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What's pushing international tourism expenditures?

by

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WHAT'S PUSHING INTERNATIONAL TOURISM EXPENDITURES?

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Abstract:

In this paper we discuss the determinants which contribute to outbound tourism expenditures. The aim is to show whether and how different socio-economic factors in countries of origin are responsible for the demand, to spent money for tourist activities in foreign countries.

While we are able to find a strict robust positive impact of all economic factors like the per capita income and the openness to trade on the tourism expenditures per capita as well as on the tourism expenditure per GDP, most of the sociological factors show rather a weak significance. However, there seems to be somewhat like a corporate openness to tourism as countries which are able to attract high inbound tourism receipts per capita also having high outbound tourism expenditures per capita as well. A further important finding is that people in democratic countries with a high level of civil rights spend a higher share of income for traveling abroad. Our results give us an indirect and encouraging hint that it makes sense for developing countries to sustainable invest in the tourism sector as an increasing willingness to pay for outbound tourism goes hand in hand with an increasing per capita income in the world.

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WHAT'S PUSHING INTERNATIONAL TOURISM EXPENDITURES? *

1 Introduction

During the last 150 years, tourism has become one of the most remarkable socio-economic phenomena. While in the first half of the last century tourism was an activity of only a small group of mostly wealthy people, it has been a mass phenomenon after World-War II, particularly from the 1970s on. Now, it can be considered as a vital dimension of global integration and trade activities. Although domestic tourism currently accounts for approximately 80 per cent of all tourist receipts (Neto 2003), there is increasing concern in international tourism. It is now an essential part of global trade and has therefore become the world's largest source of foreign exchange receipts (World Tourism Organization 2007). According to the latest figures published by the World Tourism Organization in 2007, international tourist arrivals grew by 6.6 per cent and reached a new record of more than 900 million tourists. Moreover, international tourism receipts are estimated at USD 856 billion (by including international passenger transport it exceeds USD 1 trillion) in 2007, corresponding to an increase in real terms of 5.6 per cent in the year 2006. In 2003, it represented approximately 6 per cent of worldwide exports of goods and services (World Tourism Organization 2006, p. 4). The share of tourism exports on total exports raise to approximately 30 per cent when considering service exports exclusively. Table 1 gives a comparison of the top ten largest tourism countries of origin respective destination with the world's top trade countries. The table shows that these are in most cases the same countries. Due to the increasing economic power of the tourism industry and its potential for the economic development of developing countries (see section 2), it seems reasonable to highlight the determinants of tourism demand.

* The author is indebted for helpful suggestions to Bianka Dettmer, Andreas Freytag and Niels Laub. All remaining errors are the authors' responsibility.

Table 1: Top Ten Tourism Spenders and Trade Countries

Rank	2002 Absolute Tourism Expenditures		2002 Absolute Tourism Receipts		2002 Absolute Trade (export + import)	
	Country	mio. USD	Country	mio. USD	Country	bill. USD
1	USA	58.044	USA	66.605	USA	1896.3
2	Germany	52.483	France	32.329	Germany	1106.8
3	UK	41.511	Spain	31.731	Japan	753.9
4	Japan	26.656	Italy	26.672	France	661.1
5	France	19.460	China	20.385	UK	624.9
6	Italy	16.841	UK	20.375	China	620.8
7	China	15.398	Germany	19.243	Italy	494.0
8	Netherlands	12.921	Turkey	11.901	Canada	479.9
9	Hong Kong	12.418	Austria	11.239	Netherlands	464.1
10	Canada	11.679	Canada	10.691	Belgium	411.4

Data Source: World Tourism Organization (2008), WTO (2003).

Therefore, this paper concentrates on demand factors of outbound tourism expenditures. To deal with this issue, a literature review on tourism demand models follows in the next section. Based on this review we derive five hypotheses in section 3 which will be empirically analyzed in section 4 using data from the World Tourism Organization. Section 5 concludes the paper.

2 Literature Review

In this section we briefly discuss the importance of tourism for the developing processes by reviewing the literature about tourism supply and demand modeling. In developing countries international tourism as a superior good may well become an important factor of economic development as demand increases above average to income (e.g. Brau et al. 2003, Eilat and Einav 2004, Croes and Vanagas Sr. 2005, Garín-Muñoz 2006, Vogt 2008). Because in every destination tourists demand a

number of goods and services e.g. food, accommodation, transportation, entertainment and local handcrafts as souvenirs, it stimulates new economic activity. To satisfy this demand, especially in Least Developed Countries (LDCs), the current level of production needs to increase. Thus, tourism provides many more positive effects on the economy besides an increase in production and income as direct effects. Since the tourism sector is labor intensive this tends towards an increase in employment (Lim 1997, Nijkamp 1998, Deloitte & Touch, iied and odi 1999, Neto 2003). Another indirect effect is that international tourism may enforce the political leaders in the country of destination to establish good governance, approve more civil rights or open the country for international trade. Indeed, these expected positive effects which are particularly relevant for LDCs, with mostly high rates of unemployment, low levels of GDP per capita, “problematic” governments and difficulties in entering the world market, require the development of *sustainable* tourism (Freytag and Vietze 2007).

In the light of these assumed positive effects tourism may have on economic development, an important research question to address is which determinants can pull and push the demand for tourism in countries of destination, respective origin. There are some explaining pull-factors for international tourism arrivals such as nature, price level, safety¹, infrastructure and educational level²; also entertainment and sightseeing in a certain region or country play a prominent role in the destination choice of tourists. Proxies for sightseeing and entertainment activities may be such “hard” factors in the country of destination like the number and quality of beaches, bars, sport facilities, museums, memorial sites, the quantity and quality of accommodation facilities and the like. The existence of an embassy of the origin country also seems to enhance the attractiveness of a destination (Gil-Pareja et al. 2007). In addition, geographical aspects such as the number of directly neighboring countries or the distance to rich countries may play a role. Especially, a high level of biodiversity as a direct impact factor for sightseeing activities (safari tours etc.) and

¹ Eilat and Einav (2004) show in three-dimensional panel data analysis on determinants of international tourism that the political risk is quite important for the choice of destination, while the price level only matters for tourists to developed countries.

² Eugenio-Martin et al. (2004) try to explain tourist arrivals conditional on GDP and other control variables such as safety, prices and educational level, and investment in infrastructure empirically. Their results provide evidence that low-income countries seem to need an adequate level of infrastructure, education and development to attract tourists, while medium-income countries need high levels of social development like health services and relatively high GDP per capita levels. Finally, the results show that the price level of the destination country in terms of exchange rate and purchasing power parity is irrelevant for tourism growth.

an indirect influence for “nice nature”, determines the demand for tourism positively (e.g. Nijkamp 1998, Muir-Leresche and Nelson 2000, Ashley and Elliott 2003, Creaco and Querini 2003, Croes and Vanagas Sr. 2005, Valente 2005, Garín-Muñoz 2006, Freytag and Vietze 2006, 2007). Zhang and Jensen (2007) confirm by a panel data analysis, dealing with the supply-side of tourism flows, that the country fixed effects are highly relevant for the destination choice. They conclude – albeit without a proof – that this result depends on the natural endowment and cultural heritages of the respective country. Freytag and Vietze (2006, 2007) empirically analyzed whether a rich biodiversity is a comparative advantage of tourism countries. They find that LDCs seem to have a comparative advantage in nature based tourism, and that the incidence of birds as the probably best explored taxonomic group has a positive impact on inbound tourism receipts per capita.

