UNWTO Special Workshop on Tourism Statistics

Inbound tourism in Japan: An analysis of "Accommodation Survey"

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Today's talk

1. Motivation
2. Literature review and this paper's contribution
3. Overview of inbound tourism in Japan
4. Variation in the numbers of foreign visitors among regions
5. Analysis using a panel regression model
6. Concluding remarks

1. Motivation

Motivation

- For the Japanese economy, facing demand contraction due to a declining population, inbound tourism is one of the most important policy issues in recent years.
- Foreign visitors are expected to have a positive effect particularly on local economies with weak industrial basis outside metropolitan areas.
- Following revision of the 'Statistics Act' and statistical reform by the government, the JTA has vigorously implemented economic surveys of regional tourism by setting common statistical standards.
- We can now make an empirical analysis on inbound tourism and draw some policy implications.

2. Literature review and this paper’s contribution

Prior research

- A huge amount of prior research on tourism demand: estimation of demand function, analysis on elasticities, etc.
  - —Crouch (1995), Song et al. (2009), and Peng et al. (2014) collect and review estimation models, and try to analyze the factors influencing tourism demand using a meta-analytical technique.
  - —Regarding tourism demand in Japan, ex. Sakai et al. (2000) estimates Japanese outbound tourism demand function using a panel regression model.

Prior research

- Much qualitative research on inbound tourism demand in Japan, but not so many quantitative studies

— Aso (2000) estimates the tourism demand function using an ECM model, showing that tourists from Asian countries are sensitive to prices and that those from Europe and America are influenced by their own income condition.

— Okamoto and Kurihara (2007) forecasts international tourism demand from East Asia to Japan using a model of trip generation based on logistic function.

Prior research

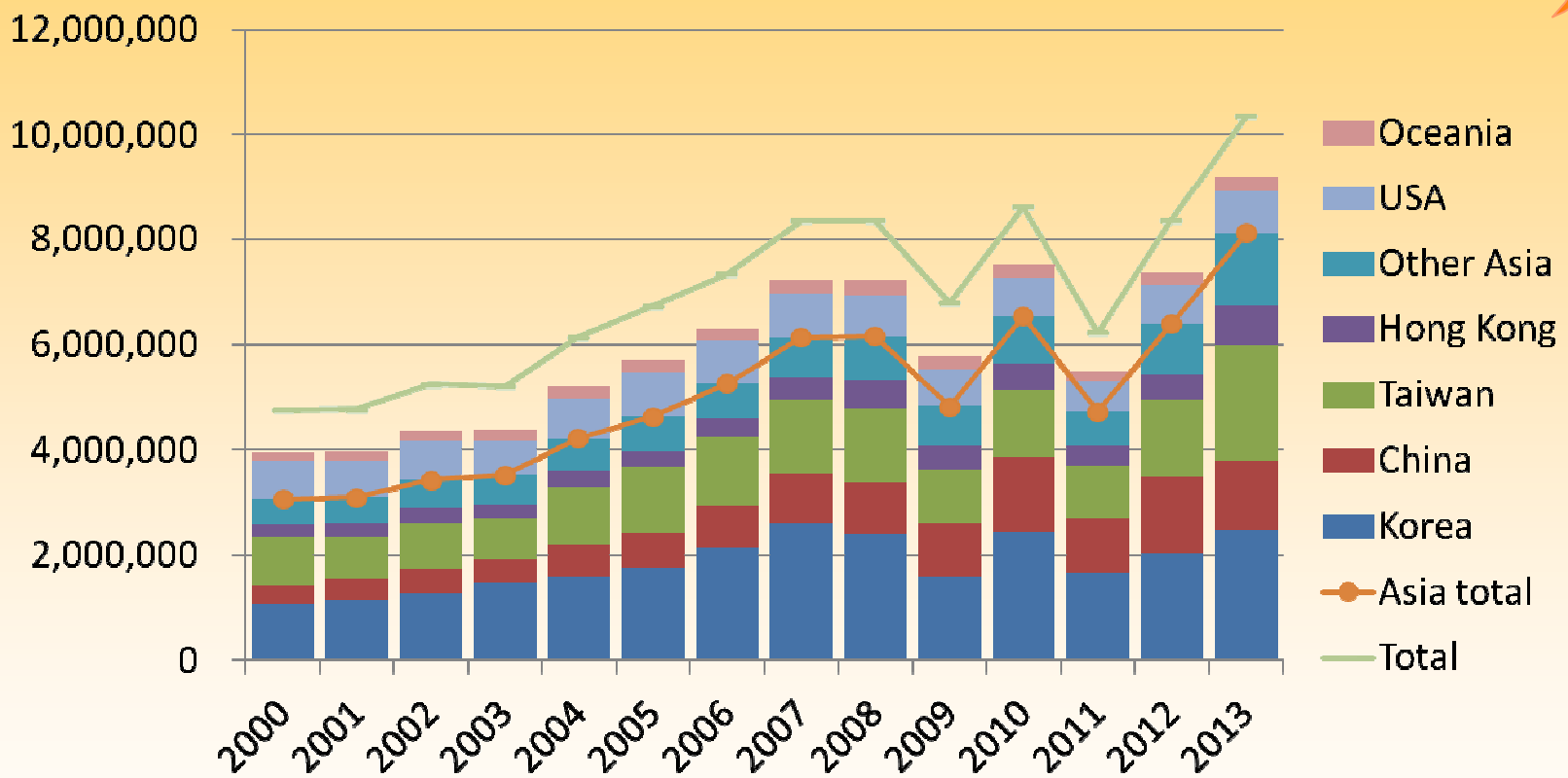
- The "Accommodation Survey" accumulates detailed data from which some researchers make statistical analyses and draw policy implications.
  - Koike et al. (2011) examines the efficiency of tourism policy by prefecture using a DEA method and proposes to improve "soft" policy instruments in tourism.
  - Ooi (2012) analyzes seasonality of accommodation guests by prefecture and find that seasonality is greater/smaller in the phase of economic stagnation/boom.

This paper's contribution

- Statistically describes the variation in the numbers of foreign visitors among prefectures, using the "Accommodation Survey" and other new data, which have been collected in recent years.
- Empirically analyzes the background of the variation among prefectures using a macro-panel regression model.
- Sheds light on an analytical usage of tourism statistics and draws policy implications.

