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CULTURAL EFFECTS ON INBOUND TOURISM INTO THE USA: A GRAVITY APPROACH

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Abstract:

In this paper we discuss the effects of cultural – and particular religious – factors on tourist flows into the USA as the world largest tourism destination. To estimate this empirically we run an augmented gravity equation. Our results give evidence that the gravity equation is an adequate instrument to explain variations in international tourist flows. With respect to the aim of the paper, we have found that cultural proximity between country of origin and country of destination have positive effects on the tourism flows between these countries. In particular, after controlling for a set of geographic variables, people from countries with the same language (English) and the same high governmental rankings like the USA, travel more into the USA for holiday than people from other countries. Above all, we have clear and stable evidence that tourists from Christian countries prefer the USA as holiday destination much stronger than people from other countries. This supports our argument that people wishing to go on holiday to countries with a similar cultural and political background.

1. Introduction

Tourism has become one of the most remarkable socio-economic phenomena, since World War II. Now it can be considered that it is a vital dimension of global integration and trade activities and has therefore become the world's largest source of foreign exchange receipts. According to the latest figures compiled by the World Tourism Organization, in 2005 international tourism receipts are estimated at US$ 680 billion (including international passenger transport it exceeds US$ 800 billion) and represents approximately 6 per cent of worldwide exports of goods and services (World Tourism Organization 2006). Especially in developing countries, international tourism as superior good may well become an important factor for economic development, as demand increases more than proportionally with world income. Additionally, international tourism may push the political leaders in the country of destination to approve more civil rights and open the country for international trade (e.g. Lim 1997, Sinclair 1998, Deloitte & Touch, iied and odi 1999; Brau et. al 2003; Neto 2003; Freytag and Vietze 2007).

As tourism may be a relevant factor for development, an important question to answer is which determinants can push the demand for tourism in the countries of origin. We try to analyze which determinants explain the huge differences in the tourism flows of international travel between countries. The focus of our examination is on the push factors, or the demand-side, of international outbound tourism.

Although, the demand for international tourism is influenced by many factors, nearly all foregoing tourism demand studies concentrates on economic factors, primarily income, in estimating fluctuations within tourism (Lim 1997, Zhang and Jensen 2007). In this paper, focus is on the explaining variables besides the expected influence of per capita income when one neglected the great impact of the attractiveness of the potential country of destination by observing only one (dominant) destination country. Our question is, which impacts do socio-economic factors have in the country of origin in the decision making process of traveling abroad.

Like in several sectors of consumer demand, attitudes, believes and the political environment may also influence the tourism demand. The aim of this paper is to analyze the impact of cultural, especially – because they cover a strong common cultural background – religious and political factors on tourism flows from all

countries into the USA. Although, some literature about religion and economic well-being (e.g. Heath et al. 1995) exists, papers dealing with the impact of religious believe on travel decisions are currently lacking. So, Vukonic (1996) pictures in his book the interaction between “Tourism and Religion”. Even though this is the first book that starts identifying the interdependency between tourism and religion, it consists primarily of the authors’ observations and reflections rather than objective statistical descriptions. Furthermore, Vukonic (1996) discusses the topic how religion can influence tourism primarily with – particularly Catholic – pilgrimages and not on broader scales. Also in Hindu societies, pilgrimages play an important role in explaining travel movements (Singh 2004). Cohen (2003) focuses more on the differences between religious travel and “normal” tourism when analyzing the reasons why American Jewish students come to study in Israel. His main result is that students who are interested in the Jewish religion (and that’s why decide to study in Israel) are not interested in Israel’s heritage sites; while those who come primarily as tourists to see the country and meet its residents are often not very religious. One can interpret this finding as a hint that religion is not the main reason for destination decisions of tourists. Running also a case study in Israel, Poria et. al (2003) came to different results. In their study tourists’ visitation patterns to the Wailing Wall in Israel, a heritage site of religious significance were explored. The results indicate that tourists’ visitation patterns are linked to tourists’ religion and their strength of religious belief *per se*; but indeed it is the culture in which participants live which constructs the meaning tourists’ associates with the site. In the first instance, this provides relevant information for the tourist management of heritage sites. Thus, it also supports our argument, that religion is a suitable indicator for the cultural proximity of societies. Mattila et al. (2001) investigate the influence of religion on tourism with another angle of view. They examine the impact of religion (and gender) on the behavior of college students during spring break holidays. Results indicate that Non-Catholic Christians (Protestants) have the lowest potential engaging in health-risk behavior (like excessive drinking) which is mostly an integral part of spring break holidays. This can explain the differences in these tourism flows within the USA.

Instead of undertaking case studies on specific religious influences on the tourism environment of sites or regions, we run a global panel estimation to get a more general insight into this relationship. The paper is organized as follows. While section

2 describes the model in detail, section 3 presents the data. The results will be discussed in section 4. Finally, section 5 concludes the paper.

2. The Model

In this paper, we estimate the impact of socio-geographical factors in the country of origin on tourism by using a gravity model. Founded by Newton, gravitation is the physical force that increases with mass and decreases with distance. In physics, the gravitation force F_{ij} between two bodies is given by:

(1) $$F_{ij} = G\frac{m_i m_j}{r_{ij}},$$

where G is the gravitational constant ($G = 6{,}674\,28\,(\pm 0{,}00067)\,10^{-11}\ {}^{\mathrm{m}^3}\!/_{\mathrm{kg\,s}^2}$), m_i is the mass of body i, m_j is the mass of body j and $d_{i,j}$ is the distance between i and j. In economics, gravity models have a long established history in the analysis of flow data, not least because of their strong empirical success in explaining international trade. In general, such models treat trade flows between two countries as being direct proportional to the product of their economic size (usually expressed as the absolute GDP) and inversely on the distance between them. The commonly used form of the model, developed independently by Tinbergen (1962) and Pöyhönen (1963), in international trade is:

(2) $$TX_{ij} = \beta_0 (Y_i)^{\beta_1} (Y_j)^{\beta_2} (D_{ij})^{\beta_3} f(A_{ij}) u_{ij}$$

where TX_{ij} is the (value) of the trade flow between country i and country j, Y_i respectively Y_j is the value of GDP in i (j), D_{ij} is the distance between (the capitals or the economic centers) of country i and j, $f(A_{ij})$ is a function of additional variables which either promote (e.g. sharing a trade block, a common cultural background) or constrain (e.g. tariffs, adjustment costs) the flow between i and j, and u_{ij} is a log-normally distributed error term (e.g. Tomkins and Twomey 2000, Durbarry 2000, Gil-Pareja et al. 2007). Durbarry (2000) and Gil-Pareja et al. (2007) conclude that with the exception of for instance Linneman (1966) or Bergstrand (1985), the equations estimated in the empirical literature have been ad hoc

specifications. Although, the first gravity models of trade come without a theoretical foundation, this has changed. Linneman (1966), Anderson (1979), Bergstrand (1985, 1989, 1990) and Helpman and Krugman (1985) assert that the gravity equation is a reduced form of a general equilibrium model in which countries' income represents the productive capacity of the exporter (supply side) and the absorptive capacity of the importer (demand side), and distance approximates transport costs. It was a fundamental finding as Bergstrand (1985) demonstrates that in a realistic assumption without a perfect international substitutability of goods in production and consumption, the gravity equation usually estimated omits some relevant price variables, implying a serious misspecification of the model. According to Eilât and Einav (2004) and Gil-Pareja et al. (2007), we therefore include the PPP conversion factor as a measure of the relative cost of living in the destination, with respect to the origin country. So we can take into account the variation in prices between the countries as well as the variation in real exchange rates over time. In addition to international trade flows, the gravity equation has also been applied to a range of ''social interactions'' such as migration, regional studies or foreign direct investment. The gravity model has also been applied in the field of tourism. The general specification form of the gravity model for econometric estimation (see e.g. Mátyás 1998, Durbarry 2000, Eilât and Einav 2004 or Gil-Pareja et al. 2007) takes the following form[1]:

$$\ln TA_{ijt} = \alpha_i + \lambda_j + \delta_t + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ij} + \beta_{ijt} A_{ijt} + u_{ijt}\,, \tag{3}$$

where TA as dependent variable is the absolute amount of tourists traveling from country i to country j in the year t; Y_{it} is the absolute GDP in the country of origin i in year t and Y_{jt} is the absolute GDP in the country of destination j in year t; D_{ij} is the geographical distance between (the capital of) country i and country j; and A_{ijt} are additional explanatory variables with variation in all three dimensions i, j and t. A_{ijt} is given as logarithmized variable, except for dummy variables. The variables α_i, λ_j and δ_t represents the country (country of origin i and country of destination j), respectively the time fixed effects as well as u_{ijt} represents the white noise disturbance term.

[1] As in all studies stated above, we solve the equation (2) by expressing the variables in natural logarithm.

Including a set of dummies and time invariant variables (above all for the distance between the two countries) in our gravity model, a country fixed effects panal estimation cannot be applied. In addition, the variable Y_{jt} (GDP of destination country) is cross-time fix, as we use the USA as the only country of destination (see section 3), so that we also cannot use period fixed effects. This is also not required, regarding the short time range of five years. Thus, we use a pooled panel least square estimation model, which however allows an increase in degrees of freedom and better estimators' large sample properties than an OLS estimation model (Sequeira and Campos 2005, see also Heath et. al 1995). A widely described problem in pooled panel estimations, with respect to fixed effects estimations, is the problem of omit variables (e.g. Cheng and Wall 2005). However, because of the structure of the gravity approach, we *must* include country (and time) constant variables and that is why we use pooled. Yet, as shown in section 4 the adjusted R-square in all estimations is comparatively high (with values of around 0.8); so that the dependent variable is described nearly complete by our explanatory variables; and the problem of omit third can be rejected. Furthermore, there should not be hidden endogeneity between the explanatory variables in our regression, as we use predominantly geographical variables which are strictly exogenous.[2] Another problem with fixed effects models is, according to Cheng and Wall (2005, pp. 54) that if '*It is in this sense that fixed-effects modeling is a result of ignorance: We do not have a good idea which variables are responsible for the heterogeneity bias, so we simply allow each trading pair to have its own dummy variable.'* As it is our intent to explain the heterogeneity in tourism demand within the world with exogenous socio-geographic variables, we cannot apply this ignorance. Instead, according to Wei and Frankel (1997), we endeavor to estimate the exact effects of geographical variables that are constant over the sample period. 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. Nevertheless, we run an additional random effects model in a sensitivity analysis, supporting the findings of the pooled panel estimation.

[2] The religion or language could be country GDP demanded, but this counts only in the very long run.

3 Data

Due to data availability, we use the USA as the only country of destination in our gravity analysis. For the USA the World Tourism Organization (2007) provides the most comprehensive country to country tourism flow data, not least because of the relative strict and comprehensive border control for security reasons since September 11, 2001. Furthermore, the USA is the worlds top tourism destination measured by absolute tourism receipts (number three in the world considering absolute number of tourism arrivals, see World Tourism Organization 2006), and cover nearly all types of tourism, because of its geographical dimension, natural und cultural richness and good infrastructure. With 208 countries of origin, one country of destination and a time period of 5 years (2001-2005) our regression analysis contains 1040 independent observations per variable.