Most tourism researchers concentrate on the role of destination development. For instance Prideaux (2000) shows how the transport system is relevant for destination developments. Murphy et al. (2000) and Melián-González and García-Falcón (2003) examine the role of products and services to destination competitiveness. They find that several supply-side related factors (such as accommodation quality, resources, destination environment, tourism infrastructure, and perceived trip value) can influence tourist’s intention to return. Beerli and Martín (2004) tested and validated the same factors from a sociological perspective and conclude that the experience accumulated by former traveling, and the sociodemographic circumstances in the country of origin, result in tourists being more tolerant when assessing the destination because they know other realities of tourism that serve as points of comparison. These results are in line with those of most empirical works analyzing differences in perceived image depending on cultural factors in the countries of origin (e.g. Vietze 2008). Similar results have also been developed with the effects of tourist’s motivation and satisfaction on destination loyalty (Yoon and Uysal 2005) and the lifecycle of an area (Moore and Whitehall 2005). Dwyer and Forsyth (1994) find a positive relation between foreign investments and the ability to attract foreign tourism flows and expenditure to the destination country. Many other studies have focused on destination marketing, the image of a destination and market positioning analysis and competitiveness (Crouch and Ritchie 1999, Uysal et al. 2000, Chen and Uysal 2002, Ritchie and Crouch 2003, Enright and Newton 2004, 2005, Trauer and Ryan 2005, Yoon and Uysal 2005). For an overview of the most important explanatory

variables of tourism flows, especially from a country-of-destination perspective see Crouch (1994), Lim (1997, 1999), Zhang and Jensen (2007), and Song and Li (2008).

We analyze determinants which seem to explain the huge differences in the expenditures for international travel between countries. The focus of our examination lies in the push factors – or the demand-side – of international outbound tourism. The analysis of tourism-demand has prevailed in the literature as the appropriate framework to estimate the international tourism trade between two or several pairs of countries (Askari 1971, Barry and O'Hagan 1972, Crouch 1994, 1999, Witt et al. 1994, Lim 1997, 1999, Morley 1998, Sinclair 1998, Croes and Vanagas Sr. 2005, Garín-Muñoz 2006, Vietze 2008, Vogt 2008). In most cases, these demand models in which just one or a few destinations are included measure price- and income elasticities of tourism receipts from a country of origin to a particular country of destination. Although the demand for international tourism is influenced by many factors nearly all of these tourism demand studies focus on economic factors, primarily income, in estimating fluctuations of tourism expenditures (Lim 1997, 1999, Zhang and Jensen 2007, Song and Li 2008).

3. Hypotheses

This section of the paper is dedicated to derive five hypotheses from the considerations in the tourism demand literature above. Our question is whether and which explanatory variables exist beside the expected impact of per capita income on tourism demand. We assess this question for a broad sample of host countries without considering a specific country of destination. Of course, demand-site models can not explain tourism flows in general as unlike as supply-side models can do this. But beside the great impact of the attractiveness of the potential country of destination, socio-economic factors in the country of origin as well play a crucial role in the decision of traveling abroad or not.

According to most demand models we claim in a **first hypothesis** that a high GDP per capita is one of the main drivers for outbound tourism expenditures per capita. This is standard in modeling tourism demand as shown by Lim (1997, 1999), and Song and Li (2008). In order to control for most exogenous geographic effects we add the country's size, the population (in relation to the size of the respective

country), and the number of land borders to this *basic model*, as these variables may have a direct impact on tourism expenditures (see Gil-Pareja et al. 2007, Zhang and Jensen 2007). As the country area limits the free space available, a higher population density may affect tourism expenditures positively (Walsh 1997, Proença and Soukiazis 2005). Therefore, a negative impact of country size on tourism expenditure is expected as we also argue that people in bigger countries travel abroad to a lesser extent than people in smaller countries. Moreover, we expect a positive impact of direct land borders on international tourism expenditures as it is assumed that a high number of neighboring countries enhances the opportunities for traveling abroad. Contrarily, the attractiveness of domestic tourism of a country, proxied by the length of coastline, the number of UNESCO world heritage sites (both in relation to the country's size), and the distance to equator (see Freytag and Vietze 2007), is the main competition of outbound tourism. It is assumed that UNESCO World Heritage Sites and the length of coastline have a negative impact on outbound tourism expenditures, while the effect of distance to equator is unclear.

The **second hypothesis** reflects the impact of important sociological, namely demographical and educational factors, on tourism expenditures. Therefore, we expand our basic model mentioned above to test whether life expectancy and literacy rate in the country of origin has an impact on traveling abroad. The hypothesis of the *socio-economic model* is as follows: As an indicator for a high quality of life, a good health system and the absence of crime and armed conflicts, we use the life expectancy rate as a non monetary proxy for the "level of development" of a country. We argue that tourism is a superior or luxury good so that tourism expenditures should also increase with the developmental level. Additionally, education may affect the ability to travel positively, as some intercultural skills are required to travel abroad (see e.g. Lim 1997; Seddighi and Theocharous 2002; Phakdisoth and Kim 2007). In other words, our second hypothesis states that there should be a positive correlation between the life expectancy as well as the literacy rate and the amount of tourism expenditures per capita.

The **third hypothesis** is expressed in our *openness model* which claims that outbound tourism in general demands both an open economy and an open society. While the openness to international trade is measured directly by the ratio of external trade to GDP, we measure the openness of the country's society via the tourism receipts per capita of the respective country. Our hypothesis is that openness to

trade as well as tourism receipts per capita affect tourism expenditures positively. While openness to trade is also used by Zhang and Jensen (2007), measuring an open society via tourism receipts per capita is unusual in foregoing studies on tourism. The reason for this assumption is that there may exist something like a cultural openness or hospitableness for tourism, which affects the development of the domestic tourism industry as well as the demand for outbound tourism. Moreover, table 2 shows that a couple of countries with the highest amount of tourism expenditures per capita are recipients of the highest per capita amounts on tourism and merchandise and service trade as well.

