions.

It is difficult to compare the results of this study with other destination benchmarking studies, since the present study uses a different methodology. However, future research might consider validating this study with studies that cover additional destinations or by comparison to other related methodologies. Importantly, and if data are available, future studies might also consider taking into account in benchmarking analysis the undesirable characteristics that impede destination performance. For instance, it would be interesting to check the influence that various barriers and constraints might have in affecting the productivity of certain tourism destinations. There are several productivity models that can take into account these undesirable characteristics but collecting such data from tourism destinations would be a challenging task.

Endnotes

1. Technology set can be also defined as a representation of the state of knowledge with respect to the transformation of inputs into outputs.
2. Note that the inclusion of more countries was not possible owing to data unavailability.
3. We used the R software to obtain the results.
4. Note that we also conducted a Spearman rank order correlation test and confirmed that the two approaches lead to a significant difference in ranking.

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