This paper concentrates on the determinants of inbound tourism arrivals into the USA. The dependent variable in this study is flows of inbound tourism arrivals from 2001 till 2005, as reported by the World Tourism Organization (2007) for 208 countries. Of course, flows of tourism expenditures (respectively receipts) may be slightly superior to flows of tourism arrivals, as these flows do not control for either the length or the spending intensity (actual value consumed) of the tourist stay at the individual destination. However, wide ranged country to country (country to USA in our case) data of tourism expenditures as well as of receipts are insufficiently available at present to undertake estimations for a large panel of countries, and about all, they are often considered highly inaccurate (Zhang and Jensen 2007). For our study it is, according to Eilât and Einav (2004) and Zhang and Jensen (2007) necessary to accept that data on flows measured as tourism arrivals is in some aspects less valid as it only weakly quantifies what should be measured, but in other aspects a more valid indicator as it quite accurately measures tourism flows than receipts.

The most important exogenous variables are the value of absolute GDP (purchasing power parity) from 2001 till 2005 (IMF 2007) ($Ln\,GDP_{it}$ and $Ln\,GDP_{USA,t}$) and the distance between the capitals of the countries of origin and Washington, D.C. ($Ln\,DIST_{i,USA}$), which is measured via Google Earth. Other exogenous socio-economic and geographic variables are the following:

- the PPP conversion factor as a measure of the relative cost of living ($Ln\ PRICE_{i,USA,t}$) (variation in prices between the countries as well as the variation in real exchange rates) in the country of destination with respect to the origin one; source is IMF (2007) and Heston et. al (2006),
- the distance of the country of origin to the equator in degree of latitude ($Ln\ EQTR_i$) as a proxy for climate differences in the country of origin which may influence the decision of the destination, source is CIA (2007),
- the country area in square km ($Ln\ SIZE_i$) as an additional expression (besides GDP) of mass of the gravity model (according to Kimura and Lee 2006), source is CIA (2007),
- a dummy for national land borders ($BORD_i$) to the USA, as Canada and Mexico have a high border traffic with the USA,
- a dummy whether the country of origin is an island ($ISLAND_i$), as proxy for geographic insularity, source is CIA (2007)
- a dummy whether the country of origin is participant of the US Visa Waiver Program, which admit citizens of 27 countries traveling into the USA without a visa ($NOVISA_{it}$). Additionally we add Mexico, Canada and Bermuda as they have similar privileges to alleviate travel to the USA, and Puerto Rico, Guam and the US Virgin Islands as they are part of the United States. We use this as proxy for lesser travel formalities, source is US Department of State (2007),
- the World Bank governance indicators for Control of Corruption ($Ln\ CCOR_i$), Government Effectiveness ($Ln\ GOVEF_i$), Political Stability ($Ln\ POLST_i$), Regulatory Quality ($Ln\ REGQUA_i$), Rule of Law ($Ln\ LAW_i$) and Voice and Accountability ($Ln\ VOICE_i$); all as proxy for the safety of a destination. We use the mean of 2000, 2002 and 2004 as time constant variable for three reasons. First, this indicator is not available for the years 2001, 2003 and 2005; second institutions show a relatively high stability over the five years of interest and third this indicator is normalized at mean zero and a standard deviation of 2.5 for all countries each year (Kaufmann et. al 1999), so time series estimations are

impossible. In addition, to allow logarithm we step up the indicator to mean 2.5 with no negative observations. Source is Kaufmann et al. (2006),

As proxy for the variables of particular interest to us, namely the cultural proximity between country of origin and country of destination, we rely (according to the trade model of Heath et al. 1995) on the religious domination of a country because religion covers (beside the belief in God) a strong common cultural background. Additionally, we use a variable for a common language. In particular we apply:

- a dummy if more than the half of the population speaks English or English is the official language ($ENGL_i$), source is CIA (2007),
- and finally the religion preferences as dummy variables for countries where more than 60 per cent are Muslim ($RL-MUSL_i$), Christian ($RL-CHRS_i$) (in some regressions the dummy Christians will be divided in Protestants ($RL-CHPR_i$), Catholic ($RL-CHCA_i$), Orthodox ($RL-CHOR_i$) or strong Christian fragmentation/ separation ($RL-CHSP_i$) as described below) or Others (Buddhist, Hindu, Shinto, Jewish etc.) ($RL-OTHR_i$). We add a further dummy for a strong religious fragmentation and competition ($RL-CONFL_i$) (at least two religions with a membership of 20 per cent in relation to the population of a country), source is CIA (2007).

The descriptive statistics referring to all non dummy variables are reported in table 1.

Table 1: Descriptive statistics

	MIN	MAX	Mean	Median	Std-dev.	N
$Ln\ GDP_{it}$	-1.609	9.420	3.520	3.364	2.148	885
$Ln\ GDP_{USA,t}$	9.211	9.420	9.306	9.294	0.076	1040
$Ln\ DIST_{i,USA}$	6.593	9.676	8.950	9.054	0.555	1035
$Ln\ PRICE_{i,USA,t}$	-2.251	2.376	0.861	0.907	0.626	894
$Ln\ SIZE_i$	0.668	16.653	10.974	11.616	2.940	1030
$Ln\ EQTR_i$	-1.478	4.162	2.899	2.952	0.949	950

In order to detect possible endogenity, we applied a correlation matrix of the main explanatory variables (see table 2). However, no strong endogenity can be detected.

