Identifying the Drivers of Competitiveness in the Jamaican Tourism Industry

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A copy of this paper is available at http://www.jftc.gov.jm/

August 2009

Abstract

The goal of this study is to inform the design of policies geared toward increasing Jamaica's share of the revenues generated by the global tourism industry. Accordingly, the paper's objective is twofold: to (i) identify the main drivers of competitiveness in travel and tourism (T&T) product; and (ii) quantify the relative effect of each driver. To accomplish this, the paper examines data which compare the competitiveness of the T&T products across 130 countries; in the sense of their attractiveness to potential providers and consumers of tourism services. Under plausible assumptions, the study provides evidence that the potential benefits from improving the cost of starting a business is unlikely to justify the potential costs of attempting to do so. The key findings of the study are: (a) increasing the number of international fairs and exhibitions hosted by Jamaica is the most effective driver of competitiveness and it is more than seven times as effective as marketing campaigns; (b) lowering the cost of starting a business in the tourism industry is unlikely to improve the competitiveness of Jamaica's tourism product; (c) relying on a more intense marketing campaign is unlikely to be the most effective response to avert the anticipated adverse effects from the UK's proposed implementation of the air passenger duty in November 2009; and (d) offering tax incentives and grant concession schemes to business interests are unlikely to improve the competitiveness of Jamaica's tourism product .

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1. Introduction

Global tourism is big business. The World Economic Forum (WEF) reports that tourism receipts (i.e. visitor expenditure) approximated US$ 682.7 billion in 2006; and in 2007, the combined direct and indirect activities in the travel and tourism industry accounted for 10.4 percent of global Gross Domestic Product (WEF 2008, 3). Given the huge economic value of this industry, policymakers have an obvious interest in identifying the basis upon which the economic surplus is distributed among the countries; that is, the basis upon which countries compete in this global industry. It seems reasonable that, all other things equal, countries which attract more investments and tourists are likely to command a greater share of the industry than countries which attract fewer investments and tourists.

The Travel and Tourism Competitiveness Index (TTCI) prepared by the WEF represents a useful platform which allows us to identify the main determinants of market share in the global tourism industry. It is constructed using numerous indicators capturing the attractiveness of each country to potential investors and tourists.[1] The value of the index is underpinned by its comprehensive nature as it is constructed using seventy-one indicators of competitiveness. Its usefulness in identifying the main determinants is limited, however, by the fact that it implicitly assumes that each indicator is equally effective in promoting competitiveness.[2] This assumption is tenuous at best, as it seems more plausible that some indicators would be more effective than others in promoting the competitiveness of a country's tourism product.

Without disputing the legitimacy of the inclusion of any indicator used to construct the index, the paper identifies the *drivers* of competitiveness; that is, it identifies the indicators which play a crucial role in promoting competitiveness. While each indicator represents a potential tool with which policymakers could enhance competitiveness, targeting the drivers allows them to design more effective ones. This is important for small developing countries such as Jamaica in which even a seemingly negligible increase in the share of this lucrative industry is likely to translate into considerable additional foreign exchange inflows. For example, visitor expenditure in Jamaica was approximately US$1.9 billion in 2006 (Planning Institute of Jamaica 2008, 17.6).

[1] The WEF's concept of competitiveness therefore differs from that of practitioners in the discipline of competition law who would, instead, focus attention on the potential for the undue exercise of market power.
[2] In technical terms, the index assigns equal weights to all seventy one indicators.

Based on these figures, Jamaica could double its 2006 visitor expenditure by acquiring an additional ⅓ of 1 percentage point (0.33 %) share of the global tourism industry.

The objective of this paper is to identify the main factors influencing Jamaica's competitiveness in the global Travel and Tourism (T&T) industry and assess the relative effectiveness of each factor. The remainder of the paper is organized as follows. Section 2 describes the methodology used to measure the influence of a variety of factors on the competitiveness of the T&T industry. Section 3 briefly reports the results of the analyses. A more detailed analysis is provided in the Appendix. A discussion on the implications of these results is provided in Section 4. Concluding remarks are offered in Section 5.

2. Methodology

The study examines data published by the WEF measuring the competitiveness of Travel and Tourism (T&T) industry for countries around the world. We use standard econometric analyses to identify and compare the determinants of competitiveness in the following twenty-four Latin America and Caribbean (LAC) countries: Argentina, Barbados, Bolivia, Brazil, Chile, Columbia, Costa Rica, Dominica Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

Data Description

The WEF's TTCI measures the relative competitiveness of tourism products across 130 countries. The purpose of the index is "…to measure the factors and policies that make it attractive to develop the T&T section in different countries…" (WEF 2008, 4). The index comprises three broad categories, referred to as sub-indices, which drive or influence the competitiveness of the T&T product. The sub-indices are: (i) regulatory framework; (ii) business environment and infrastructure; and (iii) human, cultural and natural resources. The regulatory framework sub-index captures those elements that are directly policy related and generally under the purview of the government. The business environment and infrastructure sub-index captures elements of the business environment; and the human cultural and natural resources sub-index

captures the human, cultural and natural elements of each country's resource endowments (WEF 2008, 4).

Each sub-index is constructed using "pillars" of competition. Table 1A below lists the pillars comprising each sub-index. It shows that the pillars comprising the T&T regulatory framework sub-index include, among others, policy rules and regulation; safety and security; and health and hygiene. The pillars comprising the T&T business environment and infrastructure sub-index include, among others, air transport infrastructure; tourism infrastructure; and price competitiveness in the T&T industry. The pillars comprising the human, cultural and natural resources sub-index include, among others, human resources; natural resources; and cultural resources.

Table 1A. *The Fourteen Pillars of T&T Competitiveness*

Sub-Indices of T&T Competitiveness	Pillars of Competitiveness
T&T regulatory Framework	i. Policy rules and regulation ii. Environmental sustainability iii. Safety and security iv. Health and hygiene v. Prioritization of T&T
T&T Business environment and Infrastructure	vi. Air transport infrastructure vii. Ground transport infrastructure viii. Tourism Infrastructure ix. Information and Communication and Technology (ICT) infrastructure x. Price competitiveness in the T&T industry
T&T Human, cultural and natural resources	xi. Human resources xii. Affinity for travel and tourism xiii. Natural resources xiv. Cultural resources

Source: WEF (2008, xiii)

The fourteen pillars are divided into a total of seventy-one indicators of competitiveness. Table 1B below lists the indicators comprising each pillar under the T&T regulatory framework sub-index. *Policy rules and regulations* (Pillar 1) includes the cost to start a business; time required

to start business; prevalence of foreign ownership; and business impact of rules on FDI. *Environmental sustainability* (Pillar 2) includes stringency of environmental regulation; enforcement of environmental regulation; and threatened species. S*afety and security* (Pillar 3) include business costs of crime and violence; reliability of police services; and road traffic accidents. *Health and hygiene* (Pillar 4) include access to improved sanitation; access to drinking water; and hospital beds. *Prioritization of travel & tourism* (Pillar 5) includes, among others, effectiveness of marketing and branding to attract tourists; T&T fair attendance; and T&T government expenditure.