3. Overview of inbound tourism in Japan

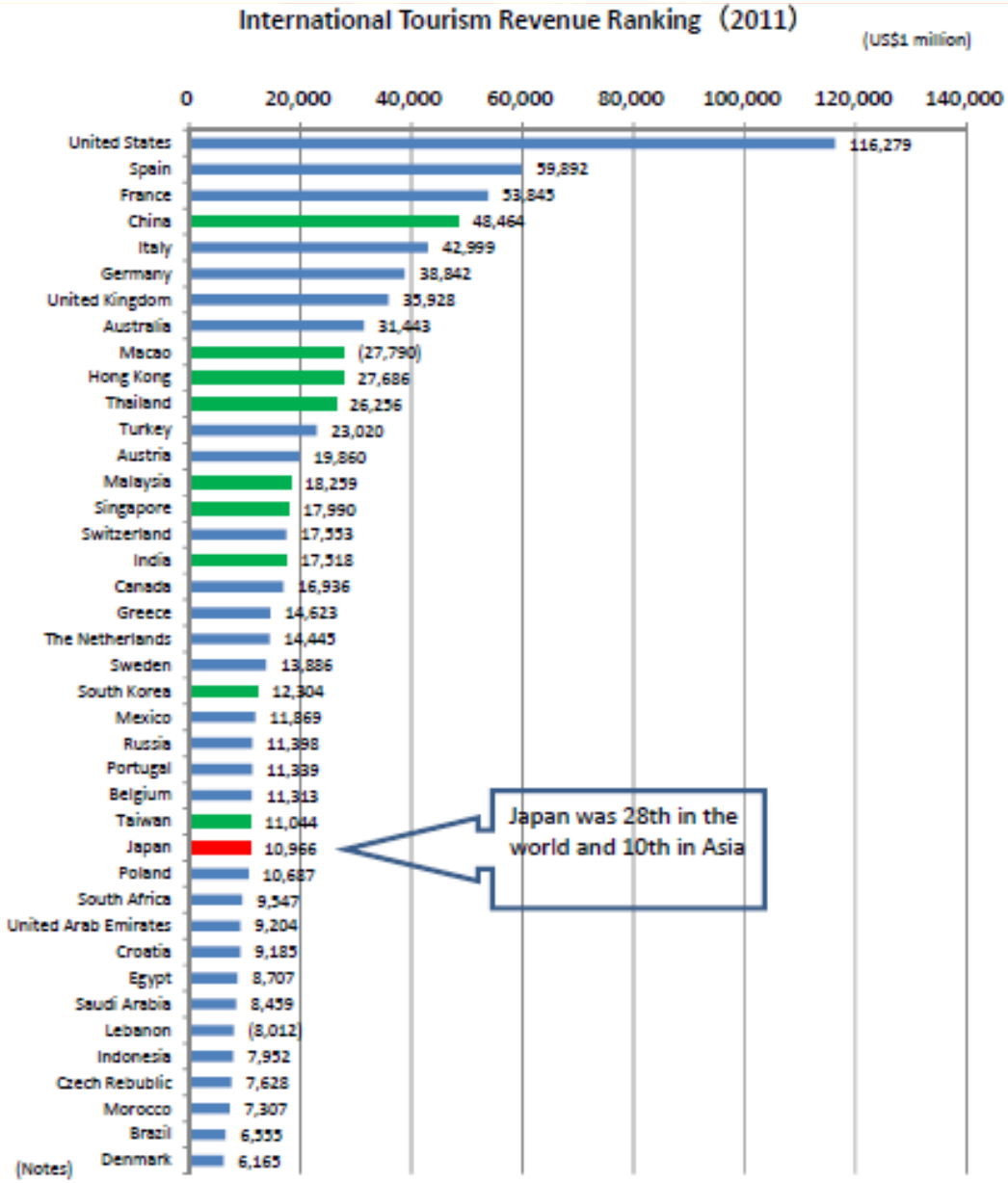
Inbound visitors



- Inbound visitors in Japan exceeded ten million in 2013 for the first time .

Source: JNTO

Inbound tourism revenue ranking



(Notes)

1 Prepared by the Japan National Tourism Organization based on materials from the UNWTO and each country's government tourism bureaus.

2 The figures shown here are provisional as of June 2012.

3 2010 figures were used for Macao and Lebanon because 2011 figures were unclear.

4 The international tourism revenue shown here does not include international travelers' fares.

5 In some cases international tourism revenue is newly announced as figures are updated, and is updated retroactively. Furthermore, when the figures for international tourism revenue are converted into US dollars, they will change according to the foreign exchange rates at that time. Consequently, depending on the timing of when the figures are used, the order may

Source: JTA, "White paper on Tourism in Japan: The tourism Situation in 2012"

Inbound visitors' purpose

Purpose	Ratio(%)	
	2012	2013
Sightseeing and leisure	49.0	54.6
Visiting relatives or acquaintances	9.1	7.3
Honeymoon	0.4	0.4
School related travel	1.1	1.2
Event	0.5	0.6
Study	1.8	1.7
Incentive tour	0.6	0.5
Business Exhibitions/fairs	1.9	1.9
International conferences	3.8	2.7
Internal meeting	7.4	7.4
Training	5.2	4.6
Negotiations and other business activities	14.9	13.6
Others	4.2	3.4

Source: JTA "Consumption Trend Survey for Foreigners Visiting Japan"

Foreign visitors staying in registered accommodations

visitor nights

	Total	Sightseeing	Others	Tokyo	(Ratio:%)
2007	22,654	11,012	11,641	7,861	(34.7)
2008	22,248	11,286	10,960	7,349	(33.0)
2009	18,298	9,309	8,989	6,378	(34.9)
2010	26,023	13,583	12,435	8,720	(33.5)
2011	18,416	9,023	9,355	5,652	(30.7)
2012	26,314	13,554	12,707	8,292	(31.5)
2013	33,511	18,638	14,840	9,831	(29.3)