Table 2: Correlation Matrix

	$Ln\ GDP_{it}$	$Ln\ GDP_{USA,t}$	$Ln\ DIST_{i,USA}$	$Ln\ PRICE_{i,USA,t}$	$Ln\ SIZE_i$	$Ln\ EQTR_i$
$Ln\ GDP_{it}$	1.000	0.039	-0.013	-0.236	0.636	0.318
$Ln\ GDP_{USA,t}$	0.039	1.000	3.52E-18	-0.121	-2.32E-17	4.81E-19
$Ln\ DIST_{i,USA}$	-0.013	3.52E-18	1.000	0.302	0.077	-0.134
$Ln\ PRICE_{i,USA,t}$	-0.236	-0.121	0.302	1.000	0.172	-0.272
$Ln\ SIZE_i$	0.636	-2.32E-17	0.077	0.172	1.000	0.076
$Ln\ EQTR_i$	0.318	4.81E-19	-0.134	-0.272	0.076	1.000

4 Empirical Results

We seek to determine the drivers which are influence the amount of inbound tourism arrivals[3] of 208 countries into the USA between the year 2001 and 2005, as it is reported by the World Tourism Organization (2007). As described above, in our first regression we add further variables of interest, besides the in gravity models necessarily required variables absolute GDP in the countries of origin (expected sign positive) and the country of destination (expected sign negative), as well as the distance between these countries (expected sign negative).

First of all, we use the PPP conversion factor as a measure of the relative cost of living in the country of destination with respect to the country of origin ($Ln\ PRICE_{i,USA,t}$). With the USA as only country of destination, this variable shows the relative distance in the purchasing power of the country of origin and the USA. We

[3] The Word Tourism Organisation counts the tourism arrivals exclusively for leisure (not business) travel.

expect a negative sign, as high (relative-) prices in the country of destination deter people from traveling into this country. According to the trade gravity model of Kimura and Lee (2006), we add the country area ($Ln\ SIZE_i$) as an additional expression (besides GDP) of mass to the gravity model. We claim, because of the better availability of domestic tourism, that people in bigger countries travel lesser outside than people in smaller countries. We do not include population size as this variable is highly correlated with country area ($corr(pop, size) = 0.81$) as well as with the absolute country GDP ($corr(pop, gdp) = 0.85$). Furthermore, the country's distance to the equator in degree of latitude ($Ln\ EQTR_j$) as proxy for climate in the host country (no sign expected), is included in our estimation.

The other geographical variables are expressed as binary dummy variables, which take the value of one if the case is given otherwise zero: For national land borders ($BORD_j$) we expect a positive sign, as land borders reduce transportation costs. As in the most trade models (e.g. Gil-Pareja et. al 2007), we expect a negative sign for the island-dummy (Takes a value of one if the country of origin is an island) ($ISLAND_i$), as insularity increases transportation costs. The dummy for participant countries of the US visa waiver program ($NOVISA_{it}$), that alleviate travel formalities, should indicate a positive relation. Finally within this framework, we study the impact of cultural variables on tourism by including a dummy whether more than the half of the population speaks English, or English is the official language ($ENGL_i$) in the origin countries (expected sign positive, because of the better communication possibilities), and a dummy for each religion (no sign expected) respectively religion conflict (negative).

For a test of these variables, we fist apply the following pooled panel least square estimation:

Model 1)

$$\begin{aligned} Ln\ TA_{i,USA,t} &= ß_0 + ß_1 Ln\ GDP_{it} + ß_2 \ln GDP_{USA,t} + ß_3 Ln\ DIST_{i,USA} \\ &+ ß_4 Ln\ PRICE_{i,USA,t} + ß_5 Ln\ SIZE_i + ß_6 Ln\ EQTR_i + ß_7 NOVISA_{i,t} \\ &+ ß_8 BORD_i + ß_9 ISLD_i + ß_{10} ENGL_i + ß_{11} RL-MUSL_i + ß_{12} RL-CHRS_i \\ &+ ß_{13} RL-OTHR_i + ß_{14} RL-CONFL_i + u_{i,USA,t} \end{aligned}$$

In a second estimation, we omit the insignificant variable distance to equator to raise the number of observations. In the third and fourth (again without distance to equator) estimation, we run model 2), in which the Christian dummy is subdivided into Catholic, Protestant, Orthodox or a strong Christian fragmentation between this religious denominations.

Model 2)

$$\begin{aligned} Ln\,TA_{i,USA,t} &= ß_0 + ß_1 Ln\,GDP_{it} + ß_2 \ln GDP_{USA,t} + ß_3 Ln\,DIST_{USA,i} \\ &+ ß_4 Ln\,PRICE_{i,USA,t} + ß_5 Ln\,SIZE_i + ß_6 Ln\,EQTR_i + ß_7 NOVISA_{i,t} \\ &+ ß_8 BORD_i + ß_9 ISLD_i + ß_{10} ENGL_i + ß_{11} RL-MUSL_i + ß_{12} RL-CHPR_i \\ &+ ß_{13} RL-CHCA_i + ß_{14} RL-CHOR + ß_{15} RL-CHSP_i + ß_{16} RL-OTHR_i \\ &+ ß_{17} RL-CONFL_i + u_{i,USA,t} \end{aligned}$$

Table 3: Absolute amount of tourism arrivals in the USA

	I	II	III	IV
CONSTANT	38.573***	39.071***	37.716***	38.296***
	(7.084)	*(7.355)*	*(7.059)*	*(7.328)*
$Ln\,GDP_{it}$	0.961***	0.960***	0.966***	0.965***
	(26.861)	*(27.883)*	*(25.0806)*	*(26.493)*
$Ln\,GDP_{USA,t}$	-2.468***	-2.502***	-2.476***	-2.502***
	(-2.468)	*(-4.435)*	*(-4.377)*	*(-4.512)*
$Ln\,DIST_{i,USA}$	-0.954***	-0.974***	-0.894***	-0.919***
	(-10.613)	*(-11.215)*	*(-10.026)*	*(-10.678)*
$Ln\,PRICE_{i,USA,t}$	-1.016***	-1.072***	-0.996***	-1.052***
	(-9.844)	*(-10.562)*	*(-9.680)*	*(-10.371)*
$Ln\,SIZE_i$	-0.093***	-0.093***	-0.085***	-0.084***
	(-3.045)	*(-3.123)*	*(-2.700)*	*(-2.694)*
$Ln\,EQTR_i$	0.022		0.071	
	(0.433)		*(1.356)*	
$NOVISA_{it}$	-0.851***	-0.540***	-0.756***	-0.664***
	(-4.951)	*(-3.305)*	*(-4.420)*	*(-4.017)*
$BORD_i$	1.552***	1.256***	1.173***	1.188***
	(3.878)	*(3.099)*	*(2.949)*	*(2.965)*

