

【Articles】

Cruise Tourism in East Asian Countries: Japan-Korea Comparison

東アジアのクルーズ船観光：日韓比較

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(Abstract)

In this article, we attempt to find what attracted more cruise ships to specific ports in Japan and South Korea in 2010 to 2017 by analyzing data of cruise traffic in each of these two countries, and to know more about cruise tourism in East-Asian countries by comparing these two countries. Our main results are as follows. First, number of calls by foreign cruise ships has positive effects on the overall cruise traffic of each port in Japan, even after controlling for possible endogeneity of this variable. This may suggest that measures to attract more foreign cruise ships can be effective to develop a cruise industry in a specific region. Second, city population has positive effects for both Japan and South Korea. Finally, whether a port is located in an island is crucial in South Korea while it is not in Japan. The data also shows that diplomatic relationships of these two countries with China are important, but the impacts seem to be different.

1. Introduction

The world cruise market has grown steadily. Cruise Lines International Association (CLIA) (2017) shows that from 2009 to 2017, number of world cruise passengers increased from 17.8 million to 25.8 million, by 45%. CLIA (2018) shows that the top three markets by passenger volume are North America, Western Europe, and Asia. In 2017, the size of the Asian market was less than one-third of the North American market. However, the annual growth rate of the Asian market was 21.3%, while that of the North American market was 5.5%. Thus, the Asian market is expected to grow more in the future. Among the Asian countries, in both Japan and South Korea, cruise tourism has been in boom in 2010s. CLIA (2017) shows that these two countries were the largest and the third largest Asian cruise markets by total calls in 2017 (the second largest was the Chinese market)¹⁾. However, CLIA (2017) also shows that the Japanese market has grown steadily while the growth rates of the South Korean market were quite bumpy.

Many previous studies analyzed the attractiveness of ports by surveys on cruise travelers/experts (shipping company, port authority, scholars, and so on). Shibasaki et al. (2011) conducted a survey for travelers of four cruise tours by Japanese cruise shipping companies (three domestic and one international), and analyzed the survey by analytic hierarchy process (AHP). They used factors that cruise travelers gave weight from their AHP analysis to construct rankings of international and Japanese cruise ports respectively. Their study was mainly based on the demand side of cruise tourism, i.e. cruise travelers' point of view, although surveys on cruise shipping companies were used to make questions in their survey. Also, their rankings were made by the weighted average of three qualitative factors, i.e. nature, history and culture including world heritage, and leisure. Another strand of cruise tourism studies utilizing survey is application of fuzzy theory. Chen (2016) conducted a survey on experts in Taiwan and used fuzzy theory with importance-performance analysis to show important factors to develop Taiwanese cruise industry. Wang et al. (2014) integrated fuzzy theory with AHP to analyze their survey on experts and ranked five cruise ports of (South-) East Asian countries. Besides studies using survey, number of cruise traffics of ports were also analyzed. For instance, Thanasis and Polemis (2018) use the shift-share technique to evaluate cruise traffics of Mediterranean ports based on the three criteria; (1) change in cruise traffic of a specific port is higher or lower than national or entire regional changes, (2) regional industry-specific change is higher or lower than the average national industry change, and (3) changes (not) attributing to region's or industry specific characteristics. This technique is to decompose cruise traffic to regional or industry specific factors compared to the national average. Thanasis and Polemis (2018) use some measures from the decomposition of data to judge whether each port has a comparative (dis) advantage.

In this article, we attempt to contribute to the literature of cruise tourism by finding what attracted more cruise ships to specific ports in Japan and South Korea by performing

regressions of cruise traffics with consideration of both demand and supply sides, and showing more about cruise tourism in East-Asian countries by comparing these two countries. Note that we implicitly assume that development of cruise tourism helps regional economies or societies. Whether this assumption can be applied to specific regions or countries is not a research questions we try to answer in this article.²⁾

Castillo-Manzano et al. (2014), whose focus was similar with ours, explored Spanish provincial data of 2002-10 and estimated equations of cruise traffic by port including the following explanatory variables:

- Number of hotels per capita, measuring tourism supply in the province.
- Population, measuring the supply of a province's cultural, gastronomic, and leisure activities.
- Island dummy: one if a port is located at an island.
- Other port traffic, measuring how much a port's facilities are enriched.
- Airport traffic: they argue a positive relationship between cruise traffic and airports in the same province.
- Depth of berth dummy: one if a port has draft of 12 meters or over, indicating how much a port can accept large-scale cruise ships.
- Charges: measured by per-passenger revenue divided by the total number of passengers using the port, measuring prices that cruise tourists pay.

We use dataset of numbers of calls by cruise ships by port and others for Japan and South Korea, and perform regressions to find determinants of cruise traffic by port in each country. In the regression analysis, we basically follow the methodology of Castillo-Manzano et al. (2014), with consideration for factors peculiar to cruise tourism in either Japan or South Korea (geopolitics in East Asian Countries, for instance).

