Determinants of Korean Outbound Tourism

Young Seaon Park

***Abstract*—This paper estimates the determinants of Korean outbound tourism applying a gravity model to 53 destination countries over 9 years. The results show that the gravity model explains Korean tourism flows as effectively as it explains trade flows. Tourism flows respond strongly to the price differences between Korea and destination countries and the presence of direct flights shows a positive sign with statistical significance. When destination countries are divided into two groups, OECD and others, Korean tourists are less price-sensitive to trips to OECD countries than they are to other countries. The significance of the distance factor in Korean overseas tourism continues and has increased over the years.**

***Index Terms*—Korea, tourism, panel data regression, gravity model.**

I. Introduction

The tourism industry has come into the spotlight as one of the biggest and fastest growing economic sectors and thus each country has been fiercely competing to attract foreign tourists. According to the United Nations World Tourism Organization (UNWTO) the number of world tourists in 2013 increased 5% from the previous year, reaching 1087 million despite the unstable world economy and all kinds of disasters such as typhoons and earthquakes [1]. Also, UNWTO estimates that the amount of international tourism receipts in 2013 is 1.1 trillion dollars, which is almost equivalent to the GDP of South Korea in the same year.

Given the importance of the tourism industry for the global economy, it is natural to look into the determinants of tourism flows and their economic impacts. A little research on related literature reveals that most of the studies conducted on the causal relationship between tourism and economic growth are of major tourists destination countries such as Spain [2], Greece [3], Turkey [4], and Cyprus [5] or of less developed countries with the tourism induced growth potential such as African countries [6] and Latin American countries [7], [8].

The studies on the determinants of tourism flows are even more numerous and diverse. Lim [9] investigated 100 previously published empirical studies on international tourism demand, and Li [10] reviewed the published studies on tourism demand modelling and forecasting since 2000. Using comprehensive data on the international tourism with the gravity model approach, Culiuc [11] found that the pattern and determinants of international tourism flows are almost identical to those of international trade flows.

Whereas most of the case studies on the international tourism focus on inbound tourism, the number of studies on outbound tourism is few. One reason might be the close linkage between the findings of the case studies and their policy implementations. Studies on inbound tourism can, with ease, produce useful insights and policy implications while studies on outbound tourism have more difficulty in any practical use. Another reason why there are scarce case studies on outbound tourism is that data on outbound tourists are harder to get than data on inbound tourists. For example, South Korean government has altogether stopped collecting information on outbound tourists from 2006.

With such a background in mind, this paper attempts to analyze the determinants of South Korean outbound tourism with a particular consideration of the distance factor between South Korea and destination countries. Since South Korea has been in chronic deficit of tourism balance of payments for the last three decades, a serious analysis of South Korean outbound tourism seems necessary and proper in terms of both intellectual curiosity and policy implications. Even in this narrow research topic there are a few previous studies to be mentioned. Lim [12] investigated the seasonal patterns of tourist arrivals from South Korea to Australia using time series modelling. Lim found that international tourism demand by South Korea is both income elastic and price elastic. Mo [13] used the GARCH volatility model to investigate whether the exchange rate volatility weakened the South Korean international tourism demand and showed that the exchange rate volatility had a negative effect on tourism demand. Seo *et al*. [14] investigated the relationships of South Korean outbound tourism demand among seven countries using the Granger causality method. Their results show that top-ranked outbound destinations by South Koreans had either unidirectional or multi-directional causal relationships.

The unique features of this paper different from the above or other studies on South Korean outbound tourism are as follows: i) the comprehensive data usage encompassing 53 destination countries over 9 year-period; ii) the adoption of the gravity model from the realm of the international trade; iii) special focus on the changing significance of the distance factor over time; and iv) a special consideration of the data selection issues.

The paper finds that Korean outbound tourism also follows a similar pattern of the gravity model analysis of the international trade. The GDP variable shows positive relations with the number of tourists and the distance variable shows strong negative relations as expected. The analyses of other variables such as Korean export to the destination countries, relative price, and the presence of direct flights also provide useful insights.

The structure of this paper is constructed as follows. The next section describes the Korean outbound tourism and relevant data. Section III explains the study's empirical methodology. Section IV discusses the empirical results, and

Manuscript received November 24, 2014; revised January 25, 2015.

Young Seaon Park is with the Faculty of Economics, Chulalongkorn University, Thailand (e-mail: yspark@kotra.or.kr).

DOI: 10.7763/JOEBM.2016.V4.373

the last section concludes.

II. Data

1989 was a special year for Korean tourism industry because Korean government completely relaxed the travel restrictions for pleasure overseas travel in the same year. The number of Korean outbound tourists jumped up 67.3% in 1989, exceeding one millions for the first time. The number continually increased over the years surpassing five millions in 2000 and ten millions in 2005. After 1995 the number of Korean outbound travelers has exceeded the number of inbound foreign travelers except for the 1998-1999 periods of Asian financial crisis [15].