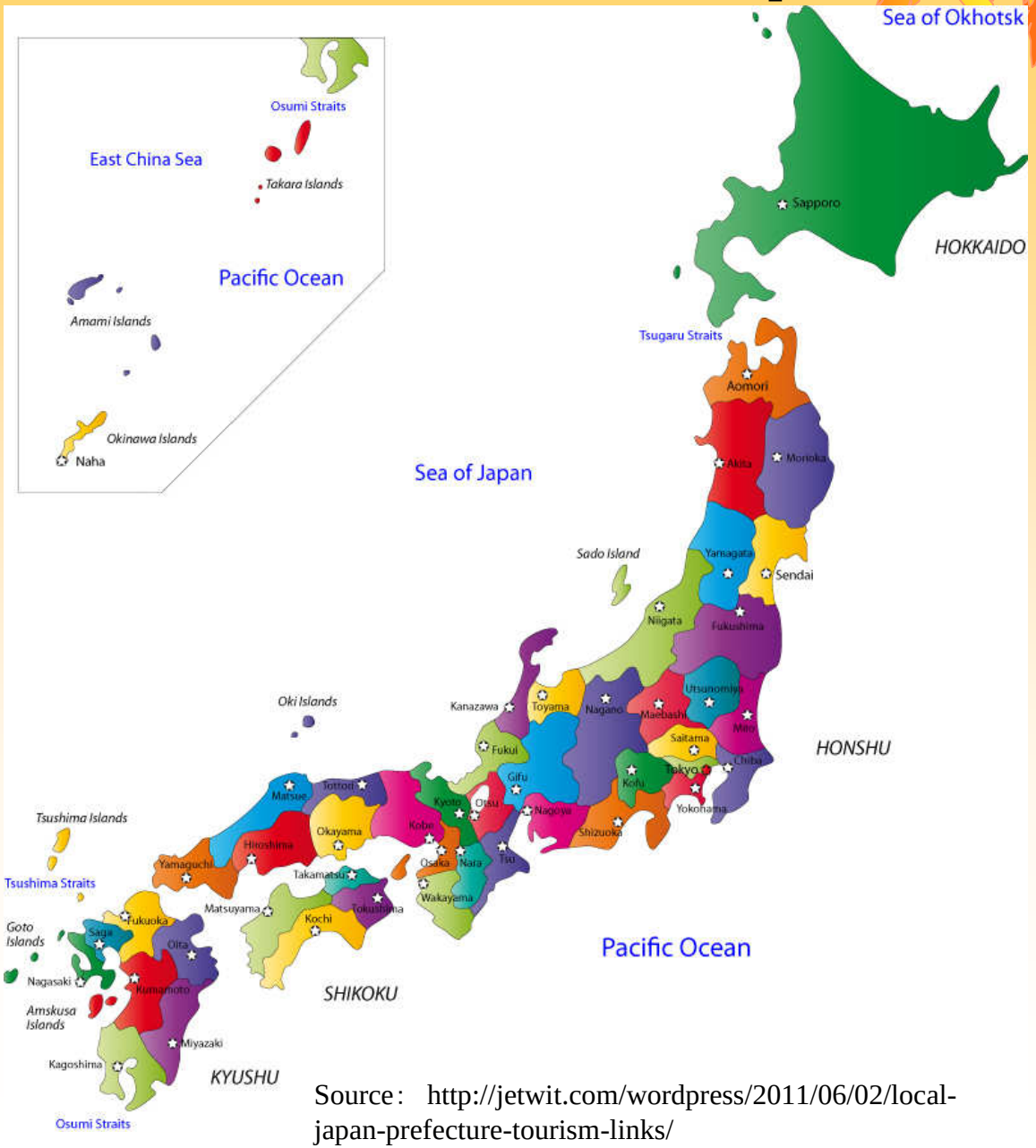
Source: JTA "Accommodation Survey"

Note: Sightseeing: Facilities where sightseeing-oriented visitors account for 50% or more.
Others: Facilities where sightseeing-oriented visitors account for less than 50%.

- Foreign visitors staying in registered accommodations show high growth. 'Sightseeing' is more than half of the total visitors.

4. Variation in the numbers of foreign visitors among regions

Prefectures in Japan



Source： http://jetwit.com/wordpress/2011/06/02/local-japan-prefecture-tourism-links/

Foreign visitors staying in registered accommodations by prefecture (2013)

thou. visitor nights

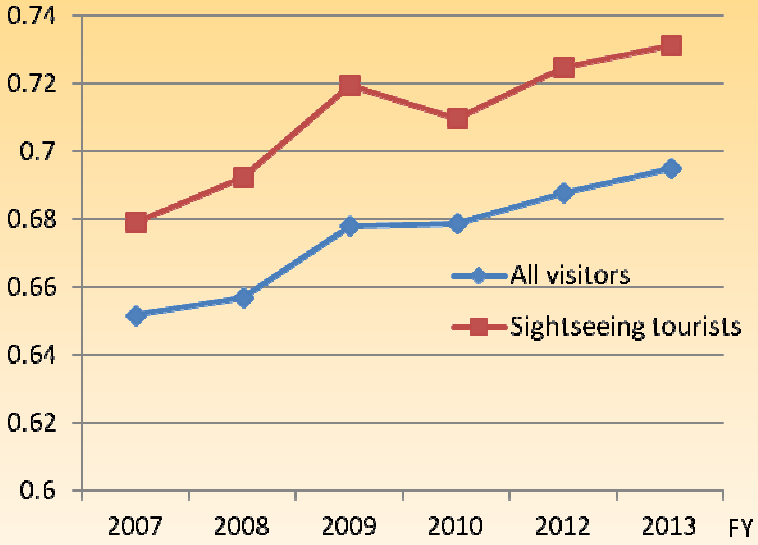
Tokyo	9,831	Toyama	136
Osaka	4,315	Shiga	132
Hokkaido	3,070	Mie	131
Kyoto	2,626	Gumma	109
Chiba	2,050	Miyagi	107
Okinawa	1,488	Niigata	107
Aichi	1,148	Saitama	98
Kanagawa	1,067	Kagawa	96
Fukuoka	900	Ibaraki	88
Shizuoka	560	Okayama	86
Nagano	543	Ehime	67
Hyogo	507	Iwate	65
Yamanashi	492	Aomori	62
Nagasaki	425	Saga	56
Kumamoto	421	Tottori	47
Gifu	417	Yamaguchi	46
Oita	410	Fukushima	42
Hiroshima	366	Yamagata	37
Ishikawa	340	Akita	36
Kagoshima	215	Tokushima	32
Wakayama	187	Fukui	30
Tochigi	179	Kochi	25
Nara	165	Shimane	19
Miyazaki	137	Total	33,511

- A wide gap among prefectures
- The top seven prefectures excluding Tokyo dominate with two thirds of the total foreign visitor nights in Japan.