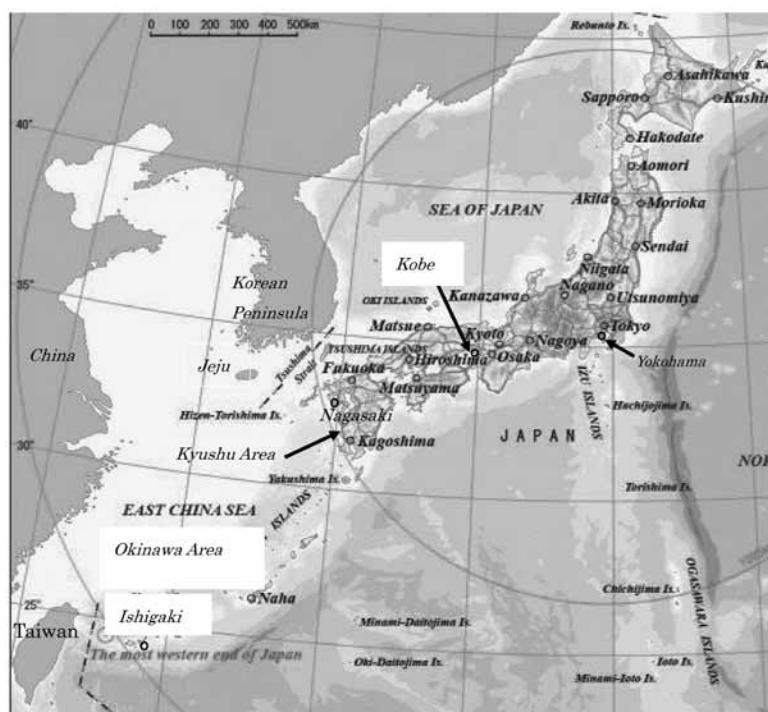
Our main results are as follows. First, number of calls by foreign cruise ships has positive effects on the overall cruise traffic of each port in Japan, even after controlling for possible endogeneity of this variable. This may suggest that measures to attract more foreign cruise ships can be effective to develop cruise industry in a specific region. Second, as Castillo-Manzano et al. (2014) with Spanish data, city population has positive effects for both Japan and South Korea. However, Castillo-Manzano et al. (2014) used provincial population, not population of a city that a port is located at, so interpreting this result should be cautious. Finally, whether a port is located in an island is crucial in South Korea while it is not in Japan.

The structure of this article is the following. Section two describes our data of calls by cruise ships by port in Japan and South Korea, and show some interesting observations from data. Section three shows our regression analysis. Section four describes development of Busan city, South Korea with its cruise industry as a case study to complement our regression analysis. Section five concludes this article with some remarks.

2. Data and Observations

In this section, we discuss some characteristics of cruise traffics in Japan and South Korea respectively. Although both countries are located in East Asia, their cruise traffics have some uncommon properties as well as common ones, especially impacts of their big neighbor country, China. Figure 1 is map of Japan, and Figure 2 is map of South Korea, respectively. In this article, we focus on eight Japanese cities in Figure 1. In the figure, from east to west, the eight cities are: Yokohama, Nagoya, Kobe, Fukuoka, Kagoshima, Nagasaki, Naha, and Ishigaki. Figure 1 also shows other East Asian countries such as China, South Korea, and Taiwan. When discussing properties of cruise ports in the above eight cities, proximity to these countries is an important factor. Also in this article, we focus on five cities of South Korea in Figure 2. In the figure, from north to south, the five cities are: Sokcho, Incheon, Busan, Yeosu/Gwangyang, and Jeju. Figures 1 and 2 show that Jeju, an island located south of mainland South Korea, is nearer to China than cities of Japan and most other port cities of South Korea. Jeju's location and its characteristic as an island resort are important factors when discussing cruise ports in South Korea, and comparing South Korea and Japan.

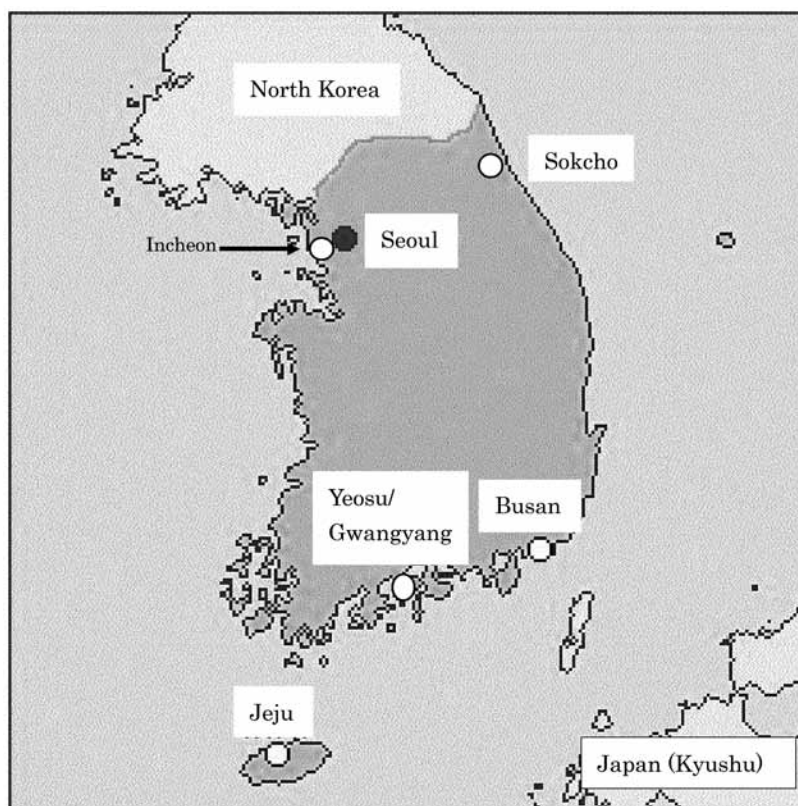
Figure 1: Map of Japan



Source: Geospatial Information Authority of Japan, MLIT website.

Note: The map is trimmed and made some changes, e.g. adding name of cities/areas, by the authors.

Figure 2: Map of South Korea



Source: Ministries of Foreign Affairs of Japan website.

Note: In the figure, names of cities/area are added by the authors.