With regard to tourism receipts the data show a similar pattern. Korea has been in chronic deficit from 1982 until present with a brief exception of 1998-2000 periods. According to the data from UNWTO, Korea is ranked 14th in terms of tourist expenditure with 21.7 billion dollars and 22nd in terms of tourism receipts with14.3 billion dollars in 2013 [15].

Fig. 1 shows the trend of Korean tourism in terms of the number of tourists during 2004-2013 periods. The sharp decline of Korean outbound tourism in 2008-2009 periods is mainly due to the world financial crisis and the devaluation of the Korea currency.

Korean government altogether stopped collecting the information of outbound tourists in 2006, so the data on Korean outbound tourists only come from the destination countries. When destination countries collect the information of inbound tourists there is no uniform way of measurements equivalent to the customs clearance of manufactured goods. Some countries measure tourist arrivals at the border, but others measure hotel arrivals. Country practices also differ in terms of determining the origin of the tourists; some countries report frontier arrivals by nationality and others by residence. The difficulty of acquiring accurate tourist information is also aggravated because most countries, when publishing the data on tourist arrivals, pay attention to countries with large number of tourists but ignore those with small number of tourists.

Notwithstanding the difficulty in acquiring comprehensive tourism data, this paper analyzes the panel data of Korean outbound tourists provided by Korea Tourism Organization which encompasses 53 destination countries during 2004-2012 periods. A distinction is made between tourist arrivals to OECD countries and the remaining countries. This is done to capture the differences in demand patterns between the two destination groups. Concerning the relative prices, as is common in tourism demand studies, this paper uses relative Consumer Price Index (CPI) of destination countries against the origin country adjusted by the relative dollar exchange rate as a proxy for price differences [16]. The formula can be expressed as follows,

$$Price_{od} = \frac{CPI_d / CPI_o}{Exchange_d / Exchange_o}$$

where *o* stands for the origin country and *d* for the destination country.

The distance variable represents travel costs. Since distance does not measure changes in travel costs over time, year dummies are included in the specifications. This paper also measures the impact of distance on tourism over time by comparing tourism in early years (2004-2006) with later years (2010-2012). Korean export of goods to destination countries can proxy business travels.

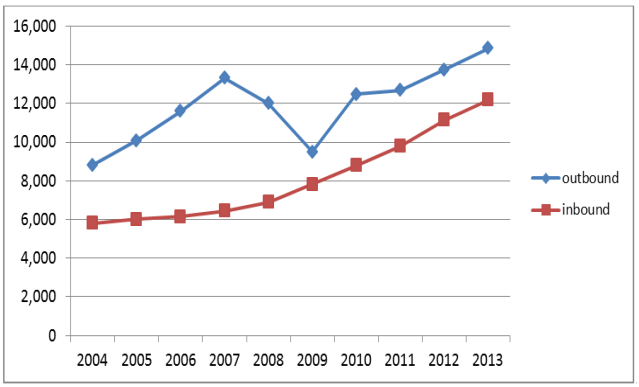

Fig. 1. Korean inbound and outbound tourists (unit: thousand people). Source: Korea Tourism Organization.

TABLE I: Data Description

Variables	Obs	Mean	Std.Dev.	Min.	Max.
$Tourist_{odt}$ (Number of tourists)	389	285,432.4	671,518	0	4,776,752
GDP_{ot} ($ amount)	477	1,022,778	142,183.4	765,000	1,220,000
GDP_{dt} ($ amount)	477	790,157.3	2,198,658	240	16,200,000
$Distance_{od}$ (km)	477	8,079.1	4,275.9	371.27	18,341.4
$Export_{odt}$ ($ million)	477	5,873	15,047.8	2	134,323
$Price_{odt}$	458	440.1	580.3	0.03	2,511.26
$Airline_{odt}$	477	0.49	0.50	0	1
$Open_{dt}$	477	21.51	148.91	0	1219.74
$Homicide_{dt}$	477	7.55	11.05	0.2	62.4

Table I shows the description of data on each variable. Macroeconomic data such as GDP, CPI, exchange rates, trade volume, and the rate of intentional homicide come from World Development Indicators. Data on Korean export to destination countries are from Korea International Trade Association (www.kita.net). Distance data measured in kilometers between the Korean capital city, Seoul, and the capital cities of destination countries are from the Mapcrow website (www.mapcrow.info). The presence of direct flights between Korea and destination countries, a non-standard gravity dummy variable, is also introduced because direct flight connections are found to have a positive impact on the number of tourist arrivals [17], [18]. The data on the presence of direct flights come from Korea Airports Corporation (www.airport.co.kr). The usual variables appearing in the most studies on international trade such as FTAs, common language, colony, common borders, and landlocked are excluded because this paper deals with unilateral tourist flows from Korea and so the above mentioned variables are not relevant in this case.