Table 1B. *Indicators Comprising the T&T Regulatory Framework Sub-index*

Pillars of Competitiveness	Indicators of Competitiveness
Pillar 1: Policy rules and regulations	• Prevalence of foreign ownership • Property rights • Business impact of rules on FDI • Visa requirements • Openness of bilateral Air Service Agreements • Transparency of government policymaking • Time required to start a business • Cost to start a business
Pillar 2: Environmental Sustainability	• Stringency of environmental regulation • Enforcement of environmental regulation • Sustainability of T&T industry development • Carbon dioxide emissions • Particulate matter concentration • Threatened species • Environmental treaty ratification
Pillar 3: Safety & Security	• Business costs of terrorism • Reliability of police services • Business costs of crime and violence • Road traffic accidents
Pillar 4: Health & Hygiene	• Physician density • Access to improved sanitation • Access to improved drinking water • Hospital beds
Pillar 5: Prioritisation of Travel & Tourism	• Government prioritization of the T&T industry • T&T government expenditure • Effectiveness of marketing and branding to attract tourists • T&T fair attendance

Source: WEF (2008, xiii)

Table 1C below presents an exhaustive list of the indicators comprising each pillar under the T&T Business environment and infrastructure sub-index. *Air transport infrastructure* (Pillar 6) includes the number of operating airlines; international air transport network; and airport density. *Ground transport infrastructure* (Pillar 7) includes quality of port infrastructure; quality of domestic transport network; and quality of railroad infrastructure. *Tourism Infrastructure* (Pillar 8) includes the number of hotel rooms. *ICT infrastructure* (Pillar 9) includes telephone lines, mobile telephone subscribers; and broadband internet subscribers. *Price Competitiveness in the T&T Industry* (Pillar 10) includes ticket taxes and airport charges; extent and effect of taxation; and hotel price index.

Table 1C. *Indicators Comprising the T&T Business environment and infrastructure Sub-Index*

Pillars of Competitiveness	Indicators of Competitiveness
Pillar 6: Air Transport Infrastructure	• Quality of air transport infrastructure • Available seat kilometers • Departures per 1,000 population • Airport density • Number of operating airlines • International air transport network
Pillar 7: Ground Transport infrastructure	• Quality of roads • Quality of railroad infrastructure • Quality of port infrastructure • Quality of domestic transport network • Road density
Pillar 8: Tourism infrastructure	• Hotel rooms • Presence of major car rental companies • ATMs accepting Visa
Pillar 9: ICT infrastructure	• Extent of Business internet use • Internet users • Fixed Telephone lines • Broadband internet subscribers • Mobile telephone subscribers
Pillar 10: Price competitiveness in the T&T industry	• Ticket taxes and airport charges • Purchasing power parity • Extent and effect of taxation • Fuels price levels • Hotel price index

Source: WEF (2008, xiii)

Table 1D below lists the indicators comprising each pillar under the T&T Human, cultural and natural resources sub-index. *Human resources* (Pillar 11) includes local availability of specialized research and training services; quality of the educational system; and HIV prevalence. *Affinity for Travel & Tourism* (Pillar 12) includes attitude of population toward foreign visitors; and extension of business trips recommended. *Natural resources* (Pillar 13) includes quality of the natural environment; number of world heritage natural sites; and protected areas. *Cultural resources* (Pillar 14) includes the number of international fairs and exhibition; and number of World Heritage cultural sites.

Table 1D. *Indicators Comprising the T&T Human, Cultural and Natural Resources Sub-Index*

Pillars of Competitiveness	Indicators of Competitiveness
Pillar 11: Human Resources	• Primary education enrollment • Secondary education enrollment • Quality of the educational system • Local availability of specialized research and training services • Extent of staff training • Hiring and firing practices • Ease of hiring foreign labour • HIV prevalence • Business impact of HIV/AIDS • Life expectancy
Pillar 12: Affinity for Travel and Tourism	• Tourism openness • Attitude of population toward foreign visitors • Extension of business trips recommended
Pillar 13: Natural Resources	• Number of World Heritage natural sites • Protected areas • Quality of the natural environment • Total known species
Pillar 14: Cultural Resources	• Number of World Heritage cultural sites • Sports stadiums • Number of international fairs and exhibitions hosted

Source: WEF (2008, xiii)

Forty two of the indicators were constructed by the WEF using hard data [see (WEF 2008, 463) for data sources], while the other twenty nine indicators were constructed using an Executive Opinion Survey administered by the WEF.[3]

Analytic Framework

To determine the drivers of competitiveness, we identify the indicators in which the most competitive countries outperform the least competitive ones. The effect of each indicator on the overall competitiveness of the T&T product is estimated as the product of the impact of (i) sub-index; (ii) pillar; and (iii) indicator marginal effects.

3. Results

We begin this section by presenting the ranking of the competitiveness LAC countries. Table 2 below shows that Barbados has the most competitive product in the LAC region and is the only LAC country ranked in the top 30 in the world. Jamaica is ranked 8th in LAC, just below Mexico which is ranked 7th. We summarise below, the estimates of the effect of each indicator variable on the overall competitiveness of the economy.[4]

[3] See WEF (2008, 67) for more details on the survey conducted.
[4] The results are reported in greater detail in the Appendix.

Table 2. *Relative Competitiveness of T&T Product in the LAC Region*

Country	Competitiveness of T&T Product	
	Rank in the LAC region	Rank in the World (out of 130)
Barbados	1	29
Costa Rica	2	44
Puerto Rica	3	46
Brazil	4	49
Panama	5	50
Chile	6	51
Mexico	7	55
Jamaica	8	57
Argentina	9	58
Uruguay	10	61
Dominica Republic	11	63
Guatemala	12	68
Peru	13	70
Columbia	14	71
Trinidad & Tobago	15	74
Honduras	16	75
Ecuador	17	86
Suriname	18	95
El Salvador	19	97
Nicaragua	20	99
Venezuela	21	103
Bolivia	22	106
Guyana	23	109
Paraguay	24	115

Source: WEF (2008)

Table 3 below vindicates our suspicion that the indicators differ regarding their effect on competitiveness. The column labeled "overall effect" measures the effect that a unit increase in each indicator variable has on the ranking of the competitiveness of a country's tourism product.[5] It shows, for instance, that a unit increase in the *number of international fairs and exhibitions hosted* by a country will increase the competitiveness ranking by 0.16 units.[6] In other words, an increase by 7 units will result in the country ranking one unit higher. By similar reasoning, it would take a 10 point increase in the number of hotel rooms to generate a one unit improvement in the ranking of the country.

[5] One unit is equivalent to one standard deviation in the scores of the respective variables.

[6] Number of international fairs and exhibitions hosted: This indicator measures the average number of international fairs and exhibitions held annually in each country between 2004 and 2006. It includes meetings organized by international associations and attended by at least 50 participants that take place on a regular basis and rotate between a minimum of three countries (WEF 2008, 466).

Table 3. *The Relative Effectiveness of Indicators of Competitiveness*

Indicator Variable	Overall Effect	Relative Effect
Number of international fairs and exhibitions hosted	0.16	1.00
Number of World Heritage natural sites	0.13	0.81
Tourism openness	0.12	0.77
Protected areas	0.12	0.73
Hotel rooms	0.10	0.62
Total known species	0.10	0.61
Sports stadium	0.10	0.60
Presence of major car rental companies	0.09	0.58
Number of World Heritage cultural sites	0.09	0.54
Road density	0.08	0.48
ATMs accepting Visa cards	0.07	0.44
T & T government expenditure	0.06	0.39
Road traffic accidents	0.06	0.38
Government prioritization of the T&T industry [a]	0.06	0.37
Prevalence of foreign ownership [a]	0.05	0.34
Business impact of rules on FDI [a]	-0.05	-0.34
T & T fair attendance	0.05	0.34
Quality of port infrastructure	0.05	0.33
Hospital beds	0.05	0.32
Access to improved sanitation [a]	0.05	0.32
Quality of the natural environment [a]	0.05	0.31
Reliability of police services [a]	0.05	0.31
Physician density	0.05	0.31
Particulate matter concentration	0.05	0.31
Threatened species	0.05	0.30
Departures per 1,000 population	0.05	0.29
Quality of domestic transport network [a]	0.04	0.28
Transparency of government policymaking [a]	0.04	0.27
Quality of roads [a]	0.04	0.27
Attitude of population toward foreign visitors [a]	0.04	0.26
Openness of bilateral Air Service Agreements	0.04	0.25
Extension of business trips recommended [a]	0.04	0.25
Business costs of terrorism [a]	0.04	0.24
International air transport network [a]	0.04	0.24
Property rights [a]	0.04	0.24
Cost to start a business	0.03	0.21
Carbon dioxide emissions	0.03	0.20
Access to improved drinking water	0.03	0.19
Available seat kilometers	0.03	0.19
Business costs of crime and violence [a]	0.03	0.18
Environmental treaty ratification	0.03	0.17
Mobile telephone subscribers	0.03	0.16
Airport density	0.02	0.15
Internet users	0.02	0.15
Fixed telephone lines	0.02	0.15
Sustainability of T & T industry development [a]	0.02	0.15
Time required to start a business	0.02	0.15
Extent and effect of taxation [a]	0.02	0.14
Effectiveness of marketing and branding to attract tourists [a]	0.02	0.14
Hiring and firing practices [a]	0.02	0.14