2-1 Calls by Cruise Ships in Japanese Ports

About Japan, we use data of the number of calls by cruise ships by port from 2010 to 2017, published by Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (preliminary numbers for 2017). Because the MLIT's annual report shows the numbers of only top ten ports in each year and the ranking changes year by year, i.e. some ports are (not) included in the ranking of a year, the numbers not shown in the MLIT report are from press releases by port authorities in various years.

Tables 1 show numbers of calls by all cruise ships of selected eight ports (Table 1-1), calls by Japanese cruise ships (1-2), and calls by foreign cruise ships (1-3), respectively. Tables 1 show that, except in 2013, the total number of calls has increased steadily during the sample period. In 2013, the number of calls by foreign cruise ships dropped sharply by 21.6% while that by Japanese ships was almost unchanged. The biggest reason of decrease in calls of foreign cruise ships was deterioration of Japan-China relationship due to nationalization of Senkaku Islands in Okinawa Prefecture by the Japanese Government

in September 11, 2012. However, only one and a half years had passed since the Great East Japan Earthquake occurred (March 11, 2011), so the effect of Japan-China relationship should be in caveat.

Table 1-1: Number of Calls by Foreign and Japanese Cruise Ships in Japan, 2010-2017.

Rank/ Year	2010		2011		2012		2013	
	Port/Number		Port/Number		Port/Number		Port/Number	
1	Yokohama	122	Yokohama	119	Yokohama	142	Yokohama	152
2	Kobe	103	Kobe	107	Hakata	112	Kobe	101
3	Hakata	84	Hakata	55	Kobe	110	Ishigaki	65
4	Nagasaki	54	Naha	53	Nagasaki	73	Naha	56
5	Kagoshima	52	Ishigaki	49	Naha	67	Nagasaki	39
6	Naha	52	Nagoya	28	Ishigaki	52	Hakata	38
7	Ishigaki	47	Nagasaki	21	Nagoya	43	Nagoya	35
8	Nagoya	27	Kagoshima	18	Kagoshima	34	Kagoshima	22
Others	388		358		472		493	
Total	929 (58.2)		808 (55.7)		1105 (57.3)		1001 (50.7)	
Rank/ Year	2014		2015		2016		2017	
	Port/Number		Port/Number		Port/Number		Port/Number	
1	Yokohama	146	Hakata	259	Hakata	328	Hakata	326
2	Hakata	115	Nagasaki	131	Nagasaki	197	Nagasaki	267
3	Kobe	100	Yokohama	125	Naha	193	Naha	224
4	Naha	80	Naha	115	Yokohama	127	Yokohama	178
5	Nagasaki	75	Kobe	97	Kobe	104	Ishigaki	132
6	Ishigaki	73	Ishigaki	84	Ishigaki	95	Kobe	117
7	Kagoshima	33	Kagoshima	53	Kagoshima	83	Kagoshima	108
8	Nagoya	30	Nagoya	34	Nagoya	36	Nagoya	33
Others	552		556		854		1380	
Total	1204 (54.2)		1454 (61.8)		2017 (57.7)		2765 (50.0)	

Source: MLIT and press releases by various port authorities.

Notes: 1. Numbers in 2017 are preliminary.

2. Type-one ports are colored in gray.

3. Total shares of the selected eight ports are in parenthesis.

Tables 1 also show that the selected eight Japanese ports can be classified as the following two types:

- Type one (names are colored in gray) : ports of large cities located east of Honshu Island with long history as either international or domestic trade hubs.

- Type two: ports of cities in Kyushu/Okinawa areas, located in southwestern part of Japan and facing East China Sea.

Type-one cities include Yokohama (near Tokyo), Kobe (near Osaka and Kyoto), and Nagoya (between Tokyo and Kyoto) (See Figure 1). Yokohama and Kobe have attracted many of foreign cruise ships as well as Japanese ones because of their long history of the largest ports in Japan for cruise and other commercial ships. Moreover, it is often said that most foreign tourists traveling Japan for the first time visited the so called “golden route,” which includes Tokyo, Kyoto, Osaka, and their neighbor cities or sightseeing places such as Mt. Fuji and hot springs. Type-one ports are located along with this golden route.

Table 1-2: Number of Calls by Japanese Cruise Ships in Japan, 2010-2017.

Rank/	2010		2011		2012		2013	
Year	Port/Number		Port/Number		Port/Number		Port/Number	
1	Yokohama	104	Yokohama	110	Yokohama	116	Yokohama	120
2	Kobe	81	Kobe	101	Kobe	88	Kobe	83
3	Nagoya	25	Hakata	29	Nagoya	38	Nagoya	32
4	Hakata	23	Nagoya	27	Hakata	27	Hakata	19
5	Nagasaki	15	Naha	16	Naha	20	Naha	15
6	Kagoshima	7	Kagoshima	10	Kagoshima	7	Kagoshima	6
7	Naha	6	Ishigaki	7	Ishigaki	6	Ishigaki	6
8	Ishigaki	2	Nagasaki	4	Nagasaki	1	Nagasaki	4
Others	328		327		326		343	
Total	591		631		629		628	
Rank/	2014		2015		2016		2017	
Year	Port/Number		Port/Number		Port/Number		Port/Number	
1	Yokohama	98	Yokohama	88	Yokohama	87	Yokohama	121
2	Kobe	68	Kobe	55	Kobe	72	Kobe	73
3	Nagoya	27	Nagoya	30	Nagoya	31	Nagoya	30
4	Hakata	16	Hakata	14	Hakata	16	Hakata	17
5	Naha	12	Naha	10	Naha	10	Kagoshima	10
6	Nagasaki	5	Ishigaki	4	Nagasaki	7	Naha	7
7	Kagoshima	4	Nagasaki	3	Ishigaki	3	Nagasaki	5
8	Ishigaki	4	Kagoshima	2	Kagoshima	3	Ishigaki	3
Others	317		283		345		485	
Total	551		489		574		751	

Source and Notes: same as Table 1-1 except for note 3.

