

## **An Analysis on the Economic Impact of Cruise Port of Call in Japan**

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**Abstract:** In recent years, cruises have enabled tourists to enjoy cheap and easy overseas travel. Cruise calling is expected to increase in the future. The objective of this study is to collect papers and responses to a survey on the effects of cruise vessel calling on Japan and generalize these effects for a particular location. Result of meta-analysis, there are regions where the economic ripple effect is high, even though the population is small, and vice versa. Cruises provide an opportunity to attract tourists and larger economic ripple effects can be expected in areas with smaller populations. We could not correct date about environment and negative cause for calling port, so did not demonstrate it. Therefore, we would like to gather and analyze data for those regions that were not visited for the purpose of this study.

*Keywords:* Cruise, Tourism, Economic impact, Meta-analysis

### **1. INTRODUCTION**

#### **1.1 Research Background**

According to the provisional value of "World Tourism Barometer" announced by the United Nations World Tourism Organization (UNWTO) in 2017, the number of overseas travelers in 2016 (international tourist arrival number) was 1.2 billion, an increase of 39% over the previous year, a positive growth for the seventh consecutive year. According to UNWTO (2017) that specializes in the Asia-Pacific region, the rate of expansion will be 4.9% by the end of 2030. Additionally, they predict the number of international travelers: In 2010, there were 2,400 million international tourists. This number is expected to reach 3,550 million by 2020 and 5,350 million by 2030. China has the largest population in Asia. The tourism expenditure will be 12% and it will lead the world's outbound tourism, followed by the United States, Germany, the UK, and France, followed by the top five countries.

In recent years, cruises have enabled tourists to enjoy cheap and easy overseas travel. It is also popular worldwide, and the number of passengers on cruise liners continues to grow (Figure 1). Among these, 21% are Chinese, followed by 11.6% Americans. According to CLIA (2017), the number of world cruise passengers reached 25.8 million in 2017 and 27.2 million people in 2018, as shown in Figure 1. You can see that the cruise industry will grow even after 2019.