Table 3 *(continued)*

Indicator Variable	Overall Effect	Relative Effect
Ticket taxes and airport charges	0.02	0.13
Fuel price levels	0.02	0.13
Secondary education enrollment	0.02	0.12
Purchasing power parity	0.02	0.12
Hotel price index	0.02	0.11
Extent of business Internet use [a]	0.02	0.11
Enforcement of environmental regulation [a]	0.02	0.11
Ease of hiring foreign labour [a]	0.02	0.10
Stringency of environmental regulation [a]	0.02	0.10
Extent of staff training [a]	0.01	0.09
Quality of the educational system [a]	0.01	0.09
Broadband Internet subscribers	0.01	0.09
Local availability of specialized research and training services [a]	0.01	0.08
Quality of railroad infrastructure [a]	0.01	0.08
Life expectancy	0.01	0.08
Primary education enrollment	0.01	0.06
Number of operating airlines	0.01	0.04
Quality of air transport infrastructure [a]	0.00	0.03
HIV prevalence	0.00	0.02
Business impact of HIV/AIDs [a]	0.00	0.01
Visa requirements	0.00	0.01

Note: Indicators marked with an 'a' are measured using an Executive Opinion Survey conducted by the WEF. The other indicators were constructed using hard data sources.

The column labeled "relative effect" measures the effectiveness of each indicator relative to the effectiveness of the number of international fairs and exhibitions hosted. It shows, for instance, that a unit improvement in the *number of hotel room* is only 62 percent as effective as a comparable improvement in the number of fairs and exhibitions hosted in improving the ranking of a country's competitiveness.

Drivers and Non-Drivers of Competitiveness

Although Table 3 reports on the relative effect of each indicator, we may discern a clearer picture of the relative importance of each variable to policymakers by identifying those which are the *drivers* of competitiveness. To do this, we identify indicators which are more prevalent in the most competitive countries than they are in the least competitive ones.[7] Based on the results, we classify each indicator into one of four categories. *Category 0* comprises the indicators which we identify as being non-drivers of competitiveness. *Category I* comprises indicators in which a country needs to excel using only our comparative measure of performance to improve the

[7] See the Appendix for a description of the procedure followed in identifying the key drivers of competitiveness.

competitiveness of its T&T product. *Category II* comprises indicators in which a country needs to excel using only our absolute measure of performance to improve the competitiveness of its T&T product. *Category III* comprises indicators in which a country needs to excel using both our absolute and comparative measure of performance to improve the competitiveness of its T&T product. The list of indicators falling into each category is presented in Tables 4A and 4B below.

Table 4A. *Non-drivers of Competitiveness*

Indicator Variable	Relative Impact
Category 0	
Number of World Heritage natural sites	0.81
Tourism openness	0.77
Protected area	0.73
Total known species	0.61
Sports stadium	0.60
Number of World Heritage cultural sites	0.54
Road density	0.48
Road traffic accidents	0.38
Quality of the natural environment	0.31
Particulate matter concentration	0.31
Departures per 1,000 population	0.29
Openness of bilateral Air Service Agreements	0.25
Carbon dioxide emissions	0.20
Business cost of crime and violence	0.18
Mobile telephone subscribers	0.16
Airport density	0.15
Time required to start a business	0.15
Extent and effect of taxation	0.14
Hiring and firing practices	0.14
Fuel price levels	0.13
Secondary education enrollment	0.12
Purchasing power parity	0.12
Hotel price index	0.11
Ease of hiring foreign labour	0.10
Primary education enrollment	0.06
Number of operating airlines	0.04
HIV prevalence	0.02
Business impact of HIV/AIDs	0.01
Visa requirements	0.01

Table 4A above lists twenty nine non-drivers of competitiveness. These are indicators which were found to have statistically insignificant effects on the observed differences in the competitiveness of the countries in the LAC region. The information contained in the table is important as it includes the following indicators usually targeted by policymakers seeking to

improve the tourism product: (i) the extent and effect of taxation; (ii) hotel price index; (iii) number of operating airlines; and (iv) business cost of crime and violence.

Table 4B. *Drivers of Competitiveness*

Indicator Variable	Relative Impact	Jamaica's rank among LAC countries
Category I		
Reliability of police services	0.31	12
Threatened species	0.30	22
Ticket taxes and airport charges	0.13	15
Category II		
Number of international fairs and exhibitions hosted	1.00	16
Hotel rooms	0.62	4
Business impact of rules on FDI	-0.34	4
Hospital beds	0.32	12
Access to improved sanitation	0.32	11
Physician density	0.31	19
Quality of domestic transport network	0.28	12
Transparency of government policymaking	0.27	5
Quality of roads	0.27	9
Property rights	0.24	5
Cost to start a business	0.21	5
Available seat kilometers	0.19	12
Environmental treaty ratification	0.17	12
Broadband internet subscribers	0.09	10
Quality of railroad infrastructure	0.08	19
Category III		
Presence of major car rental companies	0.58	8
ATMs accepting Visa cards	0.44	12
T&T Government Expenditure	0.39	
Government prioritization of the T& T industry	0.37	3
Prevalence of foreign ownership	0.34	3
T & T fair attendance	0.34	6
Quality of port infrastructure	0.33	3
Attitude of population toward foreign visitors	0.26	1
Extension of business trips recommended	0.25	11
Business cost of terrorism	0.24	11
International air transport network	0.24	2
Access to improved drinking water	0.19	11
Internet users	0.15	2
Fixed telephone lines	0.15	17
Sustainability of T & T industry development	0.15	7
Effectiveness of marketing and branding	0.14	2
Extent of business internet use	0.11	6
Enforcement of environmental regulation	0.11	17
Stringency of environmental regulation	0.10	13
Extent of staff training	0.09	11
Quality of educational system	0.09	10
Local availability of specialized research and training services	0.08	11
Life expectancy	0.08	16
Quality of air transport infrastructure	0.03	5

Table 4B lists 42 drivers of competitiveness. Category I comprises three indicators: reliability of police services; threatened species; and ticket taxes and airport charges. Category II includes drivers such as the *number of international fairs and exhibitions hosted*; *hotel rooms*; *quality of domestic transport network*; *quality of roads*; and *cost to start a business*. Category III includes drivers such as the *presence of major car rental companies*; *ATMs accepting visa cards*; *T&T fair attendance*; *quality of port infrastructure*; *access to improved drinking water*; *effectiveness of marketing and branding to attract tourists*; and *quality of air transport infrastructure*.