Table 2: Top and Least Ranked Eleven Tourism and Trade Countries

Rank	2002 Tourism Expenditures per Capita		2002 Tourism Receipts per Capita		2002 Trade (export + import) per Capita	
	Country	USD per capita	Country	USD per capita	Country	USD mio. per capita
1	Cayman Islands	12352.745	Luxembourg	5892.622	Luxembourg	155.432
2	Aruba	12026.424	Bermuda	3504.854	Hong Kong	72.127
3	Macao	10912.891	Aruba	2696.065	Singapore	72.074
4	San Marino	10242.185	Iceland	1800.681	Ireland	60.296
5	US. Virgin Islands	10073.891	United Arab Emirates	1592.068	Belgium	55.948
6	Luxembourg	6557.204	Hong Kong	1548.112	Netherlands	42.659
7	Bahamas	5906.339	Kuwait	1534.014	Austria	34.236
8	Bermuda	5396.855	Neth. Antilles	1489.183	Denmark	34.148
9	Antigua and Barbuda	4418.457	Norway	1458.008	Switzerland	34.092
10	Neth. Antilles	3926.447	Austria	1443.103	Norway	32.602
11	Palau	3854.542	Denmark	1233.623	Neth. Antilles	28.774
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198	Papua New Guinea	3.0213	Malawi	3.2615	Sudan	0.1642
199	Malawi	2.8323	Sudan	3.1222	Madagascar	0.1341
200	Myanmar	2.7287	Nepal	3.0601	Tanzania	0.1331
201	Uzbekistan	1.8475	Guinea	2.8792	Myanmar	0.1221
202	Ethiopia	1.7128	Burundi	2.4606	Nepal	0.1124
203	Pakistan	0.9025	Niger	1.8990	Uganda	0.1022
204	Bangladesh	0.4117	Bangladesh	1.1918	Sierra Leone	0.0959
205	Nigeria	0.3660	Cambodia	1.1177	Central African Rep.	0.0947
206	Tajikistan	0.2914	Myanmar	0.7528	Rwanda	0.0656
207	Burundi	0.1640	Ethiopia	0.7512	Ethiopia	0.0590
208	Congo, Dem. Rep.	0.0177	Tajikistan	0.2914	Burundi	0.0384

Data Source: World Tourism Organization (2008), WTO (2003).

To test the openness of the society more explicitly, we formulate a *governance model* which assumes that civil and political rights affect tourism expenditures positively. Therefore, the **fourth hypothesis** claims that good governance is positively correlated with tourism receipts per capita (similar Phakdisoth and Kim 2007; Vietze 2008). Besides the tautological effect that freedom to travel is an immediate outcome of political freedom, we argue that good institutions in the country of origin can obtain people to travel in foreign countries as they can be sure that their property's (and – of course – relatives) are in a good order when returning.

The **fifth hypothesis** focuses on information possibilities: A high level of information infrastructure in the country of origin could be beneficial for outbound tourism, as it assuage information search about, and enable the booking of potential holiday destinations. Consumers cannot examine the quality of tourism supply before purchasing, as it is an intangible product. Tourists therefore face higher risk and uncertainty when demanding tourism products than buying other, more tangible products. Consequently, their need for reliable information about the destination, the airline and the like is stronger than that of consumers of material products. By good information and communication infrastructure tourists are able to gain additional information on their holiday trip in advance. In other words, we expect a positive impact of the availability of information possibilities on outbound tourism expenditures. Thus, our further called *information-infrastructure model* is also standard in modeling tourism demand (e.g. Lim 1997, 1999, Phakdisoth and Kim 2007, Song and Li 2008).

4. Empirical Evidence

The following section of the paper is dedicated to an assessment of theoretical hypotheses. While the first part gives an overview about the data that is used, the following part presents a regression model and the estimated outcome. In the third part we extent the model to eliminate the strong impact of the per capita income on tourism expenditures per capita.

4.1 The Data

As the literature review on econometric tourism demand models show that there is no standard measure of tourism flows, the majority of the studies in this area define international tourism demand by using one of the following measures: The number of foreign visitors crossing the border (tourism arrivals), the number of nights spent by visitors from abroad, tourism receipts (respective tourism expenditures), or the length of stay of visiting tourists (Proença and Soukiazis 2005). This paper concentrates on the determinants of outbound tourism of the country of origin. The dependent variable is – like in lots of tourism analyses (Song and Li 2008)³– the flows of outbound tourism expenditures (in the year 2002) (*TE*); as reported by the World Tourism Organization (2007) for 208 countries. In tourism studies ‘the dependent variable is an aggregate of several separate activities definable in money terms and not a quantity as in the conventional way of estimating such coefficients’ (Kanellakis 1975, p. 17). However, the issue of an appropriate demand measure is further circumscribed by the fact that tourism demand in monetary terms represents both an amount of expenditure and the quality of consumption as well and is therefore not unproblematic (Smeral 1988, Crouch 1994). As tourism arrivals do not control for either the spending intensity (actual value consumed) or the length of the tourist stay at the destination country, measuring demand in real monetary terms is preferable (Anastasopoulos 1984; O’Hagan and Harrison 1984). Hence, flows of tourism expenditures (respectively receipts) are slightly superior to flows of tourism arrivals (Zhang and Jensen 2007, Vietze 2008).

From the five hypotheses derived in the last section we set up the empirical models on demand factors in the country of origin as follows. As mentioned above in most analyses (see Lim 1997, Song and Li 2008), GDP per capita of the country of origin (in purchasing power parity in the year 2002; data source is IMF 2007) (*GDP*); is pointed out as the most important factor which has an impact on the peoples decision to travel abroad. According to our hypotheses a set of political, geographical and trade indicators is added. The *basic model* contains the following variables:

³ Crouch (1994) indicates that of the 85 tourism studies reviewed, 48 per cent chose tourists arrivals as the measure of demand. To control the size effect we use tourism expenditures as per capita measure.

- The number of inhabitants (in 2002) in relation to the size of the respective country (*POP*) as the population density in the country of origin may affect the inhabitants to travel abroad (Heston et al. 2006);
- The size of the country (*SIZE*) in square kilometers (CIA 2008); and
- The number of national borders (*BORD*) as a proxy for the geographical situation of the country of origin (island or landlocked) (CIA 2008).

The variables below proxy determinants that affect the demand for domestic tourism (see Freytag and Vietze 2007), which is the main spending alternative for outbound tourism expenditures.

- The length of the coast line (in km) in relation to country size in square km (*COAST*) as a proxy for beaches (CIA 2008);
- The number of UNESCO world heritage sites (in 2002) in relation to country size in square km (*WHS*) as a proxy for the important historical and cultural sites on tourism (UNESCO 2005); and
- The distance of the country to the equator in degree of longitude (*EQR*) as a proxy for climate in the country of origin (CIA 2008).

Regarding the *socio-economic model* following variables are introduced in the regression:

- The life expectancy (in 2002) (*LE*) as a proxy for safety and quality of life in the country of origin (CIA 2008); and
- The literacy rate (*LIT*) as a proxy for the educational standard which is expected to be an important factor in determining the ability to travel to foreign countries (CIA 2008).