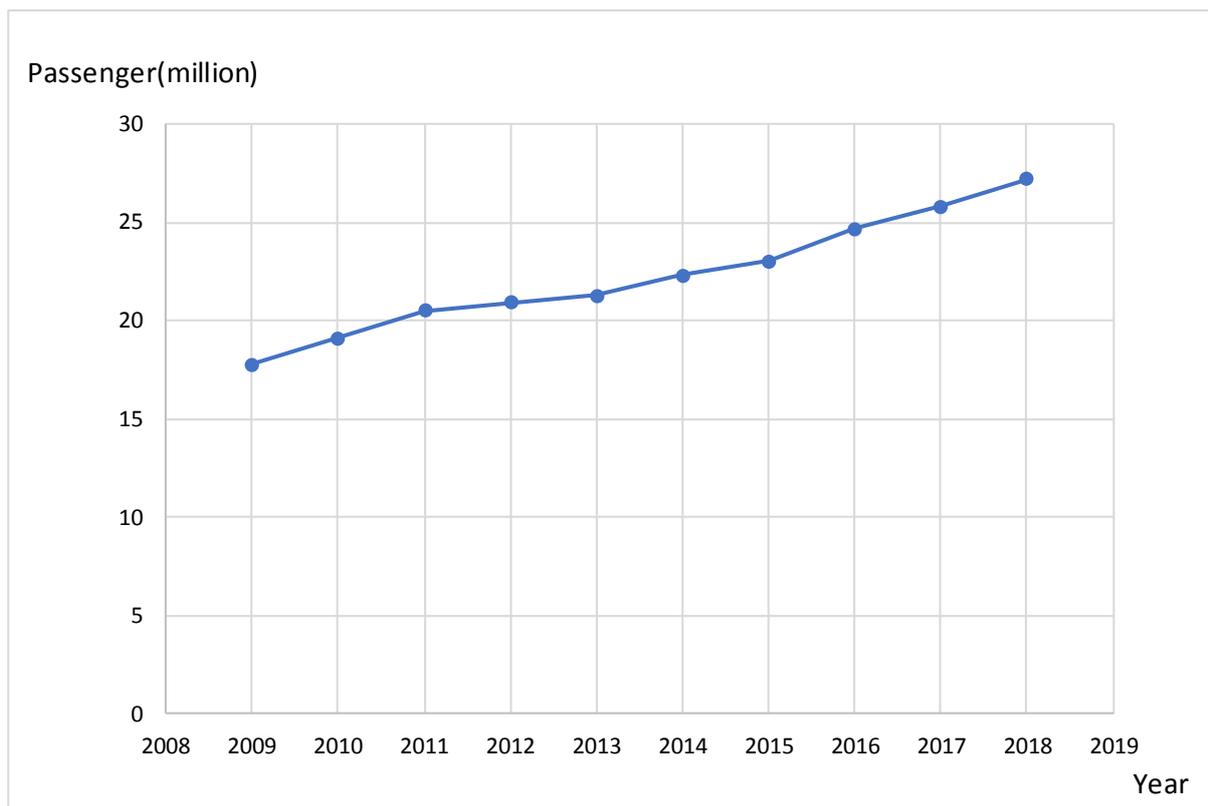


Figure1. Change in the number of cruising passengers

In recent years, the number of foreign tourists visiting Japan by cruise has increased. This number was 174 thousand in 2013 but has increased to 2.5 million in 2017. Additionally, the number of ports is increasing. It is calling 591 times in 2010, but in 2017 the number of calls by cruise is 2764 times. Cruises have a big economic impact on the nearest area, as a large number of tourists are on board. According to Fukuoka city (2010), ports having shopping areas nearby can be the port of call for tourists. The consumption amount of Fukuoka port effect is high even in a short time. In the case of Fukuoka port, calling is expected to increase sales of shops, retail stores, and sightseeing spots (e.g., food and drinks around the port).

According to Tomizawa (2013), the majority of Chinese cruise ships passengers come to Kagoshima Port for shopping. However, they mostly purchase electric/electronic goods without spending money on local tourism related products. Tomizawa (2017) suggested the reason that the tourism facilities selling local products tend to have a limited capacity of accepting a large tour group bus. This phenomenon also occurs at Sasebo Port. According to Nagasaki Economic Research Institute, Ltd. (2018), even if optional tours are provided, tourist focus on visiting Arita porcelain park. The park cannot get a lot of money. In addition, they do not have big parking space, so one has to get on/ off the bus in one corner of Matsuura Park at the central shopping arcade. As a result, shopping is limited. According to Wakiguchi and Sakai (2017), places such as Yokohama have large capacity and acceptance ability. However, places such as Kochi and Yuzu have small capacity and lower acceptance ability, and thus have a negative influence. Therefore, they cannot deal with tourists at the port of call, if they are not familiar with them.

However, the disadvantages mentioned here merit a comprehensive discussion and not a narrow one. The advantages and disadvantages to an area due to cruise calling has been reported along with the increase in the number of calls by ships, but this is only for a specific

port at a specific time. Thus, it is hard to say that the effect of calling has been extensively discussed.

## **1.2 Objectives of the study**

The objective of this study is to collect papers and responses to a survey on the effects of cruise calling on Japan and to clarify the factor that affect the amount of the economic ripple effect. If there is any room to suggest for the future, the positive solutions are proposed in this thesis.

## **2. LITERATURE REVIEW**

### **2.1 Economic Ripple Effects**

Fujiu and Takada (2012) conducted survey at three ports, Kobe Port, Muroran Port, and Naha Port, in accordance with the port of an ocean cruise with different taste of itinerary. As a result, economic effect of a port and its back hatchery 10,000-60,000yen. Chang, YT, et. al. (2017), which states are spreading to cruise companies is not necessarily efficient, he said neglecting hedge policies to prepare for risk would lead to inefficiency. In addition, Taguchi and Ikeda (2011) estimated the economic ripple effect in Osaka city and the Kinki area based on the cruising entrance record of Osaka port in 2009. The result in about 150 million yen in Osaka city and in Kinki area approximately 240 million yen. If cruise of 70,000 tons and a capacity of 2,500 passengers is going to cruise for a week fixed point cruise throughout the year with Osaka port, its economic ripple effect will be about 20.7 billion yen in Osaka city.