4. Discussion

The study achieved two important objectives. Firstly, it identified forty two tourism driver- that is, indicators which are sufficient to generate improvements in the competitiveness of the tourism product for countries located in the LAC region. Of equal importance, it also identified twenty nine tourism non-drivers- that is, indicators which are ineffective in generating said improvements. Secondly, the study quantified the relative impact of each driver. In this section, we discuss the extent to which the tourism industry is intertwined with other sectors of the economy and the usefulness of these results in informing the design of policies geared toward improving the competitiveness of the tourism industry.

Spillover Effects from other Sectors

The results presented in the previous section draw attention to the nature of the linkages between the competitiveness of tourism industry and important social markers such as education, health and the environment. They show, for example, that in order for the tourism industry to benefit from the educational sector, focus should be on the quality of the educational system and not on the quantity of students graduating from these institutions. This as Table 4B lists *quality of the educational system* as a driver (9 percent) whereas Table 4A shows that *primary education enrollment* and *secondary education enrollment* are non-drivers.

The linkage to tourism is stronger for health than it is for education. Specifically, Table 4B shows that the following indicators are strong drivers of competitiveness: *hospital beds* (32

percent); *access to improved sanitation* (32 percent); *physician density* (31 percent); and *access to improved drinking water* (19 percent).

Table 4B offers evidence of the link between tourism and the environment as it lists the following among the drivers of competitiveness: *threatened species* (30 percent); *environmental treaty ratification* (17 percent); *enforcement of environmental regulation* (11 percent); and *stringency of environmental regulation* (11 percent).

Review of Tourism Policies

Policy Review 1: *The Effectiveness of State Aid as a Policy Variable*

The Jamaican Government, for some time, has offered incentive programs and granted concessions to business interests which operate in the tourism industry. Examples of these programs and concessions include the Hotel Incentives Act (lasting 10-15 years); the Resort Cottages Incentives Act (7 years); Attraction Incentives (up to 5 years); relief from Income Tax, Customs Duty and GCT; and assistance with fast-tracking applications of foreign nationals (Planning Institute of Jamaica 2008, 17.3).

While the study shows that Government expenditure on tourism improves the competitiveness of travel and tourism industry (*T&T government expenditure* is a driver), it suggests that the use of tax incentives is likely to be an ineffective policy for enhancing competitiveness, As recorded in Table 4A, the *extent and effect of taxation* was found to be among the twenty nine non-drivers despite the fact that popular opinion among executives in Jamaica is that the level of taxes limits the incentives to work or invest.[8] Withdrawing the tax incentives, therefore, would not compromise the competitiveness of the tourism product. In fact, our study suggests that countries

[8] This variable was captured from an Executive Opinion Survey administered by the WEF. It was constructed using a scale of 1 through 7 with 1= the level of taxes significantly limits the incentives to work or invest; and 7= the level of taxes has little impact on the incentives to work or invest (WEF 2008, 434). Jamaica recorded a score of 2.8.

in the LAC region compete based mainly on non-price factors.[9] Among the other non-drivers of competitiveness is the hotel price index which measures the average price of hotel rooms.[10]

The study also shows that it is the *available seat kilometers* (19 percent) which drive competitiveness and not necessarily the *number of operating airlines*. This result should inform the ongoing debate on the usefulness of maintaining a loss-making national carrier to support the local participation in the lucrative global tourism industry. Chief among the other non-drivers listed are: the *number of world heritage natural sites*; *tourism openness*; *road traffic accidents*; *quality of the natural environment*; *business cost of crime and terrorism*; and *time required to start a business*. The results, therefore, question the usefulness of policies which are geared toward, among other things: (i) providing tax incentives and concessions for tourism business interests; (ii) supporting the discounting of hotel rooms rates; and (iii) maintaining a national air carrier.

Policy Review 2: *The effectiveness of marketing as a policy variable*

Media houses in Jamaica report that the British Government proposed to implement an air passenger duty (APD), effective November 1, 2009. The magnitude of the duty is to be based on the distance from London to the capital city of each passenger's final destination. Under the proposal, it would cost a family of four £300 in APD to travel from London to Jamaica (*Sunday Herald* 28 June- 4 July 2009, 3B). Jamaica's Tourism Minister, The Honourable Edmund Bartlett, is reportedly concerned about the negative effect which the imposition of the APD is anticipated to have on tourist arrivals in the Caribbean region and that, among other things, he plans to counteract it with a "new marketing campaign" (Wildes 2009, 1).

This study allows us to comment on this important issue. Specifically, Table 3B lists *effectiveness of marketing and branding to attract tourists* ('marketing') and *ticket taxes and airport charges* among the drivers.[11] The study, therefore, validates the Minister's suspicion that

[9] Table 7 shows that 'price competitiveness in the T&T Industry' is the least influential pillar of competitiveness. Four of the five variables which measure various prices were found to be non-drivers of competitiveness. The only price variable found to be a driver, 'ticket taxes and airport charges,' has a relative impact of only 13 percent and thirty one drivers were found to be more effective (see Table 4B).

[10] The *hotel price index* is the average room rates calculated for first-class branded hotels for the calendar year (WEF 2008, 436). Jamaica is ranked 18th in the LAC region with respect to this index.

[11] These variables were captured from an Executive Opinion Survey administered by the WEF. The 'effectiveness of marketing and branding' variable was constructed from responses to the question "Does you country carry out

the imposition of the APD will likely reduce tourist arrivals in the region; and it confirms that a more effective marketing campaign could improve tourist arrivals. Whether and the extent to which a more effective marketing campaign will avert the adverse effect is a matter that requires deeper analysis of the results of the study. Before we comment further, however, we must consider the costs of implementing alternative policy responses. Among the identified drivers, we have determined that the *number of international fairs and exhibitions* is the most effective whilst the *quality of the air transport infrastructure* is the least effective (see Table 4B). It would be premature to infer from this result, however, that policymakers should increase the level of resources allocated to the number of international fairs and exhibitions and reduce the level of resources allocated toward improving the quality of the air transport infrastructure. Such an inference could be made only after determining the relative costs associated with generating comparable increases in the respective drivers; this as the optimal policy could be designed only after considering both the expected benefits and costs of implementing the policy. For example, even though improving the quality of air transport infrastructure is only 3 percent as effective as improving the number of international fairs and exhibitions in driving competitiveness, it would be optimal for the policymaker to allocate more resources to improving the quality of air transport infrastructure if improving the number of international fairs and exhibitions is more than thirty-four times as expensive as effecting a comparable improvement in the quality of air transport infrastructure.

Obtaining a direct measure of the costs of improving the various indicators is beyond the scope of this study. We estimate an indirect measure of these costs, however, by appealing to a fundamental principle in economics.[12] When applied in this context, the principle implies that, all other things held constant, as a country improves its performance with respect to a given driver, the cost of obtaining incremental improvements in that driver increases also. To obtain an indirect measure the relative costs of achieving incremental improvements in the drivers, therefore, we assess the country's performance with respect to each driver. In assessing performance, we compare the country's ranking with respect to the driver to the overall ranking

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marketing to attract inbound tourists?" Responses using a scale of 1 through 7 were offered with 1= no, tourism marketing is nonexistent or completely ineffective and 7= yes, tourism marketing is excellent, and is very effective in attracting tourists (WEF 2008, 404). The 'ticket taxes and airport charges' variable is constructed as an index of the relative cost of access (ticket taxes and airport charges) to international airport services (WEF 2008, 432).

[12] The principle is known as the *law of increasing opportunity cost*. It states that as the production of a good increases, the opportunity cost of producing an additional unit of the product increases as well.

of the country's tourism product. In carrying out this analysis for Jamaica, we note that Jamaica's product is ranked 8th among the twenty four countries in the LAC region (see Table 2 for the complete rankings).