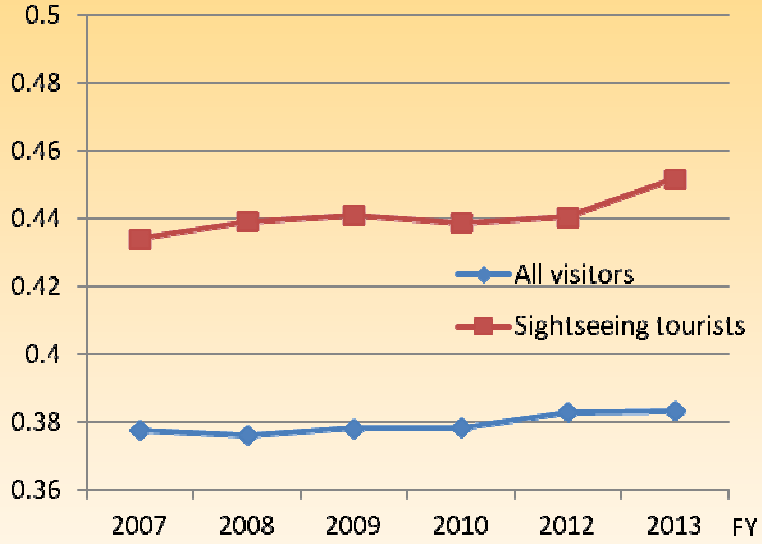
Source: JTA "Accommodation Survey"

Gini coefficients of visitors by prefecture

Foreigners



Japanese



Source: JTA "Accommodation Survey"

Note: The data are based on the survey of registered accommodation facilities with ten or more employees to keep time-series continuity.

- The variation in foreign visitors among regions is far greater than that for Japanese visitors.
- Gini coefficients of foreign visitors have increased since 2007 excluding 2011.

5. Analysis using a panel regression model

Model and data

- The estimation model is a form of tourism demand function based on cross-sectional model with period fixed effect.

Demand=F (Income, Generalized cost, Market conditions, Policy variables)

- In our model, income effect is assumed to be absorbed in the period fixed effect.

Regression model

$$\ln Q_{it} = a + b_1 \ln H_{i,t-1} + b_2 M_{i,t-1} + b_3 L_i + b_4 O_{it-1} + b_5 R_{i,t-1}$$
$$+ b_6 A_{i,t-1} + b_7 B_{i,t-1} + b_8 T_{it} + b_9 I_{it} + \beta_t + \varepsilon_{it}$$

Q: Gross foreign overnight visitors in registered accommodations
H: Capacity of hot spring hotels
M: Purchasing ratio of 'entertainment services' to the total spending by foreign tourists
L: Visitors to theme park facilities
O: Ratio of outbound travelers to the total prefectural population
R: Road improvement ratio
A: Dummy variable for international airports
B: Dummy variable for bullet train services
T: Ratio of tourism officers to the total number of administrative officers in prefectural government
I: Number of international conferences
i: prefecture, t : year

Notes on the data

- Purchasing ratio of 'entertainment services' to the total spending by foreign tourists stands for market condition of foreigners' tastes.
- 'Entertainment services' in 'Consumption Trend Survey' include optional tours on site, tour guides, golf play, amusement parks, art viewing, sports spectating, museums, zoos, aquariums, rental fees for bicycles, etc.

Descriptive statistics of the pooled data

Variables	Unit	Av.	S.D.	Min.	Max.
Gross foreign visitors staying in registered accommodations	visitor nights	402	643	10	4,077
Capacity of hot spring hotels	thou.	31	34	2	162
Purchasing ratio of ‘entertainment services’ to the total spending by foreign tourists	%	19.3	9.7	0.0	50.0
Visitors to theme park facilities	mil.	1.6	4.6	0	27.9
Ratio of outbound travelers to the total prefectural population	%	9.6	4.0	3.8	21.8
Road improvement ratio	%	55.6	9.2	36.3	74.9
Ratio of tourism officers to the total number of administrative officers in prefectural government	%	0.7	0.4	0.1	2.1
Number of international conferences		41	67	0	301

Sample period is 2007-2013,but all the data for 2011, when the earthquake occurred, is excluded.

Regression results

Dependent variable: the level of visitor nights

	Model 1	
	Coefficient	t-value
Intercept	5.062	18.47***
Capacity of hot spring hotels	0.403	31.67***
Purchasing ratio of 'entertainment services'	0.026	8.25***
Visitors to theme park facilities	0.051	24.06***
Ratio of outbound travelers	0.059	7.10***
Road improvement ratio	0.021	7.49***
International airport dummy	0.477	14.86***
Bullet train services dummy	-0.088	-1.51
Ratio of tourism officers	0.012	0.13
Number of international conferences	0.008	13.34***
Adjusted R-squared	0.64	
Number of sample	195	
Estimation period	2008-2013	

***, **, and * show that P values are 1%, 5%, and 10% or less, respectively (the following tables are also the same).

- All the explanatory variables except for bullet train service dummy and ratio of tourism officers are statistically significant with expected sign.
- The difference of inherent market conditions and transportation facilities causes the variation in the number of inbound tourists among regions.

Regression results

Dependent variable: difference of logarithms of visitor nights/ rate of change from the previous year

	Model 2		Model 3	
	Coefficient	t-value	Coefficient	t-value
Intercept	-0.036	-0.11	0.973	2.38**
Capacity of hot spring hotels	-0.014	-0.52	-0.014	-0.48
Purchasing ratio of 'entertainment services'	0.001	0.93	0.001	1.02
Visitors to theme park facilities	0.000	-0.02	0.000	-0.19
Ratio of outbound travelers	-0.002	-0.46	-0.003	-0.73
Road improvement ratio	0.002	1.79*	0.003	1.94*
International airport dummy	0.024	0.77	0.044	1.29
Bullet train services dummy	0.027	1.74*	0.028	2.40**
Ratio of tourism officers	0.100	2.71***	0.122	2.67***
Number of international conferences	0.000	1.98**	0.000	2.31**
Adjusted R-squared	0.58		0.52	
Number of sample	195		195	
Estimation period	2008-2013		2008-2013	

- None of the variables for market conditions is significant.
- Transportation facilities are still important factors; bullet train service dummy replaces international airport dummy as a significant variable.