### **2.2 Impact of Increased Acceptance**

Foreign cruise ships are increasing year by year and cruise ships in Japan is at the same level. Mizuno (2017) notes that cruises from Taiwan have recently increased, while West Japan receives 70% of foreign ships. However, Kyushu and Okinawa are not used to accepting international visitors to Japan, and there are cases of refusal. There are also cases where entry to ports is refused since the commercial facility is isolated from the port and connectivity depends on bus service. Kase (2018) said that commercial establishments are far from the ports, and thus they depend a lot on buses. However, a lot of buses are not welcomed locally and there are many disadvantages of promoting buses or taxis. MacNeill and Wozniak (2018) show that the number of people who experience cultural events and understand culture preservation increases. At the same time, it leads to an increase in waste and deterioration of public order. Likewise, they compare causally related areas with distant areas and prove that poor purchasing ability of necessities and environmental disposal of garbage that was dumped to the sea and rivers, is conspicuous.

From this, it is clear that in many cases, accepting a number of cruises is impossible and environmental pollution happens. It is clear that the understanding of culture increases, but the impact on the environment is not clear.

The effect of cruise ship has been widely examined in MacNeill and Wozniak's (2018) report, but the validation of this effect in Japan is not sufficient. Therefore, in this study, we carry out a meta-analysis that focuses on the economic impact of cruise port of call in Japan.

## **3. ACTUAL STATE OF CRUISE CALLINIG IN JAPAN**

Recent cruise calls in Japan involve a number of passengers visiting at the same time, gourmet consumption, shopping and other activities, and cultural exchange with foreign tourists and local residents. This contributes greatly to local production. The number of cruises at Japanese ports has increased, except in 2013. In 2017, a total of 2075 ships (751 Japanese ships and 2014 foreign ships) came calling (Figure 2).

On June 2, 2017, the "Legislation to Partially Revise the Port and Harbor Laws" was passed. Japanese government started admitting passenger ship to core of excellence harbors. This means the port manager can be involved in future diplomacy, cruise acceptance targets, and outline of facilities such as building terminals and accepting base formation plans (such as role sharing between civilians and officials). The port manager concluded an agreement with a private business operator. If the usage fee for a passenger facility owned by a cruise shipping company was remarkably inappropriate, the port manager changed the order.