On the other hand, type-two cities or ports include three Kyushu-area ones (Hakata in

Fukuoka city, Nagasaki, and Kagoshima), and two Okinawa-area ones (Naha and Ishigaki: both are located in small islands at East China Sea) (See Figure 1). Kyushu/Okinawa areas are closer to other East Asian countries such as China, South Korea, and Taiwan than cities of type-one ports. Because many foreign tourists from these countries, especially from China, visit Japan by cruise ships, type-two ports have a locational advantage over type-one ports and ports in other areas of Japan. Fukuoka might be a type-one city because it has similar properties except for number of calls by Japanese ships. However, Fukuoka is located in northern part of Kyushu Island. Therefore, we classify it as a type-two city. Also, a case study of Busan city, South Korea in section four can serve as a useful reference of Fukuoka city because of their proximity and economical/historical tie.

Table 1-3: Number of Calls by Foreign Cruise Ships in Japan, 2010-2017.

Rank/ Year	2010		2011		2012		2013	
	Port/Number		Port/Number		Port/Number		Port/Number	
1	Hakata	61	Ishigaki	42	Hakata	85	Ishigaki	59
2	Naha	46	Naha	37	Nagasaki	72	Naha	41
3	Kagoshima	45	Hakata	26	Naha	47	Nagasaki	35
4	Ishigaki	45	Nagasaki	17	Ishigaki	46	Yokohama	32
5	Nagasaki	39	Yokohama	9	Kagoshima	27	Hakata	19
6	Kobe	22	Kagoshima	8	Yokohama	26	Kobe	18
7	Yokohama	18	Kobe	6	Kobe	22	Kagoshima	16
8	Nagoya	2	Nagoya	1	Nagoya	5	Nagoya	3
Others	60		31		146		150	
Total	338		177		476		373	
Rank/ Year	2014		2015		2016		2017	
	Port/Number		Port/Number		Port/Number		Port/Number	
1	Hakata	99	Hakata	245	Hakata	312	Hakata	309
2	Nagasaki	70	Nagasaki	128	Nagasaki	190	Nagasaki	262
3	Ishigaki	69	Naha	105	Naha	183	Naha	217
4	Naha	68	Ishigaki	79	Ishigaki	91	Ishigaki	129
5	Yokohama	48	Kagoshima	51	Kagoshima	80	Kagoshima	98
6	Kobe	32	Kobe	42	Yokohama	40	Yokohama	57
7	Kagoshima	29	Yokohama	37	Kobe	32	Kobe	44
8	Nagoya	3	Nagoya	4	Nagoya	5	Nagoya	3
Others	235		274		510		895	
Total	653		965		1443		2014	

Source and Notes: same as Table 1-1 except for note 3.

MLIT's data have the numbers of calls by Japanese and foreign cruise ships respectively. Tables 1-1 and 1-2 show that during the sample period, most cruise ships visiting type-one ports were Japanese (especially in the first half of the period), and the numbers of calls were relatively stable, for Japanese cruise ships in particular. A typical example is Yokohama port. During the sample period, the total number of calls increased from 122 to 178. Table 1-3 shows that in the same period, the number of foreign cruise ships increased from 18 to 57, which seems to have increased rapidly, but the numbers themselves were much smaller than those of type-two ports as the table shows. Also, for type-one ports in particular, negative effects of the Great East Japan Earthquake on calls of foreign cruise ship in 2011 can be seen in Table 1-3, possibly because of proximity of type-one ports to areas damaged by the earthquake.³⁾

On the other hand, as Tables 1-1 and 1-3 show, most cruise ships visiting type-two ports were foreign, and the numbers of calls by foreign cruise ships increased rapidly during the sample period for the both types of ports. Type-two ports substantially increased total numbers as well, so their increases were due to those in the numbers of calls by foreign cruise ships.⁴⁾ One extreme case is Hakata port in Fukuoka city. During the sample period, the total number increased from 84 to 326, more than tripled. In the same period, the number of foreign cruise ships increased from 61 to 309, more than five times. Such changes made Hakata the most cruise-ship attracting port in Japan since 2015. For type-one ports, compared to type-two ports, total number of calls did not increase very much during the sample period, which made the rank of Yokohama, former most attracting port, lower (4th in 2017).

There is another interesting observation on type-two ports from press releases by authorities of these ports, showing the last and next ports that each of cruise ships visited before and after the port respectively. It is shown that many cruise ships visited more than one port in the same or adjoining areas, i.e. Kyushu/Okinawa areas. This suggests a possible network effect of cruise-ship routes, which can be observed for many Japanese ports, and such effect may be strong for Kyushu/Okinawa areas in particular, although the effect is not empirically examined in this paper.

2-2 Calls by Cruise Ships in South Korean Ports

About South Korea, we used various sources such as Korean Tourism Organization and port authorities to collect cruise traffic data. We have data of number of calls by foreign cruise ships by port from 2010 to 2017, and the numbers are shown in Table 2. The data include five ports: Jeju, Busan, Incheon, Yeosu/Gwangyang, and Sokcho, all of which have been designated by the South Korean government as most important ports. There are two big differences between Japan and South Korea about calls of cruise ships and ports that host cruise ships. One is that for South Korea, all cruise ships are foreign while for Japan, domestic, i.e. Japanese cruise ships have kept non-small shares as Tables 1 show (the share of foreign cruise ships has increased though). The other is that in South Korea,

concentration of top three ports has been quite high, while for Japan, calls by cruise ships have been quite diversified. In 2016, top three ports attracted more than 98% of total calls in South Korea. In the same year, the Japanese counterpart attracted only 35.6%. In Japan, even with top eight ports, the share was 57.7% as Table 1-1 shows.