Regression results

Dependent variable: difference of logarithms of visitor nights/ rate of change from the previous year

	Model 2		Model 3	
	Coefficient	t-value	Coefficient	t-value
Intercept	−0.036	−0.11	0.973	2.38**
Capacity of hot spring hotels	−0.014	−0.52	−0.014	−0.48
Purchasing ratio of 'entertainment services'	0.001	0.93	0.001	1.02
Visitors to theme park facilities	0.000	−0.02	0.000	−0.19
Ratio of outbound travelers	−0.002	−0.46	−0.003	−0.73
Road improvement ratio	0.002	1.79*	0.003	1.94*
International airport dummy	0.024	0.77	0.044	1.29
Bullet train services dummy	0.027	1.74*	0.028	2.40**
Ratio of tourism officers	0.100	2.71***	0.122	2.67***
Number of international conferences	0.000	1.98**	0.000	2.31**
Adjusted R-squared	0.58		0.52	
Number of sample	195		195	
Estimation period	2008-2013		2008-2013	

- The ratio of tourism officers becomes a significant explanatory variable, while this is not significant in model 1.

⇒ **Local governments that prioritize tourism may increase foreign visitors staying in their own regions.**

Regression results by purpose

Dependent variable: the level of visitor nights

	Model 4 Sightseeing		Model 5 Business etc.	
	Coefficient	t-value	Coefficient	t-value
Intercept	0.348	0.99	6.965	21.09***
Capacity of hot spring hotels	0.692	62.88***	0.137	11.16***
Purchasing ratio of 'entertainment services'	0.038	7.10***	0.008	3.42***
Visitors to theme park facilities	0.065	55.36***	0.074	13.06***
Ratio of outbound travelers	0.039	4.35***	0.037	2.75***
Road improvement ratio	0.039	21.37***	0.022	10.10***
International airport dummy	0.236	10.58***	0.631	14.33***
Bullet train services dummy	-0.330	-7.91(***)	0.628	6.10***
Ratio of tourism officers	0.438	6.56***	-0.289	-3.29(***)
Number of international conferences	0.008	19.44***	0.007	15.96***
Adjusted R-squared	0.64		0.75	
Number of sample	195		195	
Estimation period	2008-2013		2008-2013	

- The results are the same as model 1

Regression results by purpose

Dependent variable: difference of logarithms of visitor nights/ rate of change from the previous year

	Model 6 Sightseeing		Model 7 Sightseeing		Model 8 Business etc.		Model 9 Business etc.	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	0.054	0.15	1.340	3.12	−0.127	−0.38	0.808	1.87
Capacity of hot spring hotels	−0.015	−0.66	−0.025	−1.09	−0.007	−0.44	−0.008	−0.46
Purchasing ratio of 'entertainment services'	0.000	0.00	−0.002	−0.81	0.003	1.86*	0.004	2.39 **
Visitors to theme park facilities	0.001	0.30	0.000	0.20	−0.002	−0.51	−0.010	−1.41
Ratio of outbound travelers	−0.003	−0.43	−0.006	−0.89	0.000	0.02	0.018	0.83
Road improvement ratio	0.001	0.97	0.000	−0.01	0.002	1.29	0.000	0.33
International airport dummy	−0.005	−0.33	0.005	0.20	0.052	1.21	0.043	0.83
Bullet train services dummy	0.031	1.39	0.048	3.68***	−0.021	−0.53	−0.093	−2.05(**)
Ratio of tourism officers	0.121	2.52**	0.160	2.46**	0.075	1.91*	0.226	2.73***
Number of international conferences	0.001	1.69*	0.001	2.00*	0.000	0.59	0.000	0.51
Adjusted R-squared	0.57		0.53		0.36		0.27	
Number of sample	195		195		195		195	
Estimation period	2008-2013		2008-2013		2008-2013		2008-2013	

- The ratio of tourism officers is still a significant explanatory variable in the models above as in model 2 and 3.

6. Concluding remarks

Summary of the analysis

- The variation in the numbers of foreign visitors among regions excluding Tokyo has tended to widen in recent years.
- The number of foreign visitors in each prefecture is determined by tourism market conditions such as natural environment, entertainment facilities as well as transportation conditions.
- Recent changes in numbers of foreign visitors has been influenced by the ratio of tourism officers to the total number of administrative officers in each local government.

Policy implications

- 91.6 percent of the respondents answered 'very much satisfied' or 'satisfied.'
- 92.6 percent answered 'very much willing to revisit' or 'willing to revisit.'

  ("Consumption Trend Survey for Foreigners Visiting Japan," 2013)
- As foreign repeat visitors increase, they will have greater tendencies to explore hidden attractive places all over Japan.

⇒ **Local governments should strategically prioritize their tourism policies in promoting inbound tourism.**

Thank you for your attention.

ご清聴ありがとうございました

Inbound tourism in Japan: An analysis of "Accommodation Survey"

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Abstract

Inbound tourism is one of the most important economic policies in Japan, where domestic economic activities are unlikely to grow significantly due to the decreasing population. The fact that foreign visitors to Japan exceeded ten million in 2013 for the first time is regarded as progress for the inbound tourism policy. However, the number of foreign visitors is still relatively small compared with the size of the Japanese economy. This paper analyzes an "Accommodation Survey," which has accumulated detailed data on accommodation facilities and their users by prefecture and by visitor since the Japan Tourism Agency started publishing this in 2007. Firstly, the paper focuses on some statistics on foreign visitors staying in accommodation by prefecture, which shows that the gap among prefectural data has tended to widen in recent years. Secondly, it tries to analyze the background of the gap among prefectures using a panel data regression model. As a result, while the number of foreign visitors in each prefecture is determined by tourist market conditions and transportation facilities, it is also shown that the number of local government employees engaged in tourism-related duties is a significant factor in influencing recent changes in numbers of foreign visitors. Assuming that all the prefectures in Japan are potentially attractive to foreign visitors, one of the keys to success in inbound tourism is how each local government can strategically prioritize its tourism policy.