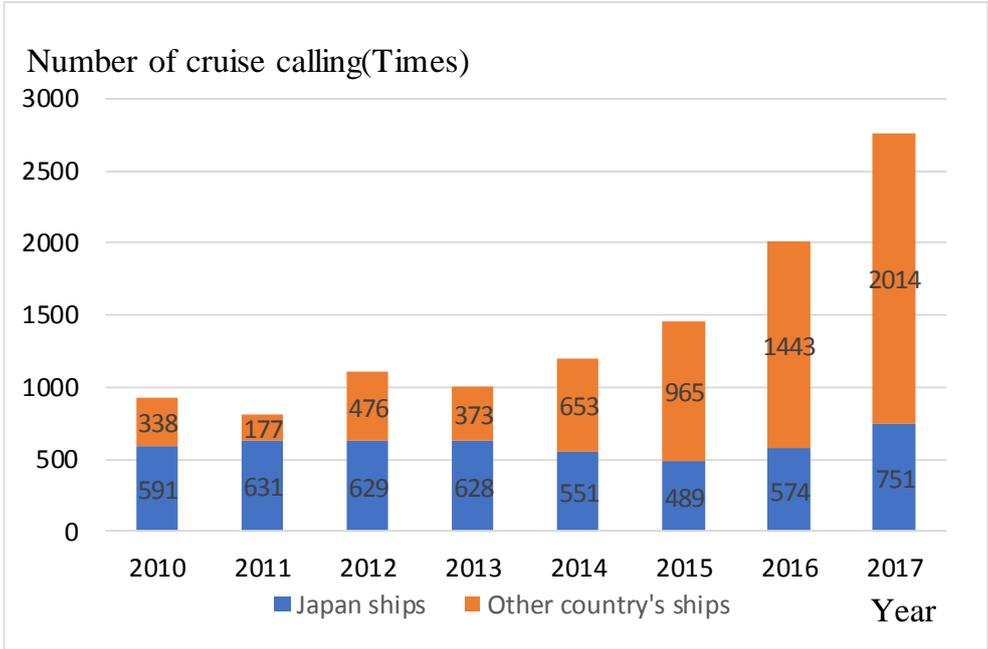


Figure2. The number of cruise calling in Japan

Table 1 shows the number of cruises called to Japan by region, and that the port of call for cruises used by international tourists visiting Japan are not Tokyo, Kansai, Yokohama, and Kobe. They sail to Kyushu and Okinawa in West Japan. These are local ports and contribute to regional economy. In 2017, The Ministry of Land, Infrastructure, and Transport Tourism (MLIT) ranked the ports as follows. No. 1 place: Hakata Port, number of calls 309 (previous year's first rank with 312); No. 2: Nagasaki Port, 262 (previous year's second rank with 190 ); and No. 3: Naha Port, 217 (previous year's third rank with 183). From Table 1, we see that this is the number of calls that Hakata has extended to cruises. It is easy to sail from China and Korea because they are the nearest.

Table1. Cruise calling by port 2017

Port	Number of call	Port	Number of call
Hakata	326	Kobe	117
Nagasaki	267	Kagoshima	108
Naha	224	Sasebo	84
Yokohama	178	Yae	66
Ishigaki	132	Other	1133
Hirara	130	Total	2764

In 2014, MLIT cooperated with the Japan Tourism Agency (JTA) to promote cruise call at port, and held business talks with overseas cruise companies and members of the National Cruise Activation Council. MLIT asked foreign ship companies to consider Japanese ports as their port of call and included the nearest sightseeing spots.

Miyakojima city (2017) established the "Miyakojima cruise liner invitation liaison council" in 2008 and it is managed by Miyakojima's bureau of tourism, commerce, and industry. The tourism section's study and council meetings were held in 2014. As in the previous example, the efforts for calling cruise liners at the ports are drawing attention at various places in Japan. This increase in calling is due to the rapid growth of Asian markets such as China, and further increase can be expected from now on. Unlike European and US tourists, Chinese tourists enjoy shopping-oriented sightseeing. An effect on economy can be thus expected due to the increase in cruise ships from the Chinese coast. In 2008, the city of Nagasaki first introduced the UnionPay card terminal to the local shopping district. Additionally, it promoted maintenance on the hardware side, such as extending the quay in 2009.

However, port of Kyushu and Okinawa are saturated due to the increased number of cruises. These ports are very crowded, and therefore cruise companies cannot reserve a preferred date. Sometimes these ports refuse to call the cruises. Additionally, according to Nakano (2017), the port of Japan accepts cruise ships' use of the quayside for cargo, although it is limited to passenger ships, and when accepting cargo at the quay, cruise passengers can get on and off the ship. In order to ensure the safety of passengers, it is necessary to suspend and restrict cargo handling. Cooperation between shipping companies and port transport operators is necessary and there are limitations on acceptable quay walls. This takes away the passenger's time. Thus, on May 30, 2017, the "Tourism Vision Realization Program 2017" was raised at the ministerial conference for the promotion of tourism. Among other things, diversification of ports was done and refusal of calling was nullified. In addition, The Ministry of Land, Infrastructure and Transport Tourism (2012) stated that "the most important thing to consider when attracting overseas cruise ships is speeding up the immigration process (elements that cannot be overlooked and are directly connected to the satisfaction)."