To run our *openness model*, we use the following variables:

- The inbound tourism receipts per capita (*TR*) in 2002, as important variables affecting the cultural openness or hospitableness for outbound tourism (World Tourism Organization 2007); and
- The openness to trade measured as the sum of imports and exports in relation to GDP in 2002 (*OPEN*), because tourism as part of trade in services is highly sensible to open markets (Heston et al. 2006).

As it is our aim to investigate the impact of the quality of governance and institutions in the origin country on tourism demand, our *governance model* include

- The World Bank governance indicators (in 2002) for Control of Corruption (*CCORR*), Effectiveness of Governance (*GOVEFF*), Political Stability (*POLST*), Rule of Law (*LAW*) and Voice and Accountability (*VOICE*) (Kaufmann et al. 2006).

Moreover, our focus is on the examination of the effect of information and communication infrastructure in the country of origin on tourism. Our *information-infrastructure model* states that a higher quality of information infrastructure could promote tourist's ability to travel to foreign countries, as tourists gain more information in advance. The following variables are included in the regression:

- The number of internet (*NET*) and telephone (*TEL*) accesses as well as TV sets (*TV*) in the year 2002 (all measured in per thousand inhabitants) as proxies for information access (World Bank 2007).

The descriptive statistics referring to the main variables outbound tourism expenditures per capita ($TE_i^{p.C}$), outbound tourism expenditures per GDP ($TE_i^{p.GDP}$), tourism receipts per capita (TR_i), GDP per capita (GDP_i) and openness to trade ($OPEN_i$) are reported in table 3.

Table 3: Descriptive Statistics

	MIN	MAX	Mean	Median	Standard dev.	N
$TE_i^{p.C}$	0.30	4751.89	274.28	53.32	587.74	158
$TE_i^{p.GDP}$	0.0003	0.0960	0.0142	0.0093	0.0157	151
TR_i	0.17	11797.11	552.67	70.04	1486.04	167
GDP_i	525.71	59191.91	9420.30	5555.56	10031.98	177
$OPEN_i$	2.02	369.65	87.88	82.36	48.39	183

Source: Own estimations.

As it is apparent that these cross-country variables are heterogeneous we generally run White-Heteroskedasticity Residual Tests. These tests approve our assumption in

some regressions. Thus, an adjusted OLS-estimator robust to heteroskedasticity (White 1980) will be used in these estimations. We use an OLS-estimation model, assuming that the relationship between the output and its determinants is linear. The non-adoption of a specific estimation model (e.g. a log function) allows to take an unprepossessed view on the impact factors of tourism demand. Including a set of time invariant variables (e.g. *SIZE*, *EQR*, *WHS*, and *BORD*) in our regression, a country fixed effects panel estimation cannot be applied. Additional, it is our aim to explain the heterogeneity in tourism expenditures within the world with exogenous socio-geographical variables, we cannot apply the '*fixed-effects modeling [as] a result of ignorance*' (Cheng and Wall, 2005, p. 54). Instead, according to Wei and Frankel (1997), we endeavor to estimate the exact effects of geographical variables that are time constant. The inclusion of country dummies will undermine these efforts; because the time-constant geographical variables are hidden from analysis as they are subsumed into the fixed effects (see also Vietze, 2008). Moreover, due to data availability it is impossible to construct a relevant time series. Thus, the OLS modeling is applied. As shown in this section the adjusted R-squared in all estimations is relatively high; so that the dependent variable is described almost completely by the chosen explanatory variables; and the issue of omitted variables⁴ can be neglected.

To demonstrate the stability of the OLS-estimations we use subsets of the equation in the most regressions stated below.

4.2 The Model and the Results

The first question assesses which determinants influence the demand of outbound tourism expenditures in the year 2002 *per capita* ($TE^{p.C}$) for 208 countries⁵, as it is reported by the World Tourism Organization (2007). To analyze this issue, the hypotheses one to five will be estimated empirically. We assume that the demand for tourism, measured by tourist expenditures, is a function of the country of origin's

⁴ A widely described problem in OLS-estimation with respect to fixed effects panel estimations is the problem of omitted variables (e.g. Cheng and Wall, 2005). However, because of the structure of our data, we must include time constant variables.

⁵ Due to data availability some countries must be excluded in the respective regressions.

characteristics or the demand side. For a test of these variables we apply the following three OLS estimation models (Hypotheses one to three):

Hypothesis 1:

$$\begin{aligned}
 TE_i^{p.C} &= \beta_0 + \text{BasicModel} + \varepsilon_i \\
 \text{BasicModel} &= \beta_1 \text{GDP}_i + \beta_2 \text{POP}_i + \beta_3 \text{SIZE}_i + \beta_4 \text{BORD}_i \\
 \text{M0} \quad &+ \beta_5 \text{COAST}_i + \beta_6 \text{WHS}_i + \beta_7 \text{EQR}_i
 \end{aligned}$$

Hypothesis 2:

$$\begin{aligned}
 TE_i^{p.C} &= \beta_0 + \text{BasicModel} + \text{SocioEconomicModel} + \varepsilon_i \\
 \text{M1} \quad &\text{SocioEconomicModel} = \beta_8 \text{LE}_i + \beta_9 \text{LIT}_i
 \end{aligned}$$

Hypothesis 3:

$$\begin{aligned}
 TE_i^{p.C} &= \beta_0 + \text{BasicModel} + \text{OpennessModel} + \varepsilon_i \\
 \text{M2} \quad &\text{OpennessModel} = \beta_{10} \text{OPEN}_i + \beta_{11} \text{TR}_i
 \end{aligned}$$

The results in table 4 do indeed support most of our hypotheses. People in countries with a high per capita income spend more money on outbound tourism than others. This result is – not very astonishing – absolutely robust across all four estimations presented below. So Hypothesis 1 can be confirmed. It is also shown that the more attractive domestic tourism in a country is the lesser are outbound tourism expenditures. The negative signs for *WHS* and *COAST* are significant and confirm our expectations. Distance to the equator (*EQR*) is not stable during the four estimations, but it seems that countries with colder climate (a higher distance to equator) provoke their people to travel to foreign countries. The variable *SIZE* shows the expected negative sign. The larger sized a country the less attractive it is for the inhabitants to travel abroad. Furthermore, the results confirm that a high population density (inhabitants in relation to the size of the respective country) pushes tourism expenditures.