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1. Introduction

According to the Japan National Tourism Organization (JNTO), the number of inbound tourists in Japan exceeded ten million in 2013 for the first time, and continues to grow in 2014. "White Paper on Tourism in Japan, 2013" published by the Japan Tourism Agency (JTA) states that tourism-related consumption by foreign visitors in 2013 has reached 1,400 billion yen, increasing by 300 billion yen from the previous year, which amounts to seven percent of domestic tourism-based consumption by Japanese. For the Japanese economy, which faces shrinking demand due to declining population, inbound tourism is one of the most important policy issues in recent years. In particular, foreign visitors are expected to have a relatively large effect on local economies with a weak industrial base outside metropolitan areas.

The Japanese government has made a variety of policies to promote inbound tourism over the past decade. It started the 'Visit Japan Campaign' in 2003, and relaxed visa requirements for visitors from a number of Asian countries. The Tourism Nation Promotion Basic Law was enacted in 2006, positioning tourism as one of the pillars of Japanese policy in the 21st century. As part of the law, the "Tourism Nation Promotion Basic Plan" was approved by the cabinet, and the JTA was established within the government in 2008 to work towards becoming a "tourism nation." Although the 'Lehman shock' in 2009 and the earthquake in 2011 hit tourism in Japan, this policy direction has never changed, and has actually strengthened. It is no wonder that the "inbound tourism boom" in recent years reflects such government policies.

Nevertheless, the number of foreign visitors is still relatively small compared with the size of the Japanese economy. In fact, ten million foreign visitors was just a goal for 2010 set by the government in 2003. While some areas succeed in attracting foreign visitors, others seem to receive little impact from inbound tourism. So far, few researchers have focused on the regional differences of inbound tourism and made quantitative analyses. This is partly due to a lack of statistical data.

In recent years, however, the JTA has vigorously implemented economic surveys of regional tourism by setting common statistical standards for inbound tourists in all prefectures, compiling detailed data, and publishing the statistical results. This paper uses the "Accommodation Survey" published by the JTA, which has accumulated detailed data on accommodation facilities and their users by prefecture and by visitor since 2007. This enables us to grasp the regional variations in foreign visitors, to analyze the background of the reality of the "boom," quantitatively, and to suggest policy implications.

The paper is organized as follows: Section 2 briefly surveys recent literature on

inbound tourism, section 3 focuses on the gap among prefectural data for foreign visitors staying in accommodation, and section 4 analyzes the background of the gap among prefectures using a panel data regression model. Section 5 concludes the paper.

2. Literature

Tourism demand has been one of the key topics for researchers to analyze for decades. Even within the field of economics, a number of studies have attempted to model the determinants of tourism demand and measured their impacts. Crouch (1995) integrates those studies and examines the demand elasticities using meta-analytical techniques. Song et al. (2009) provides a comprehensive review of tourism demand studies in detail and shows how those recent studies vigorously introduce new econometric approaches. In more recent years, Peng et al. (2014) also reviews the latest studies for their meta-analysis of tourism demand.

Regarding tourism demand in Japan, until 2000, many researchers had mainly focused on outbound tourism, which overshadows inbound tourism in Japan. For example, Sakai et al. (2000) estimates Japanese outbound tourism demand function by using a panel regression model. After that, some researchers have attempted to investigate inbound tourism. Aso (2000) estimates the tourism demand function using an ECM model based on time-series data of foreign arrivals to Japan by country. This shows that tourists from Asian countries are sensitive to prices, and that those from Europe and America are influenced by their own income condition. Also, Okamoto and Kurihara (2007) forecasts international tourism demand from East Asia to Japan using the model of trip generation based on logistic function. Okamoto and Kurihara (2012) develop their analysis by adding distribution model and explore the impact of political and external factors to inbound tourism demand.

On the other hand, as the “Accommodation Survey” accumulates detailed data, some researchers make statistical analyses on this data and draw policy implications. Koike et al. (2011) examines the efficiency of tourism policy by prefecture using the DEA method, and proposes to improve “soft” policy instruments in tourism. Ooi (2012) analyzes seasonality of accommodation guests by prefecture, and finds that seasonality is greater/smaller during the phase of economic stagnation/boom. The “Accommodation Survey” is a valuable database to be explored. Although this excludes day-trippers and tourists not staying in registered accommodations, time-series data by prefecture enables us to make a macro-panel regression model, which is widely applicable in tourism analysis.

Therefore, focusing on the demand of inbound tourism, which is an important policy

issue in recent years, this paper statistically describes the variations between foreign visitors among prefectures, using the numbers staying in registered accommodations, and analyzes the background of the gap by a macro-panel regression model. Although the sample period is not so long due to data limitations, the estimation results are more robust than a simple regression model. This also sheds light on an analytical usage of tourism statistics.

3. Inbound tourism and regional variations in Japan

3.1 Foreign visitors in recent years

The total number of foreign visitors who stay overnight in registered accommodations in Japan has increased since 2007 although it fluctuated in 2009 after the "Lehman shock" and in 2011 due to the Great Eastern Japan Earthquake. It reached 33,350 per year in 2013. Breakdown by purpose shows that the number of sightseeing tourists has increased relative to other visitors. By prefecture, although Tokyo's share has tended to decrease, Tokyo still dominates with around 30 percent of the total visitors.

Table-1 Foreign visitors staying in registered accommodations

Unit: visitor nights

	Japan total	Sightseeing	Others	Tokyo	(ratio %)
2007	22,654	11,012	11,641	7,861	(34.7)
2008	22,248	11,286	10,960	7,349	(33.0)
2009	18,298	9,309	8,989	6,378	(34.9)
2010	26,023	13,583	12,435	8,720	(33.5)
2011	18,416	9,023	9,355	5,652	(30.7)
2012	26,314	13,554	12,707	8,292	(31.5)
2013	33,511	18,638	14,840	9,831	(29.3)

Notes) Sightseeing: Facilities where sightseeing-oriented visitors account for 50% or more.
Others: Facilities where sightseeing-oriented visitors account for less than 50%.