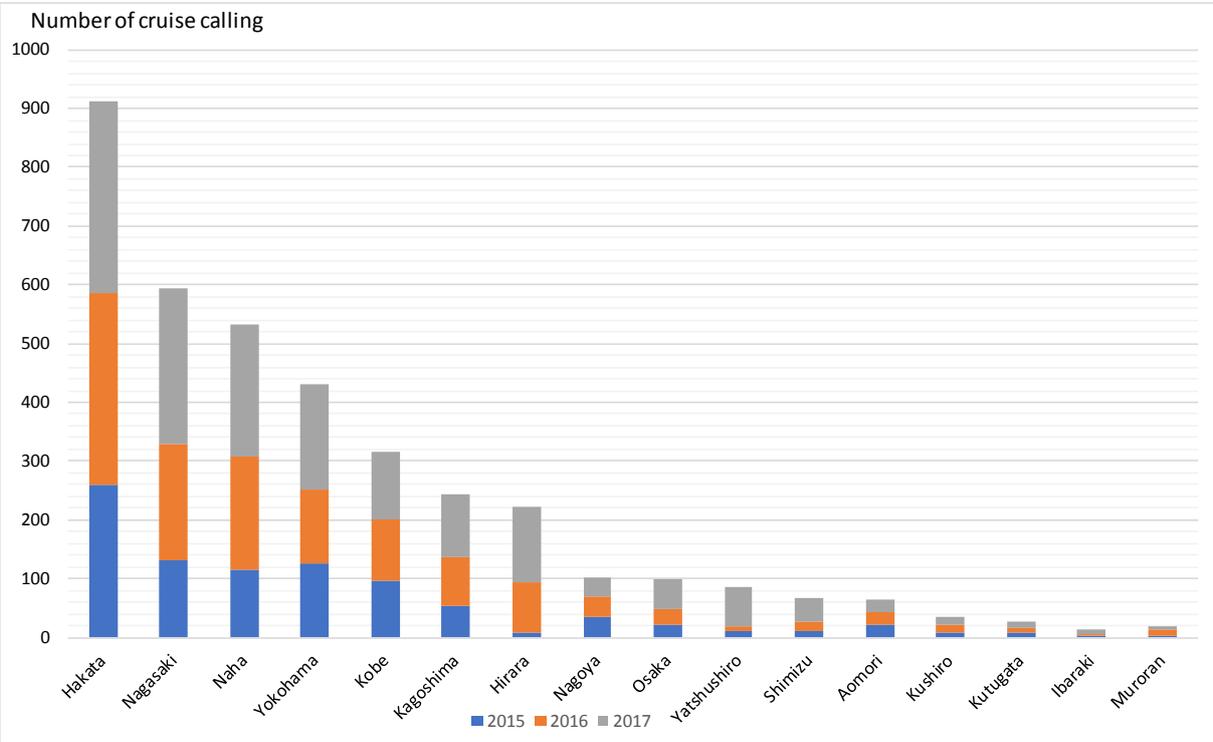
## 4. ECONOMIC IMPACT OF CRUISE CALLING TO THE REGION

### 4.1 Data

The date used for the analysis is taken from search reports and papers organized for investigation, and includes the key words "port," "cruise," "influence," and "economic ripple effect. Out of these, we will cover only those related to the ports that have been visited five or more times since 2017.

### 4.2 Economic Impact of Cruise Calling

In Figure 3, Hakata port has the largest number in Japan, followed by Nagasaki and Naha ports. The rate of increase for Hakata port is small, although there is an increasing tendency for Hirara port and Kagoshima port. The number is small when comparing the ports of Hakata,



Nagasaki, and Naha. However, the ports of Hirara and Kagoshima will grow in the future.  
 Figure3.The number of cruises calling by port (2015-2017)

First, in order to compare by port, we examined the municipality of the harbor, calculated their population, and economic ripple effect. Then, we analyzed the economic ripple effect and population data per vessel for each port. It was divided into population by port and economic ripple effect (Table 2). The method for calculating the economic ripple effect is detailed in Sasaki, et, al. (2018). They derive the Leontief inverse matrix on the model’s premise for the ripple effect analysis and calculate the secondary and tertiary ripple effects, among other things.