Table 5. *"Lower cost" and "Higher cost" Drivers of Competitiveness*

Indicator Variable	Relative Impact	Jamaica's rank among LAC countries
Panel A: "Lower cost" Drivers		
Number of international fairs and exhibitions hosted	1.00	16
Presence of major car rental companies	0.58	8
ATMs accepting Visa cards	0.44	12
T & T fair attendance	0.34	6
Hospital beds	0.32	12
Access to improved sanitation	0.32	11
Physician density	0.31	19
Reliability of police services	0.31	12
Threatened species	0.30	22
Quality of domestic transport network	0.28	12
Quality of roads	0.27	9
Extension of business trips recommended	0.25	11
Business cost of terrorism	0.24	11
Available seat kilometers	0.19	12
Access to improved drinking water	0.19	11
Environmental treaty ratification	0.17	12
Fixed telephone lines	0.15	17
Sustainability of T & T industry development	0.15	7
Ticket taxes and airport charges	0.13	15
Enforcement of environmental regulation	0.11	17
Extent of business internet use	0.11	6
Stringency of environmental regulation	0.10	13
Extent of staff training	0.09	11
Quality of educational system	0.09	10
Broadband internet subscribers	0.09	10
Local availability of specialized research and training services	0.08	11
Life expectancy	0.08	16
Quality of railroad infrastructure	0.08	19
Panel B: "Higher cost" Drivers		
Hotel rooms	0.62	4
Government prioritization of the T& T industry	0.37	3
Prevalence of foreign ownership	0.34	3
Business impact of rules on FDI	-0.34	4
Quality of port infrastructure	0.33	3
Transparency of government policymaking	0.27	5
Attitude of population toward foreign visitors	0.26	1
International air transport network	0.24	2
Property rights	0.24	5
Cost to start a business	0.21	5
Internet users	0.15	2
Effectiveness of marketing and branding to attract tourists	0.14	2
Quality of air transport infrastructure	0.03	5

Accordingly, we conservatively identify as being "higher cost", those drivers in which Jamaica is ranked, say, 5th or better.[13] Jamaica's ranking in each driver is presented in Table 4B. Based on these rankings, we separate the lower cost drivers and higher cost drivers and, respectively, present them in Panels A and B in Table 5 above.

Panel A in Table 5 lists, in descending order of effectiveness, "lower cost" indicators which Jamaican policymakers should consider targeting for improvement. The indicators are considered to be good candidates for targeting because they (i) drive competitiveness; and (ii) require relatively fewer resources to effect improvements. It shows, for instance, that increasing the number of international fairs exhibitions as it is the most effective driver of competitiveness but Jamaica is ranked only 16th in this category. Contrastingly, the *number of broadband subscribers* is less than one-tenth as effective as *increasing the number of international fairs and exhibitions hosted*. Other lower cost drivers include *ticket taxes and airport charges* (13 percent effective); *extent of business internet use* (11 percent effective); *life expectancy* (8 percent effective); and *quality of railroad infrastructure* (8 percent).

Panel B in Table 5 lists, in descending order of effectiveness, "higher cost" indicators which Jamaican policymakers are advised against targeting for further improvement. For example, the *number of hotel rooms* is the 5th most effective driver (see Table 3). Because only three other countries in the LAC region outrank Jamaica in this category, it would likely take considerable more resources to produce an incremental improvement in Jamaica's position.[14] Other indicators which are classified as being "higher cost" include *cost to start a business*; *effectiveness of marketing and branding to attract tourists*; and *quality of air transport infrastructure*.

Based on a cost-benefit analysis, therefore, a more intensive marketing campaign may not be the most appropriate response for Jamaica; in that, for at least two reasons, this response is unlikely

[13] The classification of drivers is sensitive to our assumption regarding the appropriate benchmark to distinguish between higher cost and lower cost drivers. Benchmarking costs with the 5th rank is somewhat arbitrary. Using a rank higher than 5 would increase the number of drivers classified as being lower cost whereas using a lower rank would decrease the number. For example, if a rank of 4th was used instead to benchmark costs, the *cost to start a business*, among others, would be then be upgraded to a lower cost driver. Accordingly, our concluding remark regarding the usefulness of targeting business costs is sensitive to this assumption.

[14] The countries which out-rank Jamaica with respect to *hotel rooms* are Barbados (1st), Suriname (2nd) and Costa Rica (3rd).

to be the most effective available one for neutralizing the anticipated fallout from the proposed APD. The first reason is that marketing is among the least effective tourism driver; its relative effect is estimated to be only 14 percent. The second reason is that generating significant improvements in marketing may be relatively costly as, among LAC countries, the effectiveness of Jamaica's marketing strategy is ranked second only to that of Barbados.[15]

Policymakers could design a more effective policy by adopting the following two recommendations. First, policymakers should target drivers which are more effective than marketing campaigns in promoting competitiveness; Table 4B identifies thirty-one such drivers. Targeting more effective drivers has the advantage of requiring less improvement to offset the adverse effect of the APD. Second, policymakers should target lower cost drivers; Table 5 identifies twenty-seven such variables. Targeting lower cost indicators has the advantage of requiring the Government to allocate fewer resources toward offsetting the adverse effect of the APD.

We recognize that there are other considerations for policymakers in designing the best response to the implementation of the APD. Chief among them would be the lead time required to effect a given improvement in a specified driver. We define short-term drivers as those which are likely to have a lead time of no greater than one year and long-term drivers are those which are likely to have a lead time of greater than one year. The list of lower cost drivers falling into each classification is presented in Table 6 below. It shows the prime targets for policymakers as it displays the lower cost drivers which are at least as effective as marketing campaigns in improving the competitiveness of Jamaica's tourism product. Listed in decreasing order of effectiveness, the short-term targets are as follows: *ATMs accepting Visa cards* (44 percent); *T&T fair attendance* (34 percent); and *ticket taxes and airport charges* (13 percent).[16] The list of

[15] The effectiveness of Jamaica's *marketing and branding strategy to attract tourists* is ranked 16th among the 130 countries.

[16] Strictly speaking, ticket taxes and airport charge is slightly less effective than marketing (which is 14 percent effective).

ATMs accepting visa cards: This indicator measures the number of automated teller machines (ATMs) accepting visa credit cards (WEF 2008, 464).

T&T fair attendance: This indicator measures the countries presence at 13 major T&T fairs. The fairs covered were ITB Berlin; Salon Mondial du Tourisme (France); World Travel Market (London); Holiday World Prague; International Trade Fair for Tourism (Russia); Arabian Travel Market (Dubai); PATA Travel Mart (Pacific Asia Travel Association); China International Travel Mart; Japan Association of Travel Agents (JATA) World Travel

long-term drivers includes *the number of international fairs and exhibitions* (100 percent); *presence of major car rental companies* (58 percent); *hospital beds* (32 percent); *access to improved sanitation* (32 percent); *physician density* (31 percent) and *reliability of physician services* (31 percent)

Table 6. *Prime Targets for Tourism Industry*

Indicator Variable	Relative Impact
Panel A: Short-term Drivers	
ATMs accepting Visa cards	0.44
T & T fair attendance	0.34
Ticket taxes and airport charges	0.13
Panel B: Long-term Drivers	
Number of international fairs and exhibitions hosted	1.00
Presence of major car rental companies	0.58
Hospital beds	0.32
Access to improved sanitation	0.32
Physician density	0.31
Reliability of police services	0.31
Threatened species	0.30
Quality of domestic transport network	0.28
Quality of roads	0.27
Extension of business trips recommended	0.25
Business cost of terrorism	0.24
Available seat kilometers	0.19
Access to improved drinking water	0.19
Environmental treaty ratification	0.17
Fixed telephone lines	0.15
Sustainability of T & T industry development	0.15

The best policy response should target a mix of short-term and these long-term drivers. This is due to the imminence of the implementation of the APD, and the relative effectiveness of a few of the long-term drivers. For example, to counter the anticipated fall-out in tourist arrivals, policymakers could consider, say, (i) waiving airport charges and taxes for flights originating in the UK (short-term); and (ii) increasing the number of international fairs and exhibitions hosted by Jamaica (long-term). Implementing this, or any other policy-mix, would not necessarily require securing resources above that which is currently allocated to the tourism industry; as it

Fair; Travel and Tourism Fair (India); American Society of Travel Agents' Trade Show; Travel Mart Latin America; and the International Tourism Fair of Latin America (WEF 2008, 464).