$ISLAND_i$	0.395***	0.363***	0.237*	0.319**
	(3.113)	*(2.797)*	*(1.809)*	*(2.454)*
$ENGL_i$	0.802***	0.872***	0.788***	0.848***
	(6.977)	*(7.803)*	*(6.675)*	*(7.324)*
$RL - MUSL_i$	-0.349*	-0.292	-0.259	-0.176
	(-1.695)	*(-1.476)*	*(-1.270)*	(-0.899)
$RL - CHRS_i$	1.090***	1.025***		
	(5.317)	*(5.219)*		
$RL - CHPR_i$			1.566***	1.558***
			(5.885)	*(5.985)*
$RL - CHCA_i$			1.453***	1.414***
			(6.630)	*(6.694)*
$RL - CHOR_i$			0.310	0.438*
			(1.195)	*(1.839)*
$RL - CHSP_i$			1.167***	1.055***
			(5.378)	*(4.991)*
$RL - OTHR_i$	0.839***	0.917***	0.895***	0.992
	(3.676)	*(4.059)*	*(3.962)*	*(4.428)*
$RL - CONFL_i$	-0.098	-0.047	0.018	0.079
	(-0.736)	*(-0.364)*	*(0.889)*	*(0.619)*
R^2adj	0.7817	0.7738	0.7900	0.7815
N	803	858	803	858

Dependent variable is the absolute amount of Tourism Arrivals 2001 – 2005.
Absolute t-values in parenthesis.
* Significant at the 90 percent level.
** Significant at the 95 percent level.
*** Significant at the 99 percent level.

The results in table 3 do indeed support most of our expectations. The model fits the data very well by explaining almost 80 per cent of the variation of tourist flows. So, one can explain tourism flows in this gravity model with a high significance and goodness of fit. Also most of the estimated variables are in general statistically significant, with interesting interpretations. The gravity variables of mass and distance show the expected sign: Tourism flows into the USA increases with the GDP of the country of origin (with a very high t-value of more than 26), while the

absolute GDP in the host country and the distance between both countries causes the opposite. More interesting for our analysis are the additional variables. The relative cost of living in the country of destination with respect to the country of origin ($Ln\ PRICE_{i,USA,t}$) or in other words, the relative distance in the purchasing power of the country of origin and the USA plays apparently a major role in the decision-making process of international travelers, as it affects tourism flows negatively. While distance to equator is not significant, the variables size (The larger a country is, the less attractive is it for inhabitants to travel outside), the dummy for land border (Most people prefer short and cheap ways to their holiday destination) and the dummy for English as main language (Besides the better communication possibilities, this is an expression of the preferred cultural proximity) influences the tourism arrivals into the USA, as proposed. Two variables show a significant unexpected sign, the island dummy and the dummy for participants of the US Visa Waiver Program. We reason that, opposed the most other gravity models of international trade, being an island as origin country is not negative for outbound tourism, as tourists are interested in other natural experiences. While islands for the most tourists are preferred destinations (see Freytag and Vietze 2007), tourists *from* island-countries obviously favor the widespread landscape of the United States. The negative impact of the Visa Waiver Program (VWP) is astonishing. We guess, that is because our other explanatory variables have a stronger impact on tourism flows; especially the dummies for religion, English language and land border. In the most instances, these countries are also participants of the VWP. A second possible reason could be the small size of the most VWP-countries (e.g. Liechtenstein, Luxembourg, Andorra, Austria, Singapore) which come along with low tourism departures and therefore can cause a negative impact in our analysis. The religion dummies – the parameters of special interest because they cover also a common cultural background – give the hint that cultural factors play an important role in the decision to travel into a country or not. While people from Christian and other non Muslim or Christian countries (Buddhist, Hindu, Shinto, Jews etc. that cover important "western-oriented" countries of origin like China, India, Japan and Israel[4]) prefer the USA as holiday destination, people from Muslim countries do not[5]. A division of the Christian countries into several

[4] Moreover, these countries have a significant Diaspora in the United States.

[5] It may be possible that this is also a result of the stronger US entry requirements for people of Muslim countries since September 2001.

confessions did not add much additional explanation power to our model, albeit one can see that people from Orthodox countries (mainly Eastern Europe countries) demand lower outbound tourism into the USA. Together with the strong positive impact of the English language this heightened our impression, that for the majority of tourists the destination choice for a holiday country is rather driven by the demand for cultural similarity to the home country, than by the desire to experience quite different other cultures. Presumably, this shows the people's inherent fear of the new and the other.