Table2. Population per port and economic ripple effects per cruise

port	year	population(million)	economic ripple effects(million yen)/call
Hakata	2009	1.450	44.04
Hakata	2017	1.579	326.69
Nagasaki	2009	0.444	56.36
Naha	2009	0.314	185.43
Naha	2010	0.312	97.50
Naha	2010	0.312	24.42
Naha	2015	0.319	27.00
Naha	2015	0.319	435.00
Hirara	2016	0.054	30.00
Kagoshima	2013	0.598	0.27
Shimizu	2015	0.694	64.00
Kushiro	2007	0.191	234.00
Kushiro	2009	0.188	11.00
Kushiro	2009	0.188	22.45
Kushiro	2012	0.170	32.94
Kushiro	2012	0.170	124.77
Kushiro	2012	0.170	272.72
Yokohama	2006	1.482	36.31
Yokohama	2015	1.633	246.00
Yokohama	2015	1.633	62.00
Yokohama	2015	1.633	120.00
Kobe	2009	1.538	70.89
Kobe	2012	1.542	33.04
Murorann	2010	0.094	49.32
Yatsushiro	2014	0.127	122.00
Yatsushiro	2017	0.127	105.00
Osaka	2009	0.198	24.29
Ibaraki	2017	0.390	70.00
Aomori	2018	0.285	15.97