III. Empirical Strategy

This paper adopts the gravity model for the empirical analysis of Korean outbound tourists. The gravity model is originated from the studies of international trade and it has also been adopted in the other field of interests; Gravity equations were adopted to explain cross border portfolio investment patterns [19], international finance [20], service offshoring [21], and foreign direct investment [22], [23].

Recently gravity model has also been used in the study of international tourism. Johan and Santana-Gallego [24] investigated in the determinants of African tourism using a standard panel gravity equation. They identified the factors that drive African-inbound and within-African tourism and found that the determinants of African-inbound and within-African tourism are not much different from global tourism flows. Archibald *et al.* [25] employed a gravity model to assess the competitiveness of Caribbean. They found that the long-term trend in tourist arrivals can be influenced by the destination's capacity and price level relative to the origin country and competing destinations, as well as exchange rate and airfare fluctuations. The most recent and comprehensive study on international tourism using the gravity model is conducted by Culiuc [11]. He applied the gravity model to a large dataset comprising the full universe of bilateral tourism flows spanning over a decade. The results show that the gravity model explains tourism flows as effectively as manufactured goods trade.

Since Tinbergen [26] introduced it, the gravity model has been a workhorse for analyzing international trade flows. With the publication of Eaton and Kortum [27] and Anderson and van Wincoop [28], it is evaluated that the conventional wisdom of gravity equations lacking micro-foundations was finally dismissed since neither model relied on imperfect competition or increasing returns [29].

When adopting the gravity equation for international tourism, it is necessary to compare the directions of goods (tourists) and revenue (tourism receipts) flows. The goods and revenue move against each other in the traditional trade whereas tourists move to the destination countries and spend expenses there.

Adopted for tourism, the gravity equation has the following multiplicative form:

$$X_{od} = GS_o M_d \phi_{od}$$

where X_{od} is the tourist flows from o to d, S_o denotes origin country specific factors such as GDP that represent total origin country's tourism demand and M_d represents destination country's factor conditions. G is a constant variable that does not depend on o or j. Lastly, ϕ_{od} represents the ease of tourist movements from the origin country to the destination country.

Taking into consideration of multilateral resistance, Anderson and van Wincoop [28] show that a well specified theoretically founded gravity equation takes the form:

$$X_{od} = \frac{Y_o Y_d}{Y}\left(\frac{t_{od}}{\Pi_o P_d}\right)^{1-\sigma}$$

where Y denotes world GDP, Y_o and Y_d the GDPs of countries o and d respectively, t_{od} is the cost in o of travelling to d, $\sigma > 1$ is the elasticity of substitution and Π_o and P_d represent origin and destination ease of market access or multilateral resistance terms.

The standard procedure for a gravity estimation is to take the natural logarithms of all variables and obtain a log-liner equation. This yields the following estimation equation:

$$lnX_{od} = lnG + lnS_o + lnM_d + ln\phi_{od}$$

and more specifically in the case of the Anderson and van Wincoop model:

$$lnX_{od} = \beta_0 + \beta_1 lnY_o + \beta_2 lnY_d + (1-\sigma)(\beta_3 lnt_{od} + \beta_4 ln\Pi_o + \beta_5 lnP_d) + \varepsilon_{od}$$

where β_0 is a constant and ε is the error term.

For the analysis of Korean outbound tourism, adopting and modifying the above equation the following model is estimated:

$$lnX_{odt} = \beta_0 + \beta_1 lnGDP_{ot} + \beta_2 lnGDP_{dt} + \beta_3 lnDist_{od} + \beta_4 lnExport_{odt} + \beta_5 Price_{odt} + \beta_6 Airline_{odt} + \gamma_d + \delta_t + \varepsilon_{odt}$$

where o indicates the origin country (Korea), d the destination country and t is time; ln denotes natural logarithms; X_{odt} is the flow of Korean outbound tourists in t period; GDP_{ot} and GDP_{dt} are GDPs of Korea and destination countries respectively; $Dist_{od}$ is the distance between Korea and destination countries; $Export_{odt}$ is Korean export to destination countries; $Price_{odt}$ is the relative consumer price of destination country against that of Korea adjusted with the respective exchange rates; $Airline_{odt}$ is a dummy variable denoting the presence of direct flights from Korea to the destination country; γ_d and δ_t are destination and year fixed effects respectively and ε_{odt} is a well-behaved disturbance term.