Table 4: Outbound Tourism Expenditures per Capita:
Basic-, Socio-Economic- and Openness Model

	M 0	M 1a	M 1b	M 2
<i>Const</i>	-122.69** (-2.046)	-471.91*** (-3.281)	-138.92 (-1.346)	-380.18*** (-2.748)
<i>GDP</i>	0.043*** (3.392)			0.0341*** (2.257)
<i>POP</i>	0.088** (2.351)	0.150*** (5.930)	0,159*** (5.616)	0.006 (0.092)
<i>SIZE</i>	-4.34E-05* (-1.874)	-1.88E-05* (-1.683)	-1.52E-05 (-1.375)	-2.76E-05** (-2.312)
<i>BORD</i>	19.16 (1.274)	-24.698** (-1.996)	-31.577** (-2.410)	27.99** (2.079)
<i>COAST</i>	6.770 (0.154)	59.701 (0.373)	59.167 (0.313)	-191.07* (-1.916)
<i>WHS</i>	-18,313.3* (-1.775)	-60,180.0*** (-4.929)	-61,448.5*** (-4.446)	-40,230.0*** (-3.216)
<i>EQR</i>	-4.241 (-1.268)	9.580*** (3.231)	10.990*** (3.735)	-3.601 (-1.441)
<i>LE</i>		8.217*** (3.590)		
<i>LIT</i>			250.68** (2.148)	
<i>OPEN</i>				2.956** (2.161)
<i>TR</i>				0.164** (2.060)
<i>R²adj</i>	0.6458	0.1954	0.1797	0.7553
<i>N</i>	141	145	144	135

Dependent variable: Amount of tourism expenditures per capita in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 per cent level.

** Significant at the 95 per cent level.

*** Significant at the 99 per cent level.

As also shown by table 4, the higher the number of national borders (*BORD*) the higher are the tourism expenditures per capita in the respective country. That is the expected sign and confirms that people will be pushed to travel abroad if there are more countries in the neighborhood. Similar results are displayed by some studies

dealing with this issue using gravity models (e.g. Eilat and Einav 2004, Kimura and Lee 2006, Gil-Pareja et al. 2007, Phakdisoth and Kim 2007, and Vietze 2008).

The socio-economic model examines Hypothesis 2. Since *GDP*, *LE*, and *LIT* are highly correlated, we can not use them simultaneously in the estimation.⁶ Therefore we run these models without *GDP* and estimate subsets of the respective models. Life expectancy (*LE*) shows the expected positive sign; this can be interpreted as follows: people in higher developed countries spend more money for outbound tourism. Moreover, the literacy rate (*LIT*), a chosen proxy for the educational level of a country, is positively correlated with tourism expenditures. So the socio-economic model seems to be credible to explain the demand factors of tourism.

Confirming hypothesis 3, one of the main result is that countries with a high amount of inbound tourism receipts per capita (*TR*), and a high merchandise trade volume (*OPEN*) also have large outbound tourism expenditures per capita. This displays that there are joint factors like the openness to trade and the openness to meet other cultures and people which are responsible factors to explain tourism expenditure flows. Countries which are able to attract many foreigners (and their money) to get in for holiday also have a higher request for outbound tourism. The same holds for the openness of a country to international trade. This gives the clear hint that in an open society people are also more open to travel abroad. To investigate this more explicitly, in a last regression we test the openness of the society more directly by using the World Bank governance indicators as a proxy for good institutions. As claimed in hypothesis 4, we test if these institutions have a positive impact on the amount of money people spend for outbound tourism. The impact of the institutional quality on outbound tourism expenditures is examined by the following regression⁷:

⁶ Compare correlation matrix in Appendix B.

⁷ As described above, *GDP*, *CCORR*, *GOVEFF*, *LAW*, *POLST*, and *VOICE* are highly correlated, so that we can not use them simultaneously in the estimation. A subsets of the model will be estimated; each regression with one of the governments indicator. Therefore we run these models without *GDP* and estimate subsets of the respective models as well. Compare correlation matrix in Appendix B.

Hypothesis 4:

$$TE_i^{p.C} = \beta_0 + \text{BasicModel} + \text{GovernanceModel} + \varepsilon_i$$

$$\text{M 3} \quad \text{GovernanceModel} = \beta_{12} \text{CCORR}_i + \beta_{13} \text{GOVEFF}_i + \beta_{14} \text{LAW}_i + \beta_{15} \text{POLST}_i + \beta_{16} \text{VOICE}_i$$

Table 5: Outbound Tourism Expenditures per Capita:
Governance Model

	M 3a	M 3b	M 3c	M 3d	M 3e
<i>Const</i>	128.25** (-2.156)	172.86*** (2.662)	63.348** (2.447)	122.44* (1.726)	42.40 (0.696)
<i>POP</i>	0.103*** (3.698)	0.092** (2.582)	0.115*** (4.339)	0.153*** (6.863)	0.166*** (7.082)
<i>SIZE</i>	-2.80E-05* (-1.674)	-2.89E-05* (-1.715)	-2.54E-05 (-1.571)	-1.60E-05 (-1.446)	-1.93E-05* (-1.645)
<i>BORD</i>	8.233 (0.657)	-1.530 (-0.119)	3.820 (-0.313)	-15.883 (-1.132)	-12.495 (-0.903)
<i>COAST</i>	66.75 (0.556)	33.21 (0.201)	-4.084 (-0.033)	-49.34 (-0.263)	104.28 (0.692)
<i>WHS</i>	-34,890.1** (-2.520)	-35,208.1** (-2.101)	-44,049.0*** (-3.426)	-57,036.1*** (-4.988)	-67,082.2*** (-5.867)
<i>EQR</i>	2.652* (1.784)	2.208 (1.427)	2.470 (1.590)	7.115*** (3.473)	8.477*** (3.531)
<i>CCORR</i>	295.59*** (4.539)				
<i>GOVEFF</i>		287.73*** (3.920)			
<i>LAW</i>			299.66*** (4.343)		
<i>POSLT</i>				177.41*** (3.093)	
<i>VOICE</i>					154.83*** (3.259)
<i>R²adj</i>	0.3423	0.3171	0.3253	0.2271	0.2138
<i>N</i>	145	145	145	139	145

Dependent variable: Amount of tourism expenditures per capita in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 per cent level.

** Significant at the 95 per cent level.

*** Significant at the 99 per cent level.

As shown by the regression results in table 5 the existence of good institutions has a positive impact on the amount of tourism expenditures per capita. People in countries with a high level of civil rights (*LAW*), stable (*POLST*) and effective governance (*GOVEFF*), low corruption (*CCORR*) and a high level of freedom to speak (*VOICE*) spend more money for foreign tourism than such with bad institutions. First, it is shown that the demand to travel abroad is directly affected by the level of civil rights and political freedom. In other words, freedom to travel is an immediate outcome of political freedom. Second, this circumstantiates our argument that people in open-minded societies are deciding more often to spend their holiday abroad.⁸ These results approve our hypothesis 4. The other variables remain stable during the five estimated subsets. The expected outcome referring to the distance to equator (*EQR*) can be verified: People from countries situated in the temperate zone (a higher distance to equator) decide more often traveling to foreign (warmer?) countries.