Ticket taxes and airport charges: This indicator measures the relative cost of accessing international air transport services (i.e. landing, terminal navigation, and passenger and security charges) based on the level of airport charges, passenger ticket taxes and value-added taxation (WEF 2008, 465).

could be financed by reallocating resources from the existing programs which are currently being used to support non-drivers of competitiveness.[17] Specifically, the study finds that tax incentives programs are unlikely to improve the competitiveness of the tourism product. Accordingly, the resources freed up by reducing, if not eliminating, the tax incentives could assist in financing the recommended policy response.

5. Conclusion

The study assessed the effect of seventy one variables in the competitiveness of the travel and tourism product in twenty four Latin America and Caribbean countries. It allowed us to (i) distinguish between the drivers and non-drivers of competitiveness; and (ii) compare the relative impact of each driver. Despite its simplicity, the model offers a powerful tool with which we can evaluate alternative policies geared toward improving the competitiveness of the tourism product. The popular opinion among executives in Jamaica is that (i) lowering business costs and (ii) lessening the tax burden on tourism service providers are the most effective means of improving the competitiveness of Jamaica's tourism product.

The study provides conclusive evidence which contradicts the opinion of the likely effect of taxes on the competitiveness of the tourism product. Specifically, it shows that on average, the perceived effect of taxation in the most competitive countries is no different from its perceived effect in the least competitive countries. The implication of this result is that increasing the level of tax incentives is unlikely to improve the competitiveness of Jamaica's tourism product.

The evidence on the effect of business costs is less conclusive. Under plausible assumptions, the study provides evidence that the potential benefits from improving the cost of starting a business is unlikely to justify the potential costs of attempting to do so. The key findings of the study are as follows:

(a) The *number of international fairs and exhibitions hosted* is the most effective driver of competitiveness, and is more than seven times as effective as marketing in promoting competitiveness.

[17] A list of 30 non-drivers is presented in Table 4A.

(b) Longstanding tax incentives and grant concession schemes offered to business interests are unlikely to improve the competitiveness of the tourism product;

(c) The reliance on more intense marketing is unlikely to be the most effective tool to avert the anticipated adverse effects from the proposed implementation of the air passenger duty in November 2009.

(d) The competitiveness of the tourism product is unlikely to benefit from allocating additional resources to lower the cost of starting a business in the tourism industry;

References

Baltagi, Badi. 1999. *Econometrics*: 2e. New York: Springer.

Planning Institute of Jamaica (PIOJ). 2008. *Economic and Social Survey of Jamaica 2007*. Kingston: PIOJ.

Sunday Herald. 2009. Tourism Sector faces more threats. June 28-July1: 3B.

Wildes, Andrew. 2009. Tourism fight- Jamaica to ramp up marketing worldwide to counter UK tax fallout. *The Gleaner*, July 2: 1.

World Economic Forum. 2008. *The Travel and Tourism Competitiveness Index 2008: Balancing Economic Development and Environmental Sustainability*, http://www.weforum.org/pdf/Global_Competitiveness_Reports/TTReport/TTfullreport.pdf (accessed July 1, 2009).

APPENDIX

Estimation

The first objective is to estimate the impact that each indicator variable has on competitiveness. This is accomplished in three steps using Ordinary Least Squares regression analysis.[18]

In Step One, we estimate the impact of each sub-index on the overall competitiveness. That is we estimate the magnitude of the improvement in the overall competitive index that would result from a slight improvement in each sub-index. In Step Two, we estimate the impact of the various pillars on their respective sub-index. That is, for each of the three sub-indices, we estimate the magnitude of the improvement in the sub-index that would result from a slight improvement in each pillar which comprises the respective index. In Step Three, we estimate the impact of the various indicators on their respective pillars. That is, for each of the fourteen pillars, we estimate the magnitude of the improvement in the pillar that would result from a slight improvement in each indicator which comprises the respective pillar. The effect of each indicator on the overall competitiveness of the T&T product is estimated as the product of the (i) sub-index; (ii) pillar; and (iii) indicator marginal effects.

The second objective is to identify the drivers of competitiveness. To do this, we identify features of the country (that is, indicator variables) which are more prevalent in the most competitive countries than they are in the least competitive ones. To distinguish the drivers from the non-drivers of competitiveness, we use statistical hypothesis testing.[19] Specifically, we create two sub-groups of equal sizes: one group comprises countries with the most competitive countries and the second group comprises countries with the least competitive countries. An indicator variable is considered to be a key driver of competitiveness if the group comprising the most competitive countries records a score for that variable which, on average, is more favourable than score recorded by the other group; otherwise the indicator variable is considered to be a non-driver of competitiveness.[20]

[18] See Baltagi (1999) for an introduction to this analytic framework.
[19] Formally, we use an upper tail 'unpaired (two sample) t test' of the difference in means.
[20] Formally, an indicator classified as a key driver if the difference in means tests rejects the null hypothesis that the average scores are identical in favour of the alternative hypothesis that the average score recorded for the most competitive countries is more favourable than the score recorded for the other group.

Results

Sub-Index Marginal Effects

Table A1. *Regulatory Framework Sub-index has the greatest marginal effect on Competitiveness*

	Coefficient (standard error)	Marginal Effect: sub-Index
Constant	-185.07 (8.93)**	---
Regulatory Framework	20.22 (2.88)**	0.42
Business Environment and infrastructure	19.64 (2.98)**	0.40
Human, cultural and natural resources	22.26 (1.87)**	0.42

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

The column labeled "coefficient (standard error)" reports estimates of OLS regression coefficients of each sub-index on competitiveness. For example, the estimate of 20.22 indicates that a unit increase in a country's T&T regulatory framework sub-index will lead to, on average, a 20.22 point improvement in competitiveness. Similarly, an estimate of 22.26 indicates that a unit increase in the T&T Human, Cultural and natural resources sub-index will lead to, on average, a 22.04 improvement in competitiveness. While it is perfectly legitimate to use the coefficient estimates to quantify the effect of each sub-index on competitiveness, to compare the magnitude of the contributions across the three sub-indices one would have to use standardized coefficients. The standardized coefficients are reported under the column labeled "marginal effect: subindex." The value of 0.42 for the regulatory framework sub-index indicates that a one standard deviation increase in this sub-index will lead to a 0.44 standard deviation improvement in ranking of the competitiveness of its tourism product. Similarly, a standard deviation increase in the business environment and infrastructure sub-index leads, on average, to a 0.40 standard deviation improvement in competitiveness.

STEP 2: Pillar Marginal Effects

We now report on the marginal effect that the pillar variables have on the sub-indices of competitiveness.

Pillars of the Regulatory Framework Sub-Index

The WEF constructs the regulatory framework index using five pillars: (i) policy rules and regulations; (ii) environmental sustainability; (iii) safety and security; (iv) health and hygiene; and (v) prioritization of travel & tourism. We assessed the relative contribution each pillar. The results are tabulated in Table A2 below.