Table 2 shows that among the five Korean ports, the first three ports, Jeju, Busan, and Incheon, attracted most of cruise ships. Jeju is a resort island and has attracted many Chinese tourists because they can visit the island without visas.⁵⁾ Busan is a southern big city and have implemented various measures to attract foreign cruise ships.⁶⁾ Incheon is a big city near Seoul, capital of South Korea, and it also has an international airport. Among the top three ports, Jeju has increased its calls of cruise ships at exceptionally high rate. In 2010, Busan was ranked first with 81 calls, Jeju ranked second with 49 calls, and Incheon ranked third with 13 calls. In 2016, Jeju was ranked first with 507 calls, Busan ranked second with 209 calls, and Incheon ranked third with 62 calls. Although six-year growth rates of Busan and Incheon are high, Jeju's growth rate is quite impressive, more than ten times.

However, the number of Jeju decreased sharply in 2017, although it is preliminary. The numbers of other ports also decreased, but the decreasing rate of Jeju is over 80%, much higher than others. One possible reason is that South Korean cruise tourism depends on Chinese tourists heavily, so South Korea-China relationship may affect it. Japanese cruise tourism has a similar tendency. As stated, the number of foreign cruise ships visiting Japanese ports decreased in many ports in 2013, because of deteriorating Japan-China relationship from 2012 (Tables 1). In 2013, as substitutes for Japanese ports, especially those of type two such as Hakata, the number of calls in Jeju and Incheon increased substantially (Korea Joongang Daily, October 9, 2012). However, due to non-small share of Japanese cruise ships, on the whole the decreases were not severe as those of South Korea in 2017.

Table 2: The number of calls by foreign cruise ships in South Korea, 2010-2017

Port/Year	2010	2011	2012	2013	2014	2015	2016	2017
Jeju	49	69	80	185	242	285	507	93
Busan	81	42	126	109	110	71	209	116
Incheon	13	31	8	95	92	53	62	19
Yeosu/ Gwangyang	5	0	11	17	13	1	1	0
Sokcho	0	1	1	1	0	0	1	0
Others	1	1	0	7	4	5	11	1
Total	149	144	226	414	461	415	791	229

Source: Korea Tourism Organization, Ministry of Oceans and Fisheries, Busan Port Authority, Jeju Special Self-Governing Province, Yeosu Gwangyang Port Authority, Incheon Port Authority, Gangwon-do Maritime Tourism Center.

Note: Numbers in 2017 are preliminary.

3. Regression Analysis on Determinants of Cruise Traffic

To find determinants of which ports are used as cruise calls, regression equations of calls of cruise ship by port in Japan and South Korea are estimated separately. In estimation, panel data of selected ports from 2010-17 are used (eight ports for Japan and five ports for South Korea respectively).

Descriptive statistics of variables used in our regression analysis for Japanese ports are in Table 3-1. With Tables 1, Table 3-1 shows that number of calls, both total and foreign, and city population in 2010 have large variations among ports or cities. For South Korea, descriptive statistics of the data are in Table 3-2, showing large variations of number of calls and population among ports or cities. Because cruise ships of South Korean nationality do not exits except in 2012 and 13, the number of calls of foreign cruise ships by port is a dependent variable. City population and dummy variables (island and year 2016, when the number of calls increased rapidly) are included as explanatory variables. Data of city population are from the website of Korean Statistical Information Service (KOSIS). In South Korea, population survey is conducted every year, and population data is updated every month. Therefore, even annual level, population data of South Korea is quite accurate.

Table 3-1: Descriptive Statistics of Japanese Data

Variable	NOB	Mean	Std. Dev.	Min	Max
Total Number of Calls by Port	64	97.344	69.798	18	328
Number of Calls by Foreign Ships by Port	64	64.656	72.437	1	312
City Population in 2010	8	1,296,637	1,223,299	46,922	3,688,773
Number of Visa Waiver Countries	8	12.750	7.649	4	26
Number of Immigration by Port	64	34,968.030	64,734.060	20	276,959

Table 3-2: Descriptive Statistics of South Korean Data

Variable	NOB	Mean	Std. Dev.	Min	Max
Number of Calls by Foreign Ships by Port	40	69.975	100.522	0	507
City Population	40	1,462,889	1,491,492	81,793	3,600,381

3.1 Japanese Ports

In this article, with Japanese data, we perform two kinds of regression whose dependent variable is number of calls at a port; ordinal least squares (OLS) and two-stage least squares (2SLS). The 2SLS is to control for possible endogeneity of one of explanatory variables, number of calls by foreign ships.

3.1.1 OLS Estimates

In estimation, we use some of the variables used by Castillo-Manzano et al. (2014), depending on availability of data and also effectiveness of those variables for Japanese ports. For example, airport traffic is not included for two reasons. First, in some Japanese cities, seaports and airports seem to be substitutes, not complements as Castillo-Manzano et al. (2014) argue. So the usage and interpretation of airport traffic should be cautious. Second, some ports have more than one airports in their neighbors, and including all or some of them needs some criteria, which are not available at this point. Besides these variables, our examination for the Japanese data in the last section shows possible importance for the following variables, as well as how to utilize the data of two kinds of cruise ships, Japanese and foreign.