Finally, we argue that information possibilities play a crucial role in explaining outbound tourism expenditures. To investigate this argument in hypothesis 5, we run the following model:

Hypothesis 5:

$$TE_i^{p.C} = \beta_0 + BasicModel + InformationModel + \varepsilon_i$$

M 4

$$InformationModel = \beta_{17}NET_i + \beta_{18}TEL_i + \beta_{19}TV_i$$

Although the data availability for these variables are rather low and some countries had to be excluded from the regression (except for the model 4b), the results in table 6 show clearly that the amount of (travel-) information is important for tourism expenditures. The more information facilities as measured by internet (*NET*), telephone (*TEL*), television (*TV*)⁹ per thousand inhabitants are available within the country of origin the more people can inform themselves on foreign travel opportunities. Of course, there are common causes like the level of development so that one should not over-interpret these results. However, hypothesis 5 can be

⁸ Of course, there may be common causes like the countries GDP per capita, since good institutions often causes high GDP per capita in the respective country.

⁹ We run also regressions dealing with the impact of daily newspapers, radios and PC's, each per thousand inhabitants, on tourism expenditures. The results are quite similar.

confirmed. Again, we run these models without *GDP* and estimate subsets of the respective models, as *GDP* , *NET* , *TEL* , and *TV* are highly correlated.¹⁰

*Table 6: Outbound Tourism Expenditures per Capita:
Information-Infrastructure Model*

	M 4a	M 4b	M 4c
<i>Const</i>	-62.52 (-1.139)	-89.72 (-1.328)	-70.08 (-1.271)
<i>POP</i>	0.085* (1.681)	0.106*** (4.645)	0.152*** (3.698)
<i>SIZE</i>	-2.51E-05* (-1.820)	-4.13E-05** (-2.020)	-2.02E-05 (-1.618)
<i>BORD</i>	9.758 (0.657)	10.265 (0.737)	-0.164 (-0.019)
<i>COAST</i>	1,023.5 (1.622)	-34.31 (-0.402)	662.27 (1.225)
<i>WHS</i>	571,687.6 (1.038)	-45,550.3*** (-5.459)	1,069,506 (1.571)
<i>EQR</i>	1.062 (0.586)	-2.848 (-1.020)	0.798 (0.632)
<i>NET</i>	1.054*** (5.495)		
<i>TEL</i>		1.884*** (3.601)	
<i>TV</i>			0.633*** (4.340)
<i>R² adj</i>	0.5763	0.4460	0.5319
<i>N</i>	115	145	107

Dependent variable: Amount of tourism expenditures per capita in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 percent level.

** Significant at the 95 percent level.

*** Significant at the 99 percent level.

To eliminate the rather overwhelming impact of the GDP per capita we apply further regression analysis. We use the same data and exogenous variables but measuring

¹⁰ Compare correlation matrix in Appendix B.

the impact of the exogenous variables on the amount of tourism expenditures per *unit of GDP*.

4.3 Model extension

As shown in the previous section the GDP per capita has the major impact on outbound tourism expenditures per capita. To control this effect and test the assumed elasticity of this service good, we use in contrast to section 4.2 the dependent variable *Tourism Expenditures per GDP* ($TE_i^{p.GDP}$) in the following OLS estimations. This is also common even though infrequent in tourism studies (Lim 1997, Song and Li 2008). As in all former regression we run a White-Heteroskedasticity Residual Test (White 1980). This test displays that all estimations with the dependent variable *Outbound Tourism Expenditures per GDP* are not heteroskedastic. That is why we use a simple OLS model.

Calculating with the same independent variables as above and expecting the same signs we regress the variables and indicators as in the previous chapter and assume the same hypotheses 1 till 5. Thus the regression models are as follows:

Hypothesis 1:

$$\mathbf{M0} \quad TE_i^{p.GDP} = \beta_0 + \mathit{BasicModel} + \varepsilon_i$$

Hypothesis 2:

$$\mathbf{M1} \quad TE_i^{p.GDP} = \beta_0 + \mathit{BasicModel} + \mathit{SocioEconomicModel} + \varepsilon_i$$

Hypothesis 3:

$$\mathbf{M2} \quad TE_i^{p.GDP} = \beta_0 + \mathit{BasicModel} + \mathit{OpennessModel} + \varepsilon_i$$

As table 7 displays, the findings support our hypothesis 1 to 3, similarly to the estimation results for tourism expenditures per capita shown by table 4. The variables openness to trade (*OPEN*) and tourism receipts per capita (*TR*) are positively related to outbound tourism expenditures per GDP. Peoples with a high cultural (*TR*) and economic (*OPEN*) openness are willing to spend a higher income share for traveling abroad. As a proxy for the quality of life the variable life expectancy (*LE*) has a positive impact on outbound tourism expenditures as well as the literacy rate (*LIT*) but the impact is still insignificant.

Table 7: Outbound Tourism Expenditures per GDP
Basic-, Socio-Economic- and Openness Model

	M 0	M 1a	M 1b	M 2
<i>Const</i>	0.0074*** (3.214)	-0.0065 (-0.899)	0.0029 (0.566)	0.0008 (0.290)
<i>GDP</i>	8.98E-07*** (7.155)			5.79E-07*** (4.387)
<i>POP</i>	3.83E-06*** (2.845)	5.78E-06*** (3.798)	6.24E-06*** (4.102)	2.23E-06 (1.452)
<i>SIZE</i>	-1.14E-09** (-2.257)	-7.28E-10 (-1.253)	-6.24E-06 (-1.064)	-6.73E-10 (-1.448)
<i>BORD</i>	-0.0002 (-0.563)	-0.0008 (-1.597)	-0.0010* (-1.950)	1.47E-05 (0.037)
<i>COAST</i>	-0.0069 (-1.346)	0.0052 (0.894)	0.0046 (0.762)	-0.0006 (-0.117)
<i>WHS</i>	-0.2331 (-0.208)	0.1199 (0.093)	0.4313 (0.329)	-1.035 (-0.975)
<i>EQR</i>	-7.07E-05 (-0.920)	0.0002** (2.056)	0.0002** (2.373)	-3.13E-05 (-0.431)
<i>LE</i>		0.0003** (2.335)		
<i>LIT</i>			0.0100 (1.534)	
<i>OPEN</i>				7.07E-05*** (2.715)
<i>TR</i>				6.22E-06*** (4.413)
<i>R²adj</i>	0.4548	0.2747	0.2579	0.5670
<i>N</i>	141	141	140	135

Dependent variable: amount of tourism expenditures per GDP in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 percent level.

** Significant at the 95 percent level.

*** Significant at the 99 percent level.

The most important finding is that rich countries (in terms of per capita income) spend a higher share of national income for outbound tourism than poorer ones. An increase in GDP will raise the demand for outbound tourism and increase the tourism expenditures by an elasticity exceeding one. This supports the assumption that

outbound tourism is a luxury good.¹¹ Or in other words: Wealthy people (and countries as well) output a higher demand for outbound tourism the richer they are. This finding is interesting with respect to the role of tourism for economic development. An increasing GDP in developed countries may enforce the impact of tourism as a trigger for development in LDCs. As tourism destination countries are mostly countries with a lower per capita GDP (Freytag and Vietze 2007), an increasing world GDP can improve their ability to attract foreign exchange receipts via tourism income.