In the following, we analyze whether this finding is also statable for governmental indicators which indicate civil and political rights. Here, we test the interaction of a same political background more directly. We use the World Bank Governance Indicators as proxy for institutions. We claim that good institutions in the country of origin have a positive impact on the absolute amount of US tourism arrivals from the respective country, as freedom to travel is a part of political freedom. We do not use $Ln\ DIST_{i,USA}$, $Ln\ CCOR_i$, $Ln\ GOVEF_i$, $Ln\ LAW_i$, $Ln\ POLST_i$, $Ln\ REGQUA_i$ and $Ln\ VOICE_i$ simultaneous in the same estimation, because they are highly correlated. While these government indicators are also highly correlated with GDP per capita (see also Freytag and Vietze 2007 and Vietze 2008), this does not count for the correlation with the current used variable absolute GDP. That is why we can not use these estimators together in the following model:

Model 3)
$$\begin{aligned} Ln\ TA_{i,USA,t} &= ß_0 + ß_1 Ln\ GDP_{i,t} + ß_2 \ln GDP_{USA,t} + ß_3 Ln\ DIST_{i,USA} \\ &+ ß_4 Ln\ PRICE_{i,USA,t} + ß_5 Ln\ SIZE_i + ß_6 Ln\ EQTR_i + ß_7 NOVISA_{i,t} \\ &+ ß_8 BORD_i + ß_9 ISLD_i + ß_{10} ENGL_i + ß_{11} RL-MUSL_i + ß_{12} RL-CHRS_i \\ &+ ß_{13} RL-OTHR_i + ß_{14} RL-CONFL_i + ß_{15} Ln\ CCOR_i + ß_{16} Ln\ GOVEF_i \\ &+ ß_{17} Ln\ LAW_i + ß_{18} Ln\ POLST_i + ß_{19} Ln\ REGQUA_i + ß_{20} Ln\ VOICE_i + u_{i,USA,t} \end{aligned}$$

Table 4: Institutions and tourism arrivals in the United States

	I	II	III	IV	V	VI
CONSTANT	34.689***	34.410***	34.330***	33.474***	32.986***	34.526***
	(6.588)	*(6.556)*	*(6.545)*	*(6.394)*	*(6.500)*	*(6.743)*
$Ln\ GDP_{it}$	0.922***	0.886***	0.912***	0.950***	0.884***	0.925***
	(26.856)	*(24.887)*	*(26.305)*	*(27.675)*	*(26.254)*	*(27.827)*
$Ln\ GDP_{USA,t}$	-2.171***	-2.130***	-2.115***	-2.005***	-2.088***	-2.199***
	(-3.899)	*(-3.835)*	*(-3.814)*	*(-3.625)*	*(-3.892)*	*(-4.056)*
$Ln\ DIST_{i,USA}$	-1.024***	-1.028***	-1.054***	-1.009***	-0.934***	-0.972***
	(-12.021)	*(-12.111)*	*(-12.352)*	*(-11.512)*	*(-11.304)*	*(-10.912)*
$Ln\ PRICE_{i,USA,t}$	-0.755***	-0.761***	*-0.724****	-0.745***	-0.741***	-0.810***
	(-6.892)	*(-7.064)*	*(-6.513)*	*(-7.224)*	*(-7.324)*	*(-7.952)*
$Ln\ SIZE_i$	-0.031	-0.024	-0.022	-0.050*	-0.010	-0.057*
	(-1.025)	*(-0.789)*	*(-0.704)*	*(-1.661)*	*(0.353)*	*(-1.962)*
$NOVISA_{it}$	-0.851***	-0.777***	-0.786***	-0.458***	-0.700***	-0.645***
	(-4.951)	*(-4.667)*	*(-4.735)*	*(-2.960)*	*(-4.481)*	*(-4.108)*
$BORD_i$	1.552***	1.513***	1.433***	1.216***	1.221***	1.229***
	(3.878)	*(3.806)*	*(3.614)*	*(3.240)*	*(3.186*	*(3.162)*
$ISLAND_i$	0.395***	0.390***	0.404***	0.439***	0.432***	0.243*
	(3.113)	*(3.080)*	*(3.192)*	*(3.349)*	*(3.515)*	*(1.937)*
$ENGL_i$	0.749***	0.726***	0.772***	0.693***	0.779***	0.817***
	(6.774)	*(6.564)*	*(7.026)*	*(6.049)*	*(7.339)*	*(7.607)*
$RL - MUSL_i$	-0.216	-0.274	-0.235	-0.023	-0.272	-0.220
	(-1.114)	*(-1.419)*	*(-1.215)*	*(-0.121)*	*(-1.453)*	*(-1.158)*
$RL - CHRS_i$	1.023***	0.974***	1.011***	1.174***	0.851***	0.642***
	(5.327)	*(5.080)*	*(5.280)*	*(6.363)*	*(4.554)*	*(3.317)*
$RL - OTHR_i$	0.840***	0.778***	0.806***	0.981***	0.738***	0.789***
	(3.788)	*(3.505)*	*(3.645)*	*(4.666)*	*(3.441)*	*(3.637)*
$RL - CONFL_i$	-0.050	-0.047	0.100	0.084	-0.016	-0.023
	(-0.396)	*(-0.377)*	*(0.791)*	*(0.669)*	*(-0.136)*	*(-0.191)*
$Ln\ CCOR_i$	1.067***					
	(6.020)					

$Ln\ GOVEF_i$		1.104*** *(6.461)*				
$Ln\ LAW_i$			1.087*** *(6.219)*			
$Ln\ POLST_i$				0.458*** *(5.637)*		
$Ln\ REGQUA_i$					1.126*** *(9.661)*	
$Ln\ VOICE_i$						1.119*** *(8.659)*
R^2adj	0.7865	0.7879	0.7865	0.7868	0.7990	0.7921
N	848	848	853	767	853	858

Dependent variable is the absolute amount of Tourism Arrivals 2001 – 2005.
Absolute t-values in parenthesis.
* Significant at the 90 percent level.
** Significant at the 95 percent level.
*** Significant at the 99 percent level.