Table A2. *The Prioritizing Pillar T&T has the greatest impact on a the Regulatory Framework Sub-Index*

	Coefficient (standard error)	Marginal Effect: Pillar
Constant	-0.00	---
	(0.00)	
policy rules and regulations	0.20	0.31
	(0.00)**	
environmental sustainability	0.20	0.19
	(0.00)**	
safety and security	0.20	0.27
	(0.00)**	
health and hygiene	0.20	0.32
	(0.00)**	
prioritization of T&T	0.201699	0.34
	(0.0011397)**	

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

The table above shows that the country's prioritization of T&T has a greater influence on the regulatory framework sub-index than the other pillars comprising the regulatory framework do. For example, the table shows that a standard unit increase in the health and hygiene pillar will lead to a 0.32 improvement in competitiveness compared to the 0.34 improvement which would result from a comparable improvement in the prioritization of T&T pillar.

Pillars of the Business Environment and Infrastructure Sub-Index

The WEF constructs this sub-index using five pillars: (i) air transport infrastructure; (ii) ground transport infrastructure; (iii) tourism infrastructure; (iv) Information Communications Technology (ICT) infrastructure; and (v) price competitiveness in the T&T industry. We assessed the relative contribution of each pillar. The results are tabulated in Table A3 below.

Table A3. *The Ground Transport Infrastructure and Tourism Infrastructure Pillars have the greatest effect on Business Environment and Infrastructure Sub-Index*

	Coefficient (standard error)	Marginal Effect: Pillar
Constant	0.08 (0.17)	---
Air transport infrastructure	0.15 (0.01)**	0.24
Ground transport infrastructure	0.24 (0.01)**	0.41
Tourism infrastructure	0.23 (0.01)**	0.41
ICT infrastructure	0.17 (0.02)**	0.19
Price competitiveness in the T&T industry	0.19** (0.03)	0.11

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

The coefficients presented in Table A3 above show that ground transport infrastructure and tourism infrastructure pillars have the greatest impact on the sub-index; this as a unit increase in either of these pillars leads to a 0.41 improvement in the Business Environment and Infrastructure sub-index,. Specifically, a comparable improvement in the air transport infrastructure pillar leads to only a 0.24 improvement in the sub-index. The price competitiveness in the T&T industry pillar is the least effective as a unit increase in this pillar will lead to only a 0.11 increase in the sub-index.

Pillars of the Human, Cultural and Natural Resources Sub-Index

The WEF constructs the human, cultural and natural resources sub-index using four pillars: (i) education and training, availability of quality labor; (ii) affinity for T&T; (iii) natural resources; and (iv) cultural resources. We assessed the relative contribution of each pillar. The results are presented in Table A4 below.

Table A4. *Natural Resources has the greatest impact on the T&T Human, Cultural and Natural Resources Sub-index*

	Coefficient (standard error)	Marginal Effect: Pillar
Constant	0.01 (0.02)	---
Education and training	0.25 (0.00)**	0.15
Affinity for T&T	0.25 (0.00)**	0.42
Natural resources	0.25 (0.00)**	0.68
Cultural resources	0.25 (0.00)**	0.58

Note:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

Table A4 above shows that the pillar capturing natural resources has the greatest impact on the T&T human, cultural and natural resources sub-index. It is seen that a unit increase in the education and training pillar will lead to only a 0.15 increase in this sub-index; which is only 22 percent as large as the effect that a comparable increase in the natural resources would have.

Summary

In the table below, we summarise the effect of each of the 14 pillars on the competitiveness of the travel and tourism product.

Table A5. *The Relative Impact of the 14 Pillars of the T&T Industry*

Sub-index	Pillar	Marginal Effect[a]
Regulatory Framework		
	Policy rules and regulations	0.31
	Environmental sustainability	0.19
	Safety and security	0.27
	Health and hygiene	0.32
	Prioritization of travel	0.34
Business environment and Infrastructure		
	Air transport infrastructure	0.24
	Ground transport infrastructure	0.41
	Tourism infrastructure	0.41
	ICT infrastructure	0.19
	Price competitiveness in the T&T industry	0.11
Human, cultural and natural resources		
	Human resources	0.15
	Affinity for T&T	0.42
	Natural resources	0.68
	Cultural resources	0.58

Note:
a) based on a comparison of the effect of a standard unit increase in the respective pillars on the ranking of the T&T industry.

Indicator Marginal and Overall Effects

The third step of the analysis requires us to estimate the marginal effect that each indicator variable has on its respective pillar. In the interest of space, we exclude a detailed reporting the results of this stage. Instead, we provide below only a summary of the results in Table A6.[21] The indicator variables are presented in descending order of magnitude with respect to their overall effect on the overall competitiveness index.

The indicator variable measuring the number of international fairs and exhibitions hosted ('fairs') has the greatest effect on competitiveness of the travel and tourism product in the LAC region. The indicator recording next greatest effect is the number of world heritage natural sites; which is only 81 percent as effective as the number of fairs. Increasing the number of hotel

[21] A report of the results is available from the author upon request.

rooms is found to be only 62 percent as effective as improvements in the number of fairs (Table A6).

Table A6 is very informative in that it lists the following as being among the least effective indicators: the *cost to start a business* (24 percent); *time required to start a business* (15 percent); *extent and effect of taxation* (14 percent); *effectiveness of marketing and branding to attract tourists* (14 percent); *hotel price index* (11 percent); and the *number of operating airlines* (6 percent).

Table A6. *The Effect of Indicators on Competitiveness of the Tourism Product*

Indicator Variable	Marginal Effects			Overall Effect	Relative Effect	Results of Difference in Means Test	
	Sub-index	*Pillar*	*Indicator*			*Absolute*	*Comparative*
Number of international fairs and exhibitions hosted	0.42	0.58	0.66	0.16	1.00	0.36*	0.23
Number of World Heritage natural sites	0.42	0.68	0.46	0.13	0.81	0.30	-0.08
Tourism openness	0.42	0.42	0.71	0.12	0.77	1.01	0.30
Protected areas	0.42	0.68	0.41	0.12	0.73	-0.20	0.00
Hotel rooms	0.40	0.41	0.60	0.10	0.62	0.39*	0.30
Total known species	0.42	0.68	0.35	0.10	0.61	-0.94	-0.42
Sports stadium	0.42	0.58	0.40	0.10	0.60	0.41	-0.08
Presence of major car rental companies	0.40	0.41	0.56	0.09	0.58	1.29**	0.33*
Number of World Heritage cultural sites	0.42	0.58	0.36	0.09	0.54	0.30	0.08
Road density	0.40	0.41	0.46	0.08	0.48	0.42	0.07
ATMs accepting Visa cards	0.40	0.41	0.43	0.07	0.44	0.62**	0.25*
T & T government expenditure	0.42	0.34	0.43	0.06	0.39	3.99*	0.50**
Road traffic accidents	0.42	0.27	0.52	0.06	0.38	-0.07	-0.05
Government prioritization of the T&T industry	0.42	0.34	0.41	0.06	0.37	1.07**	0.42*
Prevalence of foreign ownership	0.42	0.31	0.41	0.05	0.34	0.81**	0.58**
Business impact of rules on FDI	0.42	0.31	-0.41	-0.05	-0.34	0.68*	0.33
T & T fair attendance	0.42	0.34	0.37	0.05	0.34	1.25**	0.33*
Quality of port infrastructure	0.40	0.41	0.32	0.05	0.33	0.99**	0.33*
Hospital beds	0.42	0.32	0.37	0.05	0.32	0.47*	0.17
Access to improved sanitation	0.42	0.32	0.37	0.05	0.32	0.86*	0.02
Quality of the natural environment	0.42	0.68	0.18	0.05	0.31	0.23	0.17
Reliability of police services	0.42	0.27	0.43	0.05	0.31	0.58	0.25*
Physician density	0.42	0.32	0.36	0.05	0.31	1.01**	0.17
Particulate matter concentration	0.42	0.19	0.60	0.05	0.31	0.07	-0.13
Threatened species	0.42	0.19	0.59	0.05	0.30	-0.75	0.50**