Except for the distance to equator (*EQR*) which has a positive impact on outbound tourism expenditures per GDP, the proxies *COAST* and *WHS* for an attractive domestic tourism in a country are still insignificant; contrarily to the first regression using tourism expenditure per capita. The remaining variables, particularly population density (*POP*) and country size (*SIZE*), show the expected sign. These results show that the “closer” the people in a country live, the smaller the respective country, and the colder the climate is, the higher is the share of income expensed for external tourism.

Similarly to the regression results in table 5 on the impact of institutional factors on per capita measures of tourism expenditure, we establish the following regression to investigate the impact on tourism expenditures per GDP, as stated below:

Hypothesis 4:

$$\mathbf{M\ 3} \quad TE_i^{p.GDP} = \beta_0 + BasicModel + GovernanceModel + \varepsilon_i$$

The results in table 8 evidence that countries with good governance (measured by a high level of civil liberties, freedom to speak and a low level of corruption) have a higher share of outbound tourism expenditure per GDP than countries with worse institutions. This result confirms the theoretical assumptions claimed by hypothesis 4: If people are less afraid about the security of their relatives and (real estate) property at home, they spend more of their income for traveling abroad; regardless whether they are able to save money for insurances or time to protect their belongings. The other variables show the expected signs (*POP*, *SIZE*, and *EQR*) or are not significant (*BORD*, *COAST*, and *WHS*).

¹¹ See also Brau et al. (2003), Eilat and Einav (2004), Croes and Vanagas Sr. (2005), Garín-Muñoz (2006), Freytag and Vietze (2007), Vogt (2008).

*Table 8: Outbound Tourism Expenditures per GDP
Governance Model*

	M 3a	M 3b	M 3c	M 3d	M 3e
<i>Const</i>	0.0127*** (5.197)	0.0135*** (5.121)	0.0127*** (5.365)	0.0117*** (4.188)	0.0099*** (3.733)
<i>POP</i>	4.17E-06*** (2.973)	4.21E-06*** (2.840)	4.57E-06*** (3.263)	5.73E-06*** (3.847)	6.35E-06*** (4.255)
<i>SIZE</i>	-9.05E-10* (-1.731)	-8.87E-10 (-1.625)	-8.37E-10 (-1.589)	-6.16E-10 (-1.090)	-6.61E-10 (1.144)
<i>BORD</i>	-5.83E-05 (-0.126)	-0.0004 (-0.837)	-0.0002 (-0.341)	-0.0006 (-1.103)	-0.0006 (-1.193)
<i>COAST</i>	0.0065 (1.231)	0.0053 (0.967)	0.0044 (0.812)	0.0031 (0.520)	0.0063 (1.078)
<i>WHS</i>	0.0876 (0.075)	0.2603 (0.214)	-0.0097 (-0.008)	-0.2433 (-0.181)	-0.0160 (-0.012)
<i>EQR</i>	-1.47E-06 (-0.019)	1.22E-05 (0.144)	-1.24E-05 (-0.154)	0.0001 (1.372)	0.0002** (2.081)
<i>CCORR</i>	0.0080*** (6.023)				
<i>GOVEFF</i>		0.0070*** (4.805)			
<i>LAW</i>			0.0082*** (5.738)		
<i>POSLT</i>				0.0051*** (3.329)	
<i>VOICE</i>					0.0036** (2.255)
<i>R²adj</i>	0.4068	0.3567	0.3948	0.31131	0.2728
<i>N</i>	141	141	141	135	141

Dependent variable: amount of tourism expenditures per GDP in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 percent level.

** Significant at the 95 percent level.

*** Significant at the 99 percent level.

Finally we test for the impact of information possibilities on tourism expenditure per GDP by the following regression as indicated by our hypothesis 5:

Hypothesis 5:

$$\mathbf{M\ 4} \quad TE_i^{p.GDP} = \beta_0 + \mathit{BasicModel} + \mathit{InformationModel} + \varepsilon_i$$

Table 9: Outbound Tourism Expenditures per GDP
Information-Infrastructure Model

	M 4a	M 4b	M 4c
<i>Const</i>	0.0059** (2.196)	0.0078*** (3.210)	0.0061** (2.041)
<i>POP</i>	3.30E-06 (1.339)	4.20E-06*** (2.957)	5.35E-06** (2.056)
<i>SIZE</i>	-1.43E-09** (-2.134)	-1.11E-09** (-2.077)	-1.12E-09* (-1.715)
<i>BORD</i>	0.0001 (0.258)	-0.0003 (-0.694)	-0.0002 (-0.439)
<i>COAST</i>	0.0311 (1.016)	0.0055 (1.033)	0.00216 (0.647)
<i>WHS</i>	3.998 (0.149)	-0.8653 (-0.720)	19.63 (0.690)
<i>EQR</i>	1.33E-05 (0.150)	-5.65E-05 (-0.659)	3.70E-05 (0.335)
<i>NET</i>	3.32E-05*** (3.554)		
<i>TEL</i>		4.02E-05*** (5.696)	
<i>TV</i>			1.68-05** (2.179)
<i>R²adj</i>	0.3689	0.3931	0.3261
<i>N</i>	113	141	106

Dependent variable: amount of tourism expenditures per GDP in 2002.

Absolute t-values in parenthesis.

* Significant at the 90 percent level.

** Significant at the 95 percent level.

*** Significant at the 99 percent level.

As already shown by table 6 on tourism expenditure per capita, the model results in table 9 also indicate the significantly high impact of information infrastructure on the amount of outbound tourism expenditures (per GDP). A high level of information opportunities in the respective country increases the share of income tourists spend for outbound tourism. These results are significant for all three sub samples (*NET*, *TEL*, and *TV*) and show the expected positive sign. The other variables except for population density (*POP*) and country size (*SIZE*) are insignificant. These results

confirm our fifth hypothesis that a good information infrastructure in the country of origin is beneficial for outbound tourism per GDP, as potential tourists are able to inform themselves on the choices of the tourism industry in the destination countries and enable them to book accommodations and the like in advance.

In summary, all five hypotheses in the extended model can be confirmed. This means that besides the positive impact of the per capita income (and the life expectancy), openness to trade and tourism as well as a high level of institutional quality and information possibilities affect outbound tourism expenditures *per GDP* positively, too.