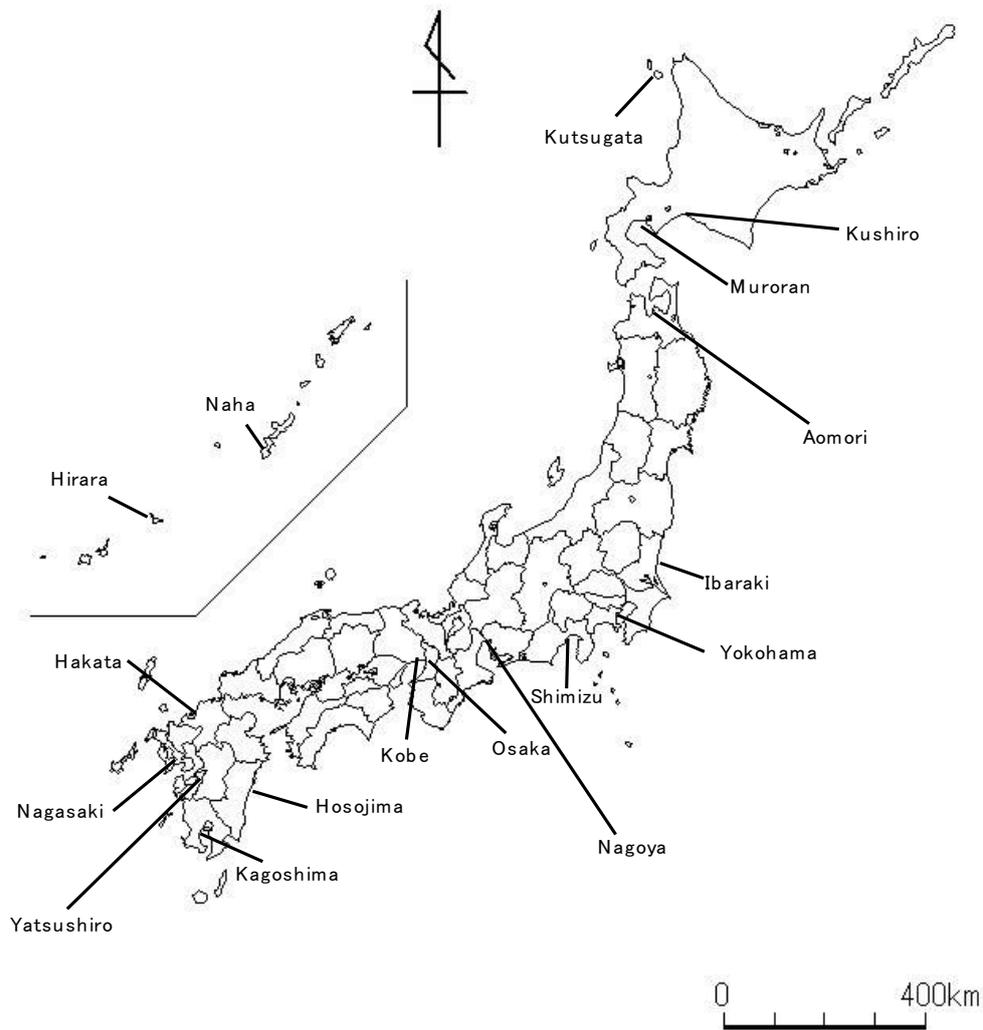


Figure4. Location of the target ports

From this table, it is clear that the numerical values are larger for Yokohama, Kobe, and Hakata ports, which have the largest population. Economic ripple effect has largest value for Naha, Kushiro, Yokohama, and Yatsushiro ports. We found that the population does not necessarily lead to economic effects when calling cruises. Next, we organize the scatter plot of economic ripple effects and population.

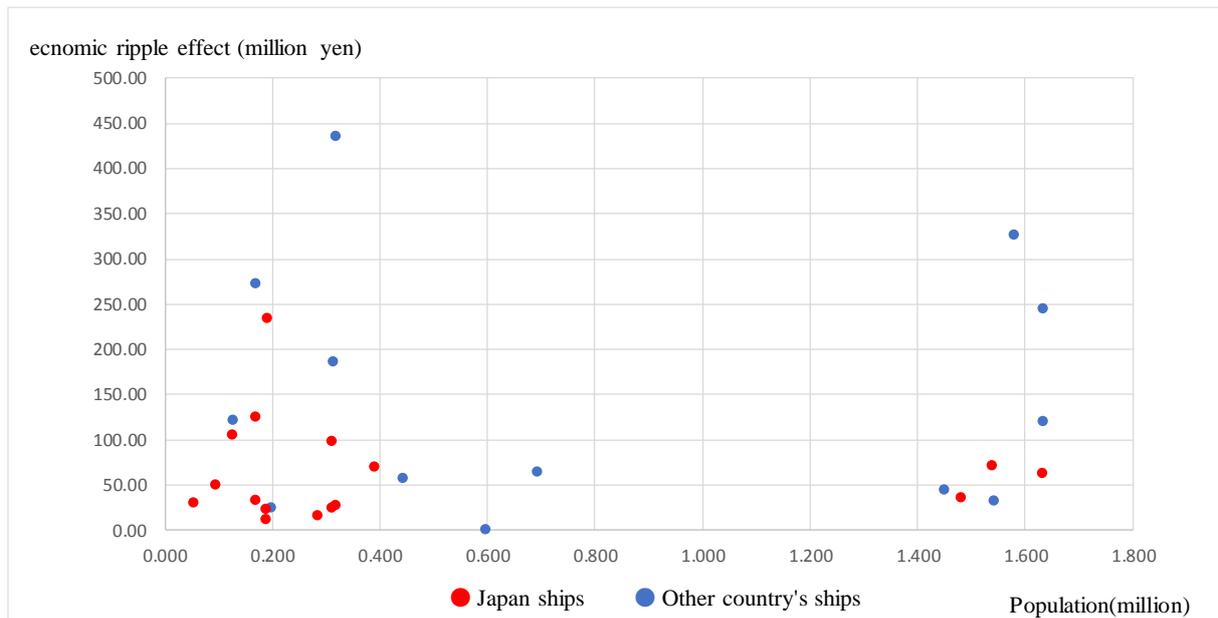


Figure5. Scatter plot of economic ripple effects and population

The results show that the correlation is spreading. The economic ripple effect is high even in regions with low population. Conversely, the economic ripple effect is low even in areas with large population. Also, Japan ships is lower economic ripple effects than other countries.