The interpretation of table 4 is fairly simple, as it confirms our expectations. The existence of good institutions in the countries of origin seems to have a positive impact on the absolute amount of US tourism arrivals. People in countries with a high level of civil rights, stable and effective governance, less but sensible regulation, low corruption and a high level of freedom to speak decide to travel more into the USA than such with bad institutions. First, one can see that the demand to travel abroad is directly affected by a high level of civil rights and political freedom. In other words, freedom of travel is an immediate outcome of political freedom. Second, as the USA have very high governmental rankings, this circumstantiates our argument above that people deciding go to holiday in countries with a similar cultural and political background.[6]

Sensitivity analysis

In a sensitivity analysis (see table 5), we run an additional random effects model. Our aim is to prove, if the findings of the estimations above hold stabile a chance of the estimation model. As described in section 2, we cannot use a cross section (or cross

[6] 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.

period) fixed effects model. That is why we use our principal estimation Model 1) (including distance to equator) with cross section random effects. We run also Model 2) and Model 3) with the same outcome as in Model 1), but forgo printing this results as the additional variables of interest (confession dummies in Model 2) and institution dummies in Model 3)) show the same – significant – sign, as in the pooled panel model.

Table 5: Sensitivity Analysis

	I (Pooled Panel)	**II (Random Effects Model)**
CONSTANT	38.573*** *(7.084)*	32.051*** *(2.527)*
Ln GDP_{it}	0.961*** *(26.861)*	0.919*** *(12.413)*
Ln $GDP_{USA,t}$	-2.468*** *(-2.468)*	-1.757*** *-11.601*
Ln $DIST_{i,USA}$	-0.954*** *(-10.613)*	-1.089*** *(-5.418)*
Ln $PRICE_{i,USA,t}$	-1.016*** *(-9.844)*	-0.255*** *(-3.375)*
Ln $SIZE_i$	-0.093*** *(-3.045)*	-0.095 *(-1.475)*
Ln $EQTR_i$	0.022 *(0.433)*	0.078 *(0.690)*
$NOVISA_{it}$	-0.851*** *(-4.951)*	0.187 *(0.547)*
$BORD_i$	1.552*** *(3.878)*	1.065 *(1.163)*
$ISLAND_i$	0.395*** *(3.113)*	0.307 *(1.052)*

$ENGL_i$	0.802***	0.817***
	(6.977)	*(3.154)*
$RL - MUSL_i$	-0.349*	-0.052
	(-1.695)	*-0.114*
$RL - CHRS_i$	1.090***	1.412***
	(5.317)	*(3.114)*
$RL - OTHR_i$	0.839***	1.085**
	(3.676)	*(2.137)*
$RL - CONFL_i$	-0.098	*0.036*
	(-0.736)	*(0.120)*
R^2adj	0.7817	-
wght. R^2adj	-	0.4047
random effects	-	x
N	803	803

Dependent variable is the absolute amount of Tourism Arrivals 2001 – 2005.
Absolute t-values in parenthesis.
* Significant at the 90 percent level.
** Significant at the 95 percent level.
*** Significant at the 99 percent level.

The results above support the strength of our findings. Except of the dummy for the US Visa Waiver Program ($NOVISA_{it}$), which shows the opposite, but also insignificant sign, all other main variables remain, with, however, sometimes lower t-values, as in our pooled panel model. Hence, the random effects model also underpins that the amount of absolute tourism arrival into the United States will be influenced positively by the absolute GDP, English as main language and a non Muslim religion (Christian, Buddhist, Hindu, Shinto and Jewish) all in the country of origin; and will be influenced negatively by the geographical distance, the relative distance in the purchasing power between the two countries, the absolute GDP in the USA, and the size of the country of origin. This supports the findings of our the preferred pooled panel model.

5 Summary and Conclusions

In this paper we discuss the effects of cultural – and particularly religious – factors on tourist flows into the USA as the world largest tourism destination. To estimate this empirically, we run an augmented gravity equation. Besides the basic variables size (country's GDP) and distance (distance between the capitals of the countries of origin and Washington, D.C) we include a set of variables that allows us to control for other important exogenous determinants of international tourism flows (the use of a common language (English); island and border status; special visa facilities; the relative costs of living; the governance situation; etc.). Our results give evidence that the gravity equation is an excellent instrument to explain variations in international tourist flows.

Go tourists on holiday to become acquainted with foreign cultures? Rather not! So, with respect to the aim of the paper, we have found that cultural proximity between country of origin and country of destination have positive effects on the tourism flows between these countries. In particular, after controlling for a set of geographic variables, people from countries with the same language (English) and the same high governmental rankings like the USA, show a higher demand for traveling into the USA for holiday than people from other countries. Above all, we have clear and stable evidence that tourists coming from Christian – and here particular from Catholic and Protestant – countries, prefer the USA as holiday destination much stronger than people from Muslim countries. As a common religion covers a strong common cultural background, these supports our argument that people wishing to go on holiday to countries with a similar cultural and political background. We think, this result is not surprising, as it shows the people's inherent fear of the new and the other.

Further research is necessary to extend the sample to learn more about other countries of destination. Nevertheless, our results give us a direct and crucial hint that culture and religion may play an important role in explaining international trade relations.

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Appendix A: Countries included in the Analysis

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

References

Anderson, J. E. (1979), 'A theoretical foundation to the gravity equation', *American Economic Review* 69: 106-116.

Bergstrand, J.H. (1985), 'The gravity equation in international trade: Some microeconomic foundations and empirical evidence', *Review of Economics and Statistics* 67: 474-481.

Bergstrand, J.H. (1989), 'The generalised gravity equation, monopolistic competition, and the factor proportions theory in international trade', *Review of Economics and Statistics* 71: 143-153.

Bergstrand, J.H. (1990), 'The Heckscher–Ohlin–Samuelson model, the Linder hypothesis, and the determinants of bilateral intra-industry trade', *Economic Journal* 100: 1216-1229.