Pooled Ordinary Least Squares (OLS) is a commonly included estimator for panel data gravity equations. However, OLS can provide inconsistent and inefficient estimates if there exists unobserved heterogeneity. In this case, the fixed-effects (FE) estimator delivers a better estimations but FE does not allow the estimation of time-invariant variables. A way to overcome this problem is to introduce country fixed-effects for the origin and destination countries [29], [30].

In addition to OLS, this paper also applies the Arellano-Bond GMM estimator to deal with dynamics of the panel data. The dynamic panel data analysis can deal with problems arising from endogenous variables such as time-invariant country characteristics correlated with the explanatory variables, and panel data with a short time dimension and a larger country dimension [31]. The Arellano-Bond system GMM estimator allows endogeneity in some explanatory variables. This paper considers the following variables as endogenous: the lagged dependent variable, GDPs of origin and destination countries, Korean export to destination countries. Lagged endogenous regressors are used as instruments and openness (trade volume over GDP) of the destination countries is separately

used as an additional instrument variable.

IV. Estimation Results

A. Baseline Results

The OLS, fixed effects, and Arellano-Bond system GMM estimation results are reported in Table II. OLS (1) does not include fixed effects of destination and year dummies while OLS (2) includes all of them. Adjusted R^2 shows that OLS (2) is a much improved estimator than OLS (1). The coefficients of the OLS (2) and FE are identical while the standard errors are a little different from each other.

The results indicate that lagged tourist arrivals from the previous years, origin country's GDP, distance, origin country's export to destination countries, price differences, and the presence of direct flights are all significant determinants for Korean outbound tourism. Whereas the origin country's GDP shows importance, the destination country's GDP does not show any statistical significance, suggesting that the traveler's income or travel affordability are more important than the development conditions of destination countries.

TABLE II: Dependent Variable: Log Tourist (OLS, FE), Tourist (GMM)

Variable	OLS		FE	SYS-GMM
	(1)	(2)		
$Tourist_{odt-1}$				0.6370*** (0.6570)
$Tourist_{odt-2}$				0.1517** (0.0657)
Ln GDP_{ot}	0.5482 (0.4813)	1.1611*** (0.4464)		0.2026*** (0.0460)
Ln GDP_{dt}	-0.0005 (0.0446)	0.0377 (0.2586)	0.0377 (0.4903)	0.0025 (0.0069)
Ln $Distance_{od}$	-0.7097*** (0.0961)	-1.2056* (0.7060)		-24.0727*** (6.6006)
Ln $Export_{odt}$	0.5647*** (0.0489)	0.3244*** (0.1061)	0.3244* (0.1827)	6.5626*** (1.5128)
$Price_{odt}$	-0.0003** (0.0001)	-0.0011*** (0.0002)	-0.0011*** (0.0003)	-24.6431 (41.2577)
$Airline_{odt}$	1.8914*** (0.1655)	0.1607** (0.0776)	0.1607* (0.9615)	
Constants	4.2701 (6.8785)	2.9021 (5.4693)	7.9341* (4.4022)	
Destination fixed effects	No	Yes	No	No
Year fixed effects	No	Yes	Yes	Yes
Observations	380	380	380	281
Adjusted R^2	0.7998	0.9872	0.5331	
AR(1)(p-value)				0.000
AR(2)(p-value)				0.106
Number of instruments				62

*,**,*** denote statistical significance at the 90, 95, and 99 percent levels, respectively.

Distance as a proxy of travel cost shows a negative sign and statistical significance as expected. There is a close relationship between distance and air fare [32]. The main cost factors for long distance air travel are fuel and cabin crew and since these operational costs increase with the length of the flight there should be a strong relationship between distance and air fare [18]. From the perspective of tourists there might exist pull and push factors in long and short distance travel. Some travelers would like to flight farther to experience exotic foreign cultures and nature (push factor) while others do not want to waste their valuable time and energy for such a long trip (pull factor). At the end of balancing each other, the forces of gravity are strong enough in the case of Korean outbound tourism. The distance variable also represents cultural proximity. Countries that are located closer to each other tend to have more common cultural denominators than countries further apart [32].

Korean export variable is a proxy for bilateral economic activity and therefore a control for business tourism [11]. The results in the regressions show that Korean export to destination countries enters with the expected positive sign and is highly significant.

The presence of direct flights can reduce the negative effects of distance on tourism arrivals. Tveteras and Roll [18] tested whether an increase in the level of international air connectivity, as represented by increased number of long-haul flights between origin and destination countries, has a positive impact on the number of tourist arrivals. Their empirical analysis on the case of Peru reveals that an increase in the number of international flight departures to Peru has marked positive effect on tourist arrival. In the case of Korean outbound tourism, the presence of direct flight clearly shows a positive sign and statistical significance.