3.2 Differences among prefectures other than Tokyo

Focusing on prefectures other than Tokyo, there still exists a wide gap between the numbers of foreign overnight visitors. The top seven prefectures, Osaka, Hokkaido, Kyoto, Chiba, Okinawa, Aichi, and Kanagawa, which exceed one million foreign visitor nights, dominate with two thirds of the total foreign visitor nights excluding Tokyo in 2013. On the other hand, the lowest is Shimane prefecture, which received less than 20,000.

Table-2 Foreign overnight visitors by prefecture (2013)

		thou. visitor nights	
Tokyo	9,831	Toyama	136
Osaka	4,315	Shiga	132
Hokkaido	3,070	Mie	131
Kyoto	2,626	Gumma	109
Chiba	2,050	Miyagi	107
Okinawa	1,488	Niigata	107
Aichi	1,148	Saitama	98
Kanagawa	1,067	Kagawa	96
Fukuoka	900	Ibaraki	88
Shizuoka	560	Okayama	86
Nagano	543	Ehime	67
Hyogo	507	Iwate	65
Yamanashi	492	Aomori	62
Nagasaki	425	Saga	56
Kumamoto	421	Tottori	47
Gifu	417	Yamaguchi	46
Oita	410	Fukushima	42
Hiroshima	366	Yamagata	37
Ishikawa	340	Akita	36
Kagoshima	215	Tokushima	32
Wakayama	187	Fukui	30
Tochigi	179	Kochi	25
Nara	165	Shimane	19
Miyazaki	137	Total	33,511

It is not a surprising fact that the number of overnight visitors differs among regions. This is because tourism demand substantially depends on natural resources and backgrounds as well as transport facilities. However, it should be born in mind that the variation in foreign visitors among regions is far greater than that for Japanese visitors. The Gini coefficient for all prefectures other than Tokyo is 0.695 for all foreign visitors and 0.731 for foreign sightseeing tourists, which contrasts with 0.383 for all Japanese tourists and 0.452 for Japanese sightseeing tourists. This might reflect the fact that many attractive sightseeing spots for Japanese in regional areas are not known to foreigners.

Furthermore, the Gini coefficient for foreign visitors has increased since 2007, excluding 2011 when the earthquake hit Japan, while that for Japanese has stayed flat. This indicates that, while some prefectures are experiencing a 'boom' of inbound tourism, others are falling behind.

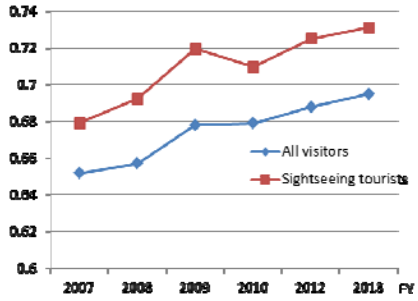

Figure-1 Gini coefficient for foreign tourists using registered accommodations

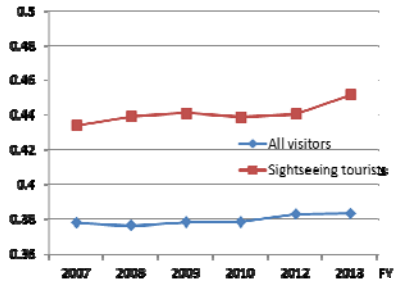

Figure-2 Gini coefficient for Japanese tourists using registered accommodations

4. Analysis of inbound tourism demand

4.1 Data and model

In order to analyze the background of inbound tourism, we construct a database for 39 prefectures excluding Tokyo, six prefectures in Tohoku where the earthquake directly hit and Fukui from the "Accommodation Survey," and other related statistics. The data is based on the survey of registered accommodation facilities with ten or more employees to maintain time-series continuity. All the data for 2011, when the earthquake occurred, is excluded.

The estimation model is a form of tourism demand function based on cross-sectional model with period fixed effect, but explanatory variables are not typical due to data limitations. Generalized travel cost should be used as price data for travel demand function, but such data cannot be obtained for each prefecture. Thus, the following model uses conditions of transport infrastructure as explanatory variables, that is, the 'road improvement ratio' published by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), dummy variables with or without bullet train stations and international airports. No income variable is set in the equation because change in foreign travelers' income including the effect of exchange rate is absorbed in the period fixed effect.

Regarding tourism market conditions, there are a variety of factors from the natural environment to the location of leisure facilities, but only limited data is available. In our model, the following four explanatory variables are adopted. Firstly, the capacity of hot spring hotels by prefecture in "Tourism data book (Suuji de mirukankou)" is used as a variable of each region's natural condition. Secondly, the purchasing ratio of 'entertainment services' to the total spending by foreign tourists by prefecture is a variable standing for the market condition of foreigners' tastes. This ratio is available from the second quarter of 2010 in "Consumption Trend Survey for Foreigners Visiting Japan" published by the JTA. The data before 2010 is

complemented by the average of three quarters in 2010. 'Entertainment services' of these statistics include optional tours on site, tour guides, golf play, amusement parks, art viewing, sports spectating, museums, zoos, aquariums, rental fees for bicycles, etc. As for amusement parks, because several large theme parks in Japan are likely to contribute significantly to inbound tourism, we add another explanatory variable using available data which is the average number of visitors to theme park facilities in 2009 and 2010 published by the Ministry of Economy, Trade, and Industry. The extent of internationalization in each region could also be a factor of market condition accepting inbound tourists. In this model, the ratio of outbound travelers to the total population in each prefecture published by Immigration Bureau of Japan, Ministry of Justice, is set as such a variable as indicating 'internationalization.'

Furthermore, local government policy for inbound tourism seems to influence on tourist demand. Since tourism economy is, in general, based on public goods such as natural resources and historical memorials, the government sector plays an important role in regulating and promoting tourism. Regarding inbound tourism, English information is, needless to say, essential in public places. Local governments that promote inbound tourism actively by providing more English information on their websites and increasing English signs and tour guides could attract more foreign visitors to their own areas than other areas. Therefore, we set the ratio of tourism officers to the total number of administrative officers in each prefectural government using "Survey of the number of local government officers (Chiho kokyo dantai no teiin kanri chosa kekka) " as a variable indicating government's activeness to tourism. 'The number of international conference by city' published by the JINTO is also added as an explanatory variable, which relates to inbound tourism policy, to a certain extent.