- Distance between two ports or other variable, capturing network effects (not used though).
- Dummies or other variables capturing possible (fixed) effects of type-two ports, i.e. ports in Kyushu/Okinawa areas.

Table 4 Determinants of Cruise Traffic in Selected Japanese Ports, 2010-17.

Dependent variable = log (number of calls by cruise ships by port)				
Estimation method = OLS (equations (1) – (3)).				
= 2SLS (equation (4)).				
NOB = 64 (= 8 ports times 8 years).				
Explanatory variable/Regression	(1)	(2)	(3)	(4)
log (number of calls by foreign cruise ships)	0.390** (0.048)	0.500** (0.042)	0.646** (0.033)	0.387** (0.055)
log (city population in 2010)		0.257** (0.040)	0.073* (0.035)	0.212** (0.044)
Type-two port dummy			-0.928** (0.110)	
(Adjusted) R-squared	0.503	0.698	0.860	0.672

Standard errors are in parenthesis. ** = one-percent significance level. * = five-percent significance level.

Note: Because instrumental variables are used to estimate equation (4), non-adjusted R-squared is shown at the bottom of column four.

In some cases, the second effect may not be a fixed effect, i.e. effect that is peculiar to specific individual and is not changing over time. One possibility is a change in main purpose of using cruise tourism for people from other Asian countries. Before, the main

purpose of Asian tourists visiting Japan was shopping, especially those visiting ports in Kyushu area (part of type-two ports).⁷⁾ However, it is often said that such a trend has been changing.

Equations (1) to (3) of Table 4 show our results of cruise traffic regression of Japanese ports, estimated by ordinary least squares (OLS). First, all regression equations show that a one-percent increase in the number of calls by foreign cruise ships increases the total number of calls by 0.4 to 0.6 percent. Second, log value of city population in 2010, from the portal site of Official Statistics Japan (e-Stat), have a significant positive effect.⁸⁾ Finally, in equation (3), a dummy variable if a port is type-two, i.e. located in either Kyushu or Okinawa areas, has a significant negative effect. This result is puzzling because in type-two ports, the total numbers of calls increased substantially during the sample period as well as that of foreign cruise ships, as Tables 1 show. Possible reasons of this unexpected sign of the effect are (1) strong positive correlation between type-two port dummy and the number of calls of foreign cruise ships (multicollinearity is not observed though), and (2) small number of total calls among type-two ports in the first half of the sample period.

We estimated equations with various dummies (year, island, and cross term of year and type-two port), but their effects were not statistically significant. Among year dummies, year 2011, when the Great East Japan earthquake occurred, does not have any significant effect. We estimate the same equations with data excluding year 2011, but the estimated coefficients are not very different from those with data including year 2011. These results suggest that data in year 2011 are not necessarily considered to be outliers. Rather, dummies of years 2013 and 2014, just after Japan-China relationship deteriorated, have negative effects in some estimations. However, the dummies of these two years become non-significant after controlling for city population in year 2010.

Also, note that the total number of calls is the sum of the numbers of calls by Japanese and foreign ships. Therefore, possible endogeneity between the number of calls by foreign ships, one of the explanatory variables, and the error term in the regression equation must be controlled. In the next subsection, one attempt to control for such endogeneity by 2SLS with instrumental variables is discussed.

3.1.2 2SLS Estimate

Equation (4) of Table 4 shows the result of 2SLS. In equation (4), the effects of number of calls by foreign ships and of city population are still statistically significant, although the sizes of the effects are smaller than those with OLS estimates. Besides controlling for possible endogeneity of number of calls by foreign cruise ships by port, what attracts foreign cruise ships is also an important question to answer. In this subsection, we attempt to answer the both questions.

Table 5 shows the first-stage estimate of regression equation, whose dependent variables is number of calls by foreign ships. Besides log value of city population in 2010, which is an explanatory variable in the second-stage regression, three variables are used

as explanatory variables: (1) type-two port dummy, which has a negative effect in OLS regression (equation 3 of Table 4), (2) Number of tourist-visa waiver countries, and (3) log value of number of immigration by port. For variable (2), developed countries in Europe, North America, and Oceania are not included. These three variables are the so called instrumental variables, which are supposed to be correlated with number of calls by foreign ships, i.e. dependent variable in the first-stage regression, but not to be correlated with the error term in the second-stage regression. For instance, Mizuho Research Institute (2016) shows that visa waiver had positive effects on the number of Asian tourists visiting Japan, especially from China. Many of Chinese tourists come to Japan by Chinese cruise ships, not Japanese ones. As an instrument, a lagged dependent variable is often used. However, in this regression, what factors affect number of calls by foreign ships is the most important question we want to answer. Data of visa waiver countries are from Ministry of Foreign Affairs of Japan (2018) and Mizuho Research Institute (2016). Following Mizuho Research Institute (2016), either complete visa waiver or change from one-time to multiple visa are considered visa waiver in this article. Data of number of immigration by port is from the website of Ministry of Justice.

Table 5: First-stage regression of 2SLS.

Dependent variable = log (number of calls by foreign cruise ships by port) Estimation method = OLS. NOB = 64.	
Explanatory variable	
log (City Population in 2010)	-0.079 (0.104)
Type-Two Port Dummy	0.827* (0.332)
Number of Visa Waiver Countries except for Western Developed Countries	0.082** (0.013)
log (Number of Immigration by Port)	0.253** (0.055)
Adjusted R-squared	0.660

Standard errors are in parenthesis. ** = one-percent significance level.

* = five-percent significance level.

Note: Number of immigration in 2017 is not available, so the number in 2016 is used.