B. Destination Differentiation

Among 53 sample destination countries 16 are OECD member countries and 37 are the remaining countries. Since the development condition measured as either GDP or infrastructure of the two groups are different, this paper attempts to measure whether there is any significant difference in tourism determinants between the two destination groups.

The GDP of the origin country, Korea, shows positive signs and statistically strong significance in both groups. Destination country's GDP shows negative signs in both groups with only OECD group showing statistical significance. Distance and the presence of direct flights variables are relevant factors in both groups as expected.

TABLE III: Dependent Variable: Log Tourist

Variable	OECD		ETC	
	OLS	FE	OLS	FE
Ln GDP_{ot}	0.7689*** (0.2927)		2.3115*** (0.7725)	
Ln GDP_{dt}	-0.5125** (0.2496)	-0.5125 (0.3700)	-0.3195 (0.3482)	-0.3195 (0.6610)
Ln $Distance_{od}$	-1.2636*** (0.2587)		-1.5582** (0.6316)	
Ln $Export_{odt}$	0.1297 (0.1065)	0.1297 (0.1583)	0.3541*** (0.1163)	0.3541* (0.1940)
$Price_{odt}$	-0.0003 (0.0002)	-0.0003 (0.0003)	-0.0018*** (0.0004)	-0.0018*** (0.0006)
$Airline_{odt}$	0.2720*** (0.0880)	0.2720** (0.1247)	0.2686** (0.1149)	0.2686** (0.1150)
Constants	19.1573*** (3.9056)	17.2678 (4.3543)	-6.7451 (5.6113)	10.8102* (5.7889)
Destination fixed effects	Yes	No	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes
Observations	120	120	260	260
Adjusted R^2	0.9879	0.3974	0.9880	0.3639

*,**,*** denote statistical significance at the 90, 95, and 99 percent levels, respectively.

The differences come from Korean export and price variables. Whereas the analysis of Korean export on OECD group does not show any meaningful results, it is an important factor in the other destination group. Also, the price factor does not show statistical significance in the case of travelling to OECD countries but it indicates a strong importance in the case of the other destination group.

The results can be interpreted in several ways. Firstly, the proportion of business travel is more prominent for the second group than for the OECD group. The second implication is

that Korean tourists are more price elastic when travelling to the less developed countries than when travelling to rich countries.

C. The Distance Factor

As the number of long-haul flight connections increased in the world it seems natural to assume that the world is getting flatter and narrower. The distance as a factor of inhibiting the tourists' movement should become less important over the years. However, the distance variable implies not only traveling costs but also many other factors. Distance can be correlated with cultural distance measured by shared language, history, food, music, TV dramas, customs etc. [32], [33]. Travelling to the places where cultural differences are wide can cause stress to some travelers.

Table IV shows the results of OLS regressions for two different periods. The comparison of year 2004 and 2012 reveals that the significance of the distance factor has become prominent as the years pass. The coefficient of distance for year 2012 is - 0.9323 which is much bigger than that for year 2004. Cross-sectional regressions can produce biased and inconsistent estimates because they may not take into consideration the endogeneity of regressors. Since panel data is more reliable than a single year cross-section data, this paper also compared three year periods between 2004-2006 and 2010-2012. The experiment of multi-year produces almost identical results. The result of year 2010-2012 shows stronger statistical significance for the distance variable than the result of year 2004-2006. The coefficient value of the distance variable in 2010-2012 is also much bigger than that in 2004-2006.

TABLE IV: DEPENDENT VARIABLE: LOG TOURIST

Variable	Single Year (OLS)		Multi Year (OLS)	
	2004	2012	2004-2006	2010-2012
Ln GDP_{ot}			0.8615 (1.2628)	0.9884 (1.7125)
Ln GDP_{dt}	0.1835 (0.2627)	-0.0320 (0.0966)	0.0992 (0.1080)	-0.0355 (0.0525)
Ln $Distance_{od}$	-0.1664 (0.3807)	-0.9323*** (0.2602)	-0.3406* (0.1792)	-0.9353*** (0.1487)
Ln $Export_{odt}$	0.6237** (0.2712)	0.5013*** (0.0924)	0.5871*** (0.1109)	0.5267 (0.0595)
$Price_{odt}$	-0.0012 (0.0008)	7.3900 (0.0002)	-0.0010** (0.0004)	0.0000 (0.0001)
$Airline_{odt}$	2.3939*** (0.8107)	1.7992*** (0.3478)	2.3002*** (0.3369)	1.5826*** (0.2020)
Constants	4.6393 (4.2342)	14.5688 (2.3941)	-4.3679 (17.5188)	0.7332 (24.0939)
Observations	31	49	109	142
Adjusted R^2	0.7877	0.8799	0.7994	0.8457

*,**,*** denote statistical significance at the 90, 95, and 99 percent levels, respectively.