Brau, R., A. Lanza and F. Pigliaru (2003), 'How fast are the Tourism Countries Growing? The Cross-Country Evidence. Fondazione Eni Enrico Mattei Working Paper Series, NOTA DI LAVORO 85.2003.

Central Intelligent Agency (CIA) (2007), 'The World Factbook 2007', http://www.cia.gov/cia/publications/factbook/ index.html, internet research of December 21, 2007.

Cheng, I.-H. and J. Wall (2005), 'Controlling for Heterogeneity in Gravity Models of Trade and Integration', *Federal Reserve Bank of St. Louis Review* 87(1): 49-63.

Cohen, E.H. (2003), 'Tourism and Religion: A Case Study – Visiting Students in Israeli Universities', *Journal of Travel Research* 42: 36-47.

Deloitte&Touch, International Institute for Environment and Development (iied) and Overseas Development Institute (odi) (1999), 'Sustainable Tourism and Poverty Elimination Study, A Report to the Department for International Development', London: Deloitte&Touch, iied, odi.

Durbarry, R. (2000), 'Tourism Expenditures in the UK: Analysis of Competitiveness using a Gravity-Based Model', Christel DeHaan Tourism and Research Institute, Nottingham University and Business School.

Eilât, Y. and L. Einav (2004), 'Determinants of International Tourism: A Three-Dimensional Panel Data Analysis', *Applied Economics* 36: 1315-1327.

Freytag, A. and C. Vietze (2007), 'Biodiversity, International Tourism and Development', *Jena Economic Research Paper* 12/2007: 1-23.

Gil-Pareja, S., R. Llorca-Vivero, J.A. Martínez-Serrano (2007), 'The impact of embassies and consulates on tourism', *Tourism Management* 28: 355-360.

Heath, W.C., M.S. Waters and J.K. Watson (1995), 'Religion an economic welfare: An empirical analysis of state per capita income', *Journal of Economic Behavior and Organization* 27(1): 129-142.

Helpman, E. and P. Krugman (1985), 'Market structure and foreign trade. Increasing returns, imperfect competition, and the international economy', Cambridge, MA: MIT press.

Heston, A., R. Summers and B. Aten (2006), 'Penn World Table Version 6.2.', Pennsylvania: Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

International Monetary Fund (IMF) (2007), 'World Economic Outlook October 2007, Database', http://www.imf.org/external/pubs/ft/weo/2005/02/data/index.htm, internet research of January 08, 2008.

Kaufmann, D., A. Kraay and M. Mastruzzi (2006), 'Governance Matters V: Governance Indicators for 1996-2005, Governance Matters V Excel Dataset', Washington, DC: The World Bank.

Kaufmann, D., A. Kraay, P. Zoido-Lobaton (1999), 'Governance Matters', Policy Research Working Paper 2196, Washington: The World Bank.

Kimura, F. and H.-H. Lee (2006), 'The gravity equation in international trade in services', Review of world economics 142(1): 92-121.

Linnemann, H. (1966), 'An econometric study of international trade flows', Amsterdam: North-Holland.

Lim, C. (1997), 'Review of international tourism demand models', *Annals of Tourism Research* 24(4): 835-849.

Mátyás, L. (1998), 'The Gravity Model: Some Economic Considerations', *The World Economy* 21(3): 397-401.

Mattila, A., Y. Apostolopoulos, S. Sonmez, L. Yu and V. Sasidharan (2001), 'The Impact of Gender and Religion on College Students' Spring Break Behavior', *Journal of Travel Research* 40: 193-200.

Neto, F. (2003), 'A new approach to sustainable tourism development: Moving beyond environmental protection', *Natural Resources Forum* 27 (3): 212–222.

Poria, Y., R. Butler and D. Airey (2003), 'Tourism, Religion and Religiosity: A Holy Mess', *Current Issues in Tourism* 6(4): 340-363.

Pöyhönen, P. (1963), 'A tentative model for the volume of trade between countries', *Weltwirtschaftilches Archiv* 90: 93-99.

Sequeira, T.N. and C. Campos (2005), 'International Tourism and Economic Growth: A Panel Data Approach', Fondazione Eni Enrico Mattei Working Paper Series, NOTA DI LAVORO 141.2005.

Sinclair, T. (1998), 'Tourism and Economic Development: A Survey', *The Journal of Development Studies* 34(5):1-51.

Singh, S. (2004), 'Religion, Heritage and Travel: Case References from the Indian Himalayas', *Current Issues in Tourism* 7(1): 44-65.

Tinbergen, J. (1962), 'An analysis of world trade flows', In: J. Tinbergen (eds.) (1962), 'Shaping the world economy' (Appendix VI), New York: Twentieth Century Fund.

Tomkins, J.M. and J. Twomey (2000), 'Occupational Mobility in England', *Applied Economics* 32: 193-209.

US Department of State (2007), 'Visa Waiver Program (VWP)', http://travel.state.gov/visa/temp/without/without_1990.html, internet research of January 08, 2008.

Vietze C. (2008), 'What's pushing International Tourism expenditures?', mimeo, Jena: Friedrich-Schiller-University Jena.

Vukonic, B. (1996), 'Tourism and Religion', Exeter: Pergamon Press.

Wei, S.-J. and J.A. Frankel (1997), 'Open versus Closed Trading Blocs', in: T. Ito and A.O. Krueger (eds.) (1997), 'Regionalism versus Multilateral Trade Arrangements', Chicago: University of Chicago Press: 119-39.

World Tourism Organization (2006), 'Tourism Highlights 2006 Edition', Madrid: UNWTO.

World Tourism Organization (2007), 'Yearbook of Tourism Statistics: Data 2001-2005, CD ROM', Madrid: UNWTO.

Zhang, J. and C. Jensen (2007), 'Comparative Advantage: Explaining Tourism Flows', *Annals of Tourism Research* 34(1): 223-243.