Table 5 shows that all instruments work; they have significant positive effects as expected. In particular, the effect of type-two port dummy is captured more properly in

2SLS than in OLS (significant negative effect in OLS).

The results shown in Tables 4 and 5 are still preliminary in a sense that the following two things are necessary for further discussion; (1) more sophisticated estimations (random/fixed effect estimates for instance) and (2) more explanatory variables. However, comparing Japanese cruise market with South-Korean counterpart, discussed in the next subsection, is still possible and meaningful even at this point.

3.2 South Korean Ports

We estimate similar equations of calls of cruise ships with data of South Korea, shown in Table 6. Like Japanese ports, a one-percent increase in city population rises the number of calls by one percent. Unlike Japanese ports, however, island dummy has a significant positive effect, reflecting a very high share of Jeju. Besides Jeju's characteristic as a resort island, the island dummy may capture its proximity to China. In fact, number of calls in Jeju in 2017 was much smaller than that in 2016, reflecting the deterioration of South Korea-China Relationship (the numbers in 2017 are preliminary though).

Table 6: Determinants of Cruise Traffic in South Korean Ports, 2010-17.

Dependent variable = log (number of calls by cruise ships by port + 1)			
Estimation method = OLS.			
NOB = 40 (= 5 ports times 8 years) .			
Explanatory variable/Regression	(1)	(2)	(3)
log (city population)	0.950** (0.161)	1.053** (0.092)	1.052** (0.091)
Island dummy		2.953** (0.327)	2.953** (0.324)
Year 2016 dummy			0.494 (0.389)
Adjusted R-squared	0.465	0.829	0.832

Standard errors are in parenthesis. ** = one-percent significance level.

Note: Some ports had no call by cruise ship in some year(s). Therefore, to take log, one is added to the actual numbers of calls.

However, two island ports in Okinawa prefecture, Naha and Ishigaki, who are much nearer to China than other Japanese ports, do not have such a strong island effect.⁹⁾ Although about Japan the two effects, diplomatic relationship with China in 2013 and the Great East Japan earthquake in 2011, may be mixed, focusing on the island effects in these

two countries may be interesting for Japan-South Korea comparison, because these islands are near from China and Taiwan, regardless of their nationality. Moreover, for Japan, the type-two dummy may include the island effect, because Kyushu is also an island, much larger than those in Okinawa area though. Year 2016 dummy has a positive coefficient, but the effect is not statistically significant, as wells as dummies of other years.

4. Case Study: Development of Busan's Cruise Industry

In this section, to complement our regression analysis in the last section, we discuss how the cruise industry in South Korea has been emerged and developed by drawing up a chronology of events occurred in Busan city/port. In this article we classify the Japanese cruise ports into two types (type 1 and type 2; see section two). Busan Port has the both characteristics of two types, although it is a South Korean port. Therefore, the case of Busan is meaningful to discuss policy implications for Japanese ports as well. Besides this property, it is the first Korean cruise port as described below. Thus discussing the case of Busan is necessary to discuss the entire cruise industry in South Korea.

Figure 3: A Look of New Cruise Port.



Source: made by the authors based on Im (2015).

Note: CIQ stands for customs, immigration and quarantine.

Busan is the second-largest city of South Korea and also the largest city in southern area of the country, whose total area is 769.88 kilometer squared and whose current population is 3,465,407 as of February, 2018, from the Busan city website. Also, Busan Port is the largest trade port of South Korea and its Gimhae International Airport is the third largest of the country. Due to these characteristics, Busan has been considered to have

good environments to develop global business industries. In fact, many international events such as Asia-Pacific Economic Cooperation Conference (APEC), Busan International Film Festival, Busan Game Show (G-Star) and Busan One-Asia Festival have been held in this city. Note that Busan has a lot of similarities with Yokohama, a type-one city in Japan.¹⁰⁾ For instance, both cities have taken various measures to increase their appeal as MICE cities (MICE stands for Meeting, Incentive Travel, Convention, and Exhibition/Event). It is well known that business travelers spend more than other types of travelers, so many cities around the world are now eager to build their reputation as MICE cities to attract more business travelers. Also, as discussed in Section two, comparing Busan with Fukuoka may be interesting, which can be a future extension of this study.

Figure 4: The Quantum of the Seas Entered the Port for General Cargos.



Source: made by authors based on Oh (2015).

There were two turning points in the process of cruise industry development at Busan. The first was 2007. In this year, the first South Korean cruise ship port facility and cruise passenger terminal were built in Busan Port. The advent of South Korea's first cruise facility has had a great impact on the development of the entire South Korean cruise industry as well as that of Busan. Besides the development of port facilities, the Centum City, an international business district, was developed in downtown of the city. The Busan Exhibition and Convention Center (BEXCO), film hall (venue of Busan International Film Festival), complex commercial district having the largest department store of the world, and many other facilities were built in this district.

The second was 2013. In this year, the number of cruise tourists and calls in Busan Port were surpassed by those in Jeju Port, which changed the cruise industry promotion policy

of Busan City drastically. Since 2014, Busan Port has started to differentiate itself from the other ports in South Korea. However, with new cruise passenger terminal and cruise pier finished in 2015, there were serious problems.¹¹⁾ The water depth of the design stage did not match the actual load line of cruise ship, thus cruise ships over 180,000 gross-tonnage cannot berth. For this reason, the original cruise pier is used as general passenger ship pier (Left pier for general passenger ships in Figure 3), and cruise ships berth another pier (Cruise Pier on the right side of Figure 3). Due to this change of use, the cruise passenger terminal, which was 840 meters away from the cruise pier, became quite inconvenient. As a result of this change, the new cruise port has become a facility that takes three hours for entry and departure formalities. Furthermore, the current cruise pier (the cruise pier in Figure 3), is only 360 meters long. This means that the cruise ships over 120,000 gross-tonnage cannot berth.