The above results imply that, to some degree, even though the extension of long-haul direct flights mitigates the traveling cost for the long distance trip, distance as a travel inhibiting factor still remains strong over the years. As for the presence of direct flights, intensive (number of cities) as well as extensive (number of countries) connections should also be considered. The number of foreign countries connected with Korea for direct flights in 2012 is 50 and among them Asian countries are 15 (30%). In terms of the number of foreign cities directly connected with Korea in the same year, 80 cities (52%) among the total 153 cities are located in Asia. The above mentioned figures suggest that geographical and cultural proximity can render more flight connections among closely located countries than farther located countries, intensifying trips to neighboring countries.

D. Data Selection Issues

Latest studies on international trade take zero trade data seriously because without treating this matter appropriately there might be a sample selection bias. With the consideration of firm heterogeneity, Helpman et al. [34] developed a model of international trade that yields a gravity equation with a Heckman correction [35].

This section experiments the same application of Heckman sample selection model for Korean outbound tourism. To apply the Heckman model, we need to consider an outcome equation and a selection equation. The outcome equation takes the form of the standard gravity model, but it only applies to those observations within the estimation sample:

$$lnX_{od} = \beta_0 + \beta_1 lnY_o + \beta_2 lnY_d + (1-\sigma)(\beta_3 lnt_{od} + \beta_4 ln\Pi_o + \beta_5 lnP_d) + \varepsilon_{od} \quad if \quad p_{od} > 0$$

$$lnX_{od} = missing \quad if \quad p_{od} \le 0$$

The variable p_{od} is a latent variable that can be interpreted as the probability that a particular data level is included in the estimation sample. The selection equation relates the latent variable to a set of observed explanatory variables. Helpman *et al.* [34] included the regulation variable in the selection equation assuming that it affects the probability of trade engagement between two countries.

Using the intentional homicide variable derived from World Development Indicators and openness (trade volume over GDP) of the destination countries as additional variables, the selection equation takes the following form, where p_{od} is a latent probability of selection and d_{od} is an observed dummy variable equal to unity for those observations that are in the sample, and zero for those that are not.

$$p_{od} = \beta_0 + \beta_1 lnY_o + \beta_2 lnY_d + (1-\sigma)(\beta_3 lnt_{od} + \beta_4 ln\Pi_o + \beta_5 lnP_d) + \beta_6 homicide_d + \beta_7 open_d + \varepsilon_{od}$$

$$d_{od} = 1 \; if \; p_{od} > 0$$

$$d_{od} = 0 \; if \; p_{od} \le 0$$

Table V compares the results from OLS and Heckman two-step estimation. The results from the Heckman outcome equation are strikingly similar to the results from OLS; except for GDP of destination countries all the variables show the right signs and statistical significance. However, the overall results should be considered with skepticism because all the variables from the selection equation do not show statistical significance.

A possible explanation for this poor result is that the data on tourism is not appropriate for Heckman estimation. When the tourism authorities of destination countries collect and announce the arrival information of the tourists, they normally do so for only countries with a considerable number of

tourists. Therefore, the data condition of international trade and tourism is different.

TABLE V: DEPENDENT VARIABLE: LOG TOURIST

Variable	OLS	Heckman	
		Outcome	Selection
Ln GDP_{ot}	1.1611*** (0.4464)	1.1529*** (0.2450)	63.1737 (294.2630)
Ln GDP_{dt}	0.0377 (0.2586)	0.03912 (0.1332)	-2.7364 (4.4497)
Ln $Distance_{od}$	-1.2056* (0.7060)	-1.2002*** (0.4683)	-8.7793 (483.8857)
Ln $Export_{odt}$	0.3244*** (0.1061)	0.3243*** (0.0554)	0.9432 (0.9443)
$Price_{odt}$	-0.0011*** (0.0002)	-0.0011*** (0.0002)	0.0127 (0.0078)
$Airline_{odt}$	0.1607** (0.0776)	0.1609* (0.0881)	-2.9505 (531.5245)
$Homicide_{dt}$			0.06041 (0.1429)
$Open_{dt}$			-4.5453 (3.4372)
Constants	2.9021 (5.4693)	2.9553 (3.4027)	-752.1639
Destination fixed effects	Yes	Yes	
Year fixed effects	Yes	Yes	
Observations	380	458	
Adjusted R^2	0.9872		
Mills lamda		-0.1710 (0.3915)	
Rho		-0.5710	
Sigma		0.2995	

*,**,*** denote statistical significance at the 90, 95, and 99 percent levels, respectively.