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

Table A6 *(continued)*

Indicator Variable	Marginal Effects			Overall Effect	Relative Effect	Results of Difference in Means Test	
	Sub-index	*Pillar*	*Indicator*			*Absolute*	*Comparative*
Departures per 1,000 population	0.40	0.24	0.48	0.05	0.29	0.31	0.28
Quality of domestic transport network	0.40	0.41	0.27	0.04	0.28	1.08**	0.17
Transparency of government policymaking	0.42	0.31	0.33	0.04	0.27	0.55*	0.08
Quality of roads	0.40	0.41	0.26	0.04	0.27	0.87*	0.17
Attitude of population toward foreign visitors	0.42	0.42	0.23	0.04	0.26	0.38**	0.50**
Openness of bilateral Air Service Agreements	0.42	0.31	0.31	0.04	0.25	0.36	0.16
Extension of business trips recommended	0.42	0.42	0.23	0.04	0.25	0.79**	0.50**
Business costs of terrorism	0.42	0.27	0.34	0.04	0.24	0.89**	0.58**
International air transport network	0.40	0.24	0.39	0.04	0.24	1.05**	0.42*
Property rights	0.42	0.31	0.29	0.04	0.24	1.03**	0.25
Cost to start a business	0.42	0.31	0.26	0.03	0.21	0.80*	0.10
Carbon dioxide emissions	0.42	0.19	0.40	0.03	0.20	0.11	-0.25
Access to improved drinking water	0.42	0.32	0.22	0.03	0.19	0.67**	0.33*
Available seat kilometers	0.40	0.24	0.31	0.03	0.19	0.07*	0.25
Business costs of crime and violence	0.42	0.27	0.26	0.03	0.18	0.57	n/a
Environmental treaty ratification	0.42	0.19	0.33	0.03	0.17	1.15**	0.38
Mobile telephone subscribers	0.40	0.19	0.33	0.03	0.16	0.35	0.08
Airport density	0.40	0.24	0.25	0.02	0.15	0.19	-0.17
Internet users	0.40	0.19	0.31	0.02	0.15	0.90**	0.33*
Fixed telephone lines	0.40	0.19	0.30	0.02	0.15	0.81*	0.25*
Sustainability of T & T industry development	0.42	0.19	0.29	0.02	0.15	0.95**	0.25*
Time required to start a business	0.42	0.31	0.18	0.02	0.15	0.57	0.28
Extent and effect of taxation	0.40	0.11	0.50	0.02	0.14	-0.30	-0.08
Effectiveness of marketing and branding to attract tourists	0.42	0.34	0.15	0.02	0.14	1.08**	0.58**
Hiring and firing practices	0.42	0.15	0.35	0.02	0.14	0.14	0.08

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

Table A6 *(continued)*

Indicator Variable	Marginal Effects			Overall Effect	Relative Effect	Results of Difference in Means Test	
	Sub-index	*Pillar*	*Indicator*			*Absolute*	*Comparative*
Ticket taxes and airport charges	0.40	0.11	0.46	0.02	0.13	0.19	0.33*
Fuel price levels	0.40	0.11	0.45	0.02	0.13	-0.58	-0.31
Secondary education enrollment	0.42	0.15	0.32	0.02	0.12	0.38	0.19
Purchasing power parity	0.40	0.11	0.43	0.02	0.12	-0.44	-0.42
Hotel price index	0.40	0.11	0.40	0.02	0.11	-0.41	-0.27
Extent of business Internet use	0.40	0.19	0.22	0.02	0.11	0.83**	0.50**
Enforcement of environmental regulation	0.42	0.19	0.21	0.02	0.11	0.70**	0.33*
Ease of hiring foreign labour	0.42	0.15	0.27	0.02	0.10	-0.18	-0.08
Stringency of environmental regulation	0.42	0.19	0.19	0.02	0.10	0.64**	0.42**
Extent of staff training	0.42	0.15	0.24	0.01	0.09	0.68**	0.33*
Quality of the educational system	0.42	0.15	0.24	0.01	0.09	0.48	0.08
Broadband Internet subscribers	0.40	0.19	0.17	0.01	0.09	0.46*	0.17
Local availability of specialized research and training services	0.42	0.15	0.22	0.01	0.08	0.88**	0.42**
Quality of railroad infrastructure	0.40	0.41	0.08	0.01	0.08	0.45**	n/a
Life expectancy	0.42	0.15	0.21	0.01	0.08	0.49**	0.42*
Primary education enrollment	0.42	0.15	0.16	0.01	0.06	0.17	0.12
Number of operating airlines	0.40	0.24	0.07	0.01	0.04	0.25	0.25
Quality of air transport infrastructure	0.40	0.24	0.04	0.00	0.03	0.94*	0.50**
HIV prevalence	0.42	0.15	0.05	0.00	0.02	0.06	0.17
Business impact of HIV/AIDs	0.42	0.15	0.02	0.00	0.01	0.47	0.17
Visa requirements	0.42	0.31	0.01	0.00	0.01	0.17	-0.17

Notes:
* indicates that the coefficient is significant at the 5 percent level.
** indicates that the coefficient is significant at the 1 percent level.

Identifying the Key Drivers of Competitiveness

Although Table A6 reports on the relative effect of each indicator variable on the competitiveness of the T&T product, we may discern an clearer picture of the relative importance of each variable by identifying those which are *drivers* of competitiveness. To do this, we identify indicator variables which are more prevalent in the most competitive countries than they are in the least competitive ones.

To do this, we create two sub-samples comprising twelve countries each. One sub-sample comprises the most competitive T&T countries whilst the other sample comprises the least competitive ones. In determining whether an indicator variable is a driver of competitiveness, we test whether the most competitive countries outperform the least competitive ones with respect to the indicator variable. Specifically, if the average score for a particular indicator variable is statistically significantly greater for the sub-sample of the most competitive countries, we conclude that the indicator is a driver of competitiveness; otherwise we conclude that the indicator is a non-driver of competitiveness.

In implementing this test, we use two alternative measures of the indicator variable: the *absolute* and *comparative* measures. The absolute measure refers to the actual score assigned to the variable.[22] Our comparative measure of the indicator variable draws upon the concept of *comparative advantage* as defined by the WEF.[23] The results of the statistical tests are reported in Table A6 above under the columns labeled "Results of Difference in Means Test." The figures reported under these columns represent the difference in average score of the two sub-samples. An asterisk (*) or double-asterisk (**) beside a reported figure indicates that the average scores of the two sub-samples are significantly statistically different from each other at conventional levels of significance.

[22] The absolute scores range from 1 through 7.

[23] The term comparative advantage is used by the WEF in a manner which is fundamentally different from how the term is normally understood in the international trade field in the discipline of economics. "For the top 10 countries in the overall TTCI, any variables on which the country is ranked 10th or higher are considered to be advantages…For those countries ranked 11th to 50th on the overall TTCI, any variables with a higher rank that the country's overall rank are considered to be an advantage….For countries with an overall rank on the TTCI lower than 50, any variable for which the country has a rank of 50 or higher are considered to be advantages.." (WEF 2008, 102)

The absence of an asterisk indicates that the average score for the respective variable is not statistically different between the two sub-samples.