5. Conclusions

In this paper we discussed the determinants which contribute to outbound tourism expenditures. While we are able to find a strict robust positive impact of all economic factors like GDP per capita and the openness to trade on the tourism expenditures per capita as well as tourism expenditures per GDP, most of the sociological factors e.g. the literacy rate and the control variables for the attractiveness of domestic tourism show rather a weak significance. However, there seems to be somewhat like a corporate openness to tourism as countries which are able to attract high inbound tourism receipts per capita also have high outbound tourism expenditures per capita as well. A further important finding is that people in democratic countries with a high level of civil rights and good political stability spend a higher share of income for traveling abroad. Additionally, good information possibilities in the country of origin encourage foreign travel. These results support the idea that there are also some important factors in the country of origin promoting foreign tourism besides the expected impact of the per capita income. Further research is necessary to learn more about exact price and income elasticities of tourism. Nevertheless, our results give us an indirect and encouraging hint that it makes sense for developing countries to sustainable invest in the tourism sector as an increasing willingness to pay for outbound tourism goes hand in hand with an increasing per capita income in the world.

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Appendix A: Countries included in the Analysis

Afghanistan	Dominica	Libya	Saint Vincent and the Grenadines
Albania	Dominican Rep.	Liechtenstein	Samoa
Algeria	Ecuador	Lithuania	San Marino
American Samoa	Egypt	Luxembourg	Sao Tome and Principe
Andorra	El Salvador	Macao	Saudi Arabia
Angola	Equatorial Guinea	Macedonia, FYR	Senegal
Antigua and Barbuda	Eritrea	Madagascar	Seychelles
Argentina	Estonia	Malawi	Sierra Leone
Armenia	Ethiopia	Malaysia	Singapore
Aruba	Fiji	Maldives	Slovakia
Australia	Finland	Mali	Slovenia
Austria	France	Malta	Solomon Islands
Azerbaijan	French Polynesia	Marshall Islands	Somalia
Bahamas	Gabon	Mauritania	South Africa
Bahrain	Gambia	Mauritius	Spain
Bangladesh	Georgia	Mayotte	Sri Lanka
Barbados	Germany	Mexico	Sudan
Belarus	Ghana	Micronesia	Suriname
Belgium	Greece	Moldova	Swaziland
Belize	Grenada	Monaco	Sweden
Benin	Guam	Mongolia	Switzerland
Bermuda	Guatemala	Morocco	Syria
Bhutan	Guinea	Mozambique	Taiwan
Bolivia	Guinea-Bissau	Myanmar	Tajikistan
Bosnia and Herzegovina	Guyana	Northern Marianals	Tanzania
Botswana	Haiti	Namibia	Thailand
Brazil	Honduras	Nepal	Togo
Brunei	Hong Kong	Neth. Antilles	Tonga
Bulgaria	Hungary	Netherlands	Trinidad and Tobago
Burkina Faso	Iceland	New Zealand	Tunisia
Burundi	India	New Caledonia	Turkey
Cambodia	Indonesia	Nicaragua	Turkmenistan
Cameroon	Iran, Islamic Rep.	Niger	Uganda
Canada	Iraq	Nigeria	Ukraine
Cape Verde	Ireland	Norway	United Arab Emirates
Cayman Islands	Israel	Oman	United Kingdom
Central African Rep.	Italy	Pakistan	United States
Chad	Jamaica	Palau	Uruguay
Chile	Japan	Panama	Uzbekistan
China	Jordan	Papua New Guinea	Vanuatu
Colombia	Kazakhstan	Paraguay	Venezuela
Comoros	Kenya	Peru	Vietnam
Congo, Dem. R.	Kiribati	Philippines	Virgin Island
Congo, Rep. of	Korea, DPRp	Poland	Yemen
Costa Rica	Korea, Republic of	Portugal	Zambia
Cote d'Ivoire	Kuwait	Puerto Rico	Zimbabwe
Croatia	Kyrgyzstan	Qatar	
Cuba	Laos	Romania	
Cyprus	Latvia	Russian Federation	
Czech Republic	Lebanon	Rwanda	
Denmark	Lesotho	Saint Kitts and Nevis	
Djibouti	Liberia	Saint Lucia	

Appendix B: Correlation Matrix

	$TE_i^{p,C}$	$TE_i^{p,GDP}$	GDP	POP	SIZE	BORD	COAST	WHS	EQR	LE	LIT	OPEN	TR	CCORR	GOVEF	LAW	POLST	VOICE	NET	TEL	TV	
$TE_i^{p,C}$	1.000																					
$TE_i^{p,GDP}$	0.896	1.000																				
GDP	0.765	0.543	1.000																			
POP	0.509	0.458	0.222	1.000																		
SIZE	-0.107	-0.177	0.160	-0.094	1.000																	
BORD	-0.213	-0.231	-0.213	-0.208	0.299	1.000																
COAST	0.545	0.479	0.313	0.855	-0.112	-0.300	1.000															
WHS	0.318	0.208	0.437	-0.033	-0.228	-0.040	-0.020	1.000														
EQR	0.362	0.230	0.602	-0.116	0.023	-0.002	-0.006	0.437	1.000													
LE	0.469	0.375	0.642	0.186	0.120	-0.176	0.258	0.405	0.529	1.000												
LIT	0.369	0.328	0.586	0.098	0.064	-0.168	0.193	0.363	0.565	0.689	1.000											
OPEN	0.488	0.498	0.207	0.681	-0.268	-0.307	0.579	0.063	0.032	0.136	0.238	1.000										
TR	0.758	0.589	0.670	0.403	-0.094	-0.189	0.479	0.443	0.414	0.519	0.448	0.422	1.000									
CCORR	0.723	0.543	0.917	0.235	0.093	-0.268	0.291	0.410	0.578	0.583	0.516	0.263	0.755	1.000								
GOVEF	0.673	0.479	0.909	0.247	0.108	-0.219	0.298	0.460	0.610	0.630	0.587	0.290	0.765	0.956	1.000							
LAW	0.686	0.513	0.905	0.203	0.083	-0.250	0.273	0.430	0.610	0.604	0.552	0.255	0.743	0.972	0.968	1.000						
POLST	0.531	0.416	0.690	0.168	0.011	-0.254	0.247	0.265	0.558	0.444	0.517	0.334	0.611	0.778	0.787	0.822	1.000					
VOICE	0.463	0.299	0.774	0.053	0.041	-0.286	0.168	0.464	0.600	0.534	0.597	0.096	0.636	0.805	0.838	0.832	0.754	1.000				
NET	0.663	0.493	0.889	0.272	0.137	-0.273	0.338	0.365	0.583	0.632	0.598	0.262	0.681	0.864	0.875	0.861	0.683	0.774	1.000			
TEL	0.671	0.469	0.938	0.221	0.162	-0.169	0.322	0.487	0.664	0.691	0.651	0.178	0.762	0.869	0.887	0.874	0.674	0.804	0.913	1.000		
TV	0.537	0.354	0.841	0.059	0.189	-0.131	0.204	0.357	0.724	0.712	0.679	0.054	0.569	0.757	0.774	0.765	0.619	0.722	0.831	0.872	1.000	