In order to understand the factors affecting the economic impact of calling, we estimated the regression analysis. The following variables are used as an explanatory variable in this model.

Annual sales turnover – represents the attractiveness for shopping the economic ripple effect is expected to be high if the amount of sales is high. The number for annual turnover implies the amount sold for one year at a large commercial establishment (area over 1,000m<sup>2</sup>).

Passenger's nationality – is one-zero dummy variable. It takes the value of one if it is other country's ship, and zero it is Japanese ship.

Number of guests – represents the level of destination attractiveness.

Distance to city – could be a barrier for shopping due to the time limitation of cruise passengers. We calculate this by replacing the distance to the city hall with the distance to the city.

We examine Model 1 for all cases and find It to be inferior. Model 2 was found with significant variables.

Table3. Estimation results of regression analysis

	Model1	Model 2
annual sales turnover	662.53 *** (0.00204)	293.53 ** (0.0383)
Passenger's nationality	205715953.00 (0.103)	166724489.60 (0.13)
Number of guest	-15054625.78 ** (0.0134)	
Distance to city	-24.92 (0.524)	
constant	62675671.65 (0.563)	
adjusted R2	0.285	0.279
n	30	30

( ) P value

\*\*\*1%significant level \*\*5%significant level \*10%significant level

From the results, we observe that high economic ripple effect corresponds to the regions around the ports that have large commercial establishments. Additionally, international tourists have a bigger impact on economic ripple effect than that of Japanese tourists. Conversely, we found that the number of guests and the distance to city are not related to economic ripple effect.

The economic ripple effect is expected to be higher, if regions around the port are multilingual and friendlier. Additionally, since cruise passengers have less time to go around the, each harbor can work in solidarity with the sightseeing spots by taking advantage of their features.

## 5.CONCLUSION

### 5.1 Conclusion

In this study, we conducted a meta-analysis with the aim of understanding and offering possible measures to maximize the economic ripple effect on areas near the cruise ports that respond to future calls, which has been debated so far. Chapter 1 shows the trends for cruise ships and the expectations of inbound tourists on cruise to Japan, against the backdrop of the international trends in world tourism. Chapter 2 shows the existing studies and summarizes the economic ripple effect by the current calling port and the impact caused by acceptance. We clarify the narrowness of cruise sightseeing calling data, which is currently being studied

in Japan. Chapter 3 summarizes the condition of Japanese cruises and observes the future status of the port of calling through MLTI on cruise to Japan; the future looks promising. In chapter 4, we conducted a meta-analysis based on the keywords and information gathered from economic ripple effects by the calling ports.

As mentioned in Chapter 1, the advantages and disadvantages of this study were not exhaustive, but by using meta-analysis we were able to understand the influence of cruise. Economic ripple effect is not dependent on the population of an area. There are regions where the economic ripple effect is high, even though the population is small, and vice versa. Cruises provide an opportunity to attract tourists and larger economic ripple effects can be expected in areas with smaller populations. To achieve this, the most important requirements are large commercial establishments in the area and a suitable environment for international tourists.

## 5.2 Future Task

From the meta-analysis in this study, we could only inspect the economic ripple effect for 37 cases. However, we could not collect data on negative environmental impact to the calling ports, and therefore could not present it. However, we could not correct data about environment and negative cause for calling port, so did not demonstrate it. Cruise calling is expected to increase in the future. Therefore, we would like to gather and analyze data for those regions that were not visited for the purpose of this study. With regard to the economic ripple effect, we need to clarify the endogeneity and simultaneity issue. Moreover, structural equation modeling will be estimated to investigate the factors affecting the economic ripple effect.

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