V. CONCLUSIONS

The paper uses the gravity model to analyze the determinants of Korean outbound tourism applying dataset from 53 destination countries during 2004-2012 periods. The gravity model explains tourism flows as effectively as it explains trade flows. The methodology employed included OLS, Fixed effects, Arellano-Bond system GMM, and Heckman two-step estimator.

The results show that whereas the GDP of the origin country (Korea) is important for tourism flows, the GDP of the destination countries do not have statistical importance. Korean tourists are sensitive to the price differences between Korea and destination countries and the presence of direct flights contributes to overseas tourism. Distance is still a deterring factor for tourism just as in the case of trade.

When destination countries are divided into two groups, OECD and others, Korean tourists are less price-sensitive to trips to OECD countries than to other countries. Also, Korean export to destination countries, the proxy variable for the business trip, does not show statistical significance at all for OECD countries whereas it shows strong importance for other countries. The above observations imply that, in general, Koreans travelling to richer countries are those more for pleasure trips and are ready to take high travel costs than those travelling to less developed countries. On the other hand, those who travel to less developed countries are more price-sensitive and have higher proportion of business travel than those traveling to rich countries.

The effect of distance on Korean outbound tourism is compared for two period years; single year comparison between 2004 and 2012 and multi-year comparison between 2004-2006 and 2010-2012. The results show that the importance of distance factor in Korean overseas tourism has never disappeared but increased over the years.

Lastly, the issue of data selection was dealt at the last subsection. Just as in the case of international trade, the study on international tourism may suffer biased estimation results due to the zero tourist information. Since destination countries collect and report only tourist arrival information of the considerable number of tourists, defining the dataset whether the empty part is zero or not is a hard job.

Future research could expand the case study by comparing tourism demand among several countries. Also, further research could broaden the analysis to cover additional factors affecting international tourism such as tourism infrastructure, visa requirements, and cultural attractions.

APPENDIX: LIST OF COUNTRIES USED IN THE ANALYSIS

Japan	India	Slovakia
China	Laos	Austria
Hong Kong	Bhutan	Finland
Thailand	Jordan	Canada
Turkey	Yemen	United States
Macao	Seychelles	Jamaica
Vietnam	Mauritius	Guatemala
Nepal	Swaziland	Chile
Sri Lanka	South Africa	Costa Rica
Cyprus	Uganda	Brazil
Israel	Sierra Leone	Ecuador
Maldives	Germany	Panama
Malaysia	United Kingdom	Peru
Philippines	Russia	Mexico
Indonesia	Macedonia	New Zealand
Cambodia	Sweden	Australia
Mongolia	Slovenia	Fiji
Singapore	Georgia	

REFERENCES

[1] World Tourism Organization (UNWTO). (Nov. 3, 2014). Tourism Highlights 2014. [Online]. Available: http://dtxtq4w60xqpw.cloudfront.net/sites/all/files/pdf/unwto_highlights14_en_hr_0.pdf

[2] J. Balaguer and M. Cantavella-Jord´a, "Tourism as a long-run economic growth factor: The spanish case," *Applied Economics*, vol. 34, pp. 877-884, 2002.

[3] N. Dritsakis, "Tourism as a long-run economic growth factor: An empirical investigation for Greece using a causality analysis," *Tourism Economics*, vol. 10, pp. 305-316, 2004.

[4] L. Gunduz and A. Hatemi-J, "Is the tourism-led growth hypothesis valid for Turkey?" *Applied Economics Letters*, vol. 12, pp. 499-504, 2005.

[5] S. Katircioglu, "Tourism, trade and growth: The case of cyprus," *Applied Economics*, vol. 41, no. 19-21, pp. 2741-2750, 2009.

[6] B. Fayissa, C. Nsiah, and B. Tadasse, "The impact of tourism on economic growth and development in Africa," MTSU Department of Economics and Finance Working Papers, August 2007.

[7] J. Eugenio-Mart´ın, N. Morales, and R. Scarpa, "Tourism and economic growth in Latin American countries: A panel data approach," *Nota de Lavoro*, no. 26, 2004.

[8] J. G. Brida, B. Lanzilotta, S. Lionetti, and W. A. Risso, "Research note: The tourism led growth hypothesis for Uruguay," *Tourism Economics*, vol. 16, no. 3, pp. 765-771, 2010.

[9] C. Lim, "A meta-analysis review of international tourism demand," *Journal of Travel Research*, vol. 37, pp. 273-84, 1999.

[10] H. Song and G. Li, "Tourism demand modelling and forecasting-A review of recent research," *Tourism Management*, vol. 29, no. 2, pp. 203-220, 2008.

[11] A. Culiuc, "Determinants of international tourism," IMF Working Paper, WP/14/82, 2014.