Table 7. Busan City's Cruise Industry Promotion Plan 2016.

Goal	Details
Expansion of attracting overseas cruise tourists	<ul style="list-style-type: none"> - Developing local tourist attractions - Strengthening marketing of overseas promotion - Construction of convenient immigration system
Cultivation of domestic cruise ship	<ul style="list-style-type: none"> - Administrative support such as ship finance, taxation - Expansion of domestic cruise market - Providing new cruise route information - Providing support and incentive to use port facilities
Creation of cruise infrastructure	<ul style="list-style-type: none"> - Expansion of cruise port infrastructure
Activation of cruise-related industry	<ul style="list-style-type: none"> - Nurturing the specialists - Promoting linkage of marine agricultural, marine tourism products, shipbuilding and education industries - Expansion of cruise port supply business - Cruise industry support system construction

Source: made by the authors based on Ministries Concerned of South Korea (2016).

Busan City has established new development plans to solve these problems. First, the well-designed cruise port expansion plan was announced. This plan was to redevelop and expand the Yeongdo Cruise Port. Yeongdo Cruise Port is currently a cruise port with a capacity of 80,000 gross-tonnage. According to this development plan, however, it will be changed into a port that a 220,000 gross-tonnage cruise ship can berth. Second, in close cooperation with the ministries of the central government, Busan City announced new fostering plans to improve its cruise industry (Ministries concerned 2016 and Ministry of Ocean and fisheries 2016). The plan was aimed to attract overseas cruise tourists, foster domestic cruise ships, create new cruise infrastructures, and revitalize cruise-related industries. Details of this plan are shown in Table 7. According to this plan, Busan City launched a program to link cruise tourism products with medical tourism products and to

train specialists in the cruise industry (Busan City 2017 and Oceans and Fisheries HRD Institute 2015). This plan is also to secure differentiation as MICE city by using the existing infrastructure of Busan City, such as the Centum City.

5. Concluding Remarks

This article attempts to find what attracts more cruise ships to specific ports in Japan and South Korea by analyzing data of cruise traffics of these countries respectively, and to know more about cruise tourism in East-Asian countries by comparing these two countries. The main results of our regression analysis are as follows. (1) For Japan, attracting more foreign cruise ships is an effective measure to increase the overall cruise traffic, (2) City population has positive effects in the both countries, and (3) The island effect is valid only for South Korea.

Besides brushing up our regression analysis, including combining and/or separate analysis of Japanese and Korean data, the future research agenda will include the following things. First, more literature review, especially previous studies on Asia/Europe cruise industries, is needed. Second, policy implication or discussion for measures for ports to attract more cruise ships should be explored more. Regarding this matter, network effects among neighboring ports may be important, especially for type-two ports in Japan. Also, more case studies of both Japanese and South Korean port cities may give more insights. Third, comparison of cruise industry in East Asia including China with these in Europe and other regions may be interesting.

Notes

- 1) The Chinese market is not analyzed in this article, not because it is not important but as discussed later, diplomatic relationships between China and other two East Asian countries are one of key factors in this article.
- 2) See MacNeill and Wozniak (2018), who attempt to answer this question for northern Honduras.
- 3) According the website of Japan Meteorological Agency, the hypocenter of the earthquake was east of the Pacific Coast of Tohoku area, whose biggest city is Sendai in Figure 1.
- 4) See section three about how to deal

with this foreign cruise ship effect in our regression analysis.

- 5) See section three how visa-waiver policies have been effective in the Japanese cruise market.
- 6) See Section four for details.
- 7) See Tomizawa (2013) about the case of Kagoshima Port, located in southern Kyushu in Figure 1.
- 8) We do not use data of city population of years 2011-17, because in Japan, population survey is conducted every five year at census. Therefore, except for census years (2010 and 2015 in the sample period), numbers of city population are estimated values.

- 9) Ishigaki Island has attracted many tourists from Taiwan, which is nearer than mainland China. See Kazue and Kato (2016) for details.
- 10) See Matsubara (2015).
- 11) The following statements are based on Im (2015), Kim (2016), Kwak (2016), and Oh (2015).

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(要旨)

本稿では2010年から2017年の間に、日本・韓国各国において他よりも多くのクルーズ船が来港した港はどのような要素を持っていたのかを回帰分析等から明らかにしようとし、両国の比較により東アジア諸国におけるクルーズ船観光について知見を得ることを試みた。主な結果は以下の通りである。第一に日本において外国船籍のクルーズ船来港数は、日本船籍の船も含めた来港数全体を多くする効果を持つ。この結果は外国船籍船来港数の内生性を考慮してもその統計的有意は変わらない。そしてこの結果は外国船籍のクルーズ船を誘致することが、日本のある地域のクルーズ船観光を発展させるための効果的な政策であることを示唆している。第二に港が位置する都市の人口は、日韓両国でクルーズ船来港数に正に有意な効果を持つ。最後に港が島に位置していることは韓国についてはクルーズ船来港数に正に有意な効果を持つが、日本については有意ではない。分析結果はまた、日韓両国の中国との関係が両国のクルーズ船観光において重要であることと、中国との二国間関係のインパクトは日韓両国で異なることを示している。

(謝辞)

本稿は日本大学商学部附属商学研究共同研究「国内物価の変動要因の実証分析」(代表:池野秀弘教授)の研究成果の一部である。著者は2名の審査員および吉見太洋氏(中央大学)からの有益なコメントに深く感謝する。本稿の誤りは全て著者に帰する。