[12] C. Lim, "The major determinants of Korean outbound travel to Australia," *Mathematics and Computers in Simulation*, vol. 64, pp. 477-485, 2004.

[13] S.-W. Mo, "Exchange rate volatility and outbound tourism demand: Evidence from Korea," *Journal of Tourism Sciences*, vol. 27, no. 4, pp. 147-162, 2004.

[14] J. H. Seo, S. Y. Park, and S. Boo, "Interrelationships among Korean outbound tourism demand: Granger causality analysis," *Tourism Economics*, vol. 16, no. 3, pp. 597-610, 2010.
[15] Korea Tourism Organization. (September 2014). Korean outbound tourist statistics. [Online]. Available: http://kto.visitkorea.or.kr/kor/notice/data/statis/profit/board/view.kto?id=422808&isNotice=false&instanceId=294&rnum=1.
[16] W. A. Naude and A. Saayman, "Determinants of tourist arrivals in Africa: A panel data regression analysis," *Tourism Economics*, vol. 11, pp. 365-391, 2005.
[17] E. Fujii, E. Im, and J. Mak, "The Economics of direct flights," *Journal of Transport Economics and Policy*, pp. 185-195, 1992.
[18] S. Tveteras and K. H. Roll, "Long-haul flights and tourist arrivals," MPRA Paper, no. 32157, 2011.
[19] R. Portes and H. Rey, "The determinants of cross-border equity transaction flows," *Journal of International Economics*, vol. 65, pp. 269-296, 2005.
[20] Y. Okawa and E. Van Wincoop, "Gravity in international finance," HKIMR Working Paper, no. 7, 2010.
[21] K. Head, T. Mayer, and J. Ries, "How remote is the offshoring threat?" *European Economic Review*, vol. 53, no. 4, pp. 429–444. 2009.
[22] K. Head and J. Ries, "FDI as an outcome of the market for corporate control: Theory and evidence," *Journal of International Economics*, vol. 74, no. 1, pp. 2-20, 2008.
[23] J. de Sousa and J. Lochard, "Does the single currency affect foreign direct investment?" *The Scandinavian Journal of Economics*, vol. 113, no. 3, pp. 553-578, 2011.
[24] J. Fourie and M. Santana-Gallego, "The determinants of African tourism," *Economic Research Southern Africa*, NO. 260, 2011.
[25] X. Archibald, J. L. Corbiniere, and W. Moore, "Analysis of tourism competitiveness in the Caribbean: A gravity model approach," presented at 29th Annual Review Seminar, Research Department, Central Bank of Barbados, Barbados, 2008.
[26] J. Tinbergen, "Shaping the world economy: Suggestions for an international economic policy," Twentieth Century Fund, New-York, 1962.
[27] J. Eaton and S. Kortum, "Technology, geography, and trade," *Econometrica*, vol. 70, no. 5, pp. 1741-1779, 2002.
[28] J. E. Anderson and E. van Wincoop, "Gravity with gravitas: A solution to the border puzzle," *The American Economic Review*, vol. 93, no. 1, pp. 170–192, 2003.
[29] K. Head and T. Mayer, "Gravity equations: Workhorse, toolkit, and cookbook," CEPR Discussion Paper, no. 9322, 2013.
[30] Y. Kandogan, "Consistent estimates of regional blocs, trade effects," *Review of International Economics*, vol. 162, pp. 301-314, 2008.
[31] D. Roodman, "How to do Xtabond2: An introduction to difference and system GMM in stata," Discussion paper, SSRN, 2006.
[32] B. Mc Kercher, A. Chan, and C. Lam, "The impact of distance on International tourist movements," *Journal of Travel Research*, vol. 47, no. 2, pp. 208-224, 2008.
[33] Y. S. Park, "Trade in cultural goods: A case of the Korean wave in Asia," *Journal of East Asian Economic Integration*, vol. 18, no. 1, pp. 83-107, 2014.
[34] E. Helpman, M. Melitz, and Y. Rubinstein, "Estimating trade flows: Trading partners and trading volumes," *Quarterly Journal of Economics*, vol. 123, no. 2, pp. 441–487. 2008.
[35] J. J. Heckman, "Sample selection as a specification error," *Econometrica*, vol. 47, no. 1, pp. 153-161, 1979.

Young Seaon Park is a Ph.D. candidate at the Faculty of Economics in Chulalongkorn University, Bangkok, Thailand. His areas of research are applied microeconomics, international trade, and South East Asian economy. His published research paper includes "Trade in cultural goods: A case of the Korean wave in Asia".

He worked at the overseas branch offices of Korea Trade-Investment Promotion Agency (KOTRA) in Warsaw, Poland (2002-2007), and Bangkok, Thailand (2008-2013). At present he is the deputy director of KOTRA Global Academy, Seoul, Korea.