Descriptive statistics of the pooled data here is shown in the Table 3.

Table-3 Descriptive statistics of the pooled data

Variables	Unit	Av.	S.D.	Min.	Max.
Gross foreign visitors staying in registered accommodations	visitor nights	402	643	10	4,077
Capacity of hot spring hotels	thou.	31	34	2	162
Purchasing ratio of 'entertainment services' to the total spending by foreign tourists	%	19.3	9.7	0.0	50.0
Visitors to theme park facilities	mil.	1.6	4.6	0	27.9
Ratio of outbound travelers to the total prefectural population	%	9.6	4.0	3.8	21.8
Road improvement ratio	%	55.6	9.2	36.3	74.9
Ratio of tourism officers to the total number of administrative officers in prefectural government	%	0.7	0.4	0.1	2.1
Number of international conferences		41	67	0	301

Estimated cross sectional demand function with period fixed effect is as follows:

$$\ln Q_{it} = a + b_1 \ln H_{i,t-1} + b_2 M_{i,t-1} + b_3 L_i + b_4 O_{it-1} + b_5 R_{i,t-1} + b_6 A_{i,t-1} + b_7 B_{i,t-1} + b_8 T_{it} + b_9 I_{it} + \beta_t + \varepsilon_{it}$$

Q: Gross foreign overnight visitors in registered accommodations

H: Capacity of hot spring hotels

M: Purchasing ratio of 'entertainment services' to the total spending by foreign tourists

L: Visitors to theme park facilities

O: Ratio of outbound travelers to the total prefectural population

R: Road improvement ratio

A: Dummy variable for international airports

B: Dummy variable for bullet train services

T: Ratio of tourism officers to the total number of administrative officers in prefectural government

I: Number of international conferences

i: prefecture, t : year

3.2 Results and discussions

First of all, we estimate the above function setting the level of total foreign overnight visitors as a dependent variable (model 1). The result in Table 4 shows that all the explanatory variables except for bullet train services dummy and ratio of tourism officers are statistically significant with expected sign. This supports our simple idea that the difference of inherent market conditions and transportation facilities causes the variation in the number of inbound tourists among regions.

Table-4 Estimation result (dependent variable: the level of visitor nights)

	Model 1		
	Coefficient	t-value	
Intercept	5.062	18.47	***
Capacity of hot spring hotels	0.403	31.67	***
Purchasing ratio of 'entertainment services'	0.026	8.25	***
Visitors to theme park facilities	0.051	24.06	***
Ratio of outbound travelers	0.059	7.10	***
Road improvement ratio	0.021	7.49	***
International airport dummy	0.477	14.86	***
Bullet train services dummy	-0.088	-1.51	
Ratio of tourism officers	0.012	0.13	
Number of international conferences	0.008	13.34	***
Adjusted R-squared	0.64		
Number of sample	195		
Estimation period	2008-2013		

Notes ***, **, and * show that P values are 1%, 5%, and 10% or less, respectively (the following tables are also the same).

The problem is that the gap has widened in recent years. We therefore estimate logarithmic difference of gross foreign overnight visitors (model 2) or rate of change in foreign overnight visitors from the previous year (model 3) as a dependent variable using the same explanatory variables. Table 5 shows the results.

Table-5 Estimation result (dependent variable: difference of logarithms of visitor nights/ rate of change from the previous year)

	Model 2			Model 3		
	Coefficient	t-value		Coefficient	t-value	
Intercept	−0.036	−0.11		0.973	2.38	**
Capacity of hot spring hotels	−0.014	−0.52		−0.014	−0.48	
Purchasing ratio of 'entertainment services'	0.001	0.93		0.001	1.02	
Visitors to theme park facilities	0.000	−0.02		0.000	−0.19	
Ratio of outbound travelers	−0.002	−0.46		−0.003	−0.73	
Road improvement ratio	0.002	1.79	*	0.003	1.94	*
International airport dummy	0.024	0.77		0.044	1.29	
Bullet train services dummy	0.027	1.74	*	0.028	2.40	**
Ratio of tourism officers	0.100	2.71	***	0.122	2.67	***
Number of international conferences	0.000	1.98	**	0.000	2.31	**
Adjusted R-squared	0.58			0.52		
Number of sample	195			195		
Estimation period	2008-2013			2008-2013		

The results in model 2 and 3 are quite different from model 1. None of the variables for market conditions is significant. On the other hand, transportation facilities are still important factors in increasing foreign visitors. Road improvement ratio is significant at ten percent level. as in the level function; the bullet train services dummy replaces the international airport dummy as a significant variable.

What we should note here is that the ratio of tourism officers becomes a significant explanatory variable in model 2 and 3, while this is not significant in model 1. In Japan, in general, it is difficult for large, rigid organizations like local governments to reallocate staff among departments and sections. This means the reallocation of staff reflects the change in policy priority. That is, local governments that prioritize tourism by reallocating their staff to tourism sections may increase foreign visitors staying in their own regions.

5. Conclusion

Inbound tourism is one of the most important economic policies in Japan, where domestic economic activities are unlikely to grow significantly due to the decreasing population. This paper uses the "Accommodation Survey," and concludes two points.

Firstly, the variation in number of foreign visitors among regions excluding Tokyo has tended to widen in recent years. Secondly, while the number of foreign visitors in each prefecture is determined by tourism market conditions such as natural environment, entertainment facilities as well as transportation conditions, the ratio of tourism officers to the total number of administrative officers in each local government is a significant factor in influencing recent changes in numbers of foreign visitors.

According to "Consumption Trend Survey for Foreigners Visiting Japan" on satisfaction of travels to Japan and revisit willingness, 91.6 percent of the respondents answered 'very much satisfied' or 'satisfied,' and 92.6 percent answered 'very much willing to revisit' or 'willing to revisit.' As foreign repeat visitors increase, they will have a greater tendency not only to travel around the famous tourist spots but also to explore hidden attractive places all over Japan. Therefore, it will become more important for each local area to provide information in foreign languages and to promote foreign travelers to come to their own region.

So far, it has been qualitatively discussed that, assuming that all the prefectures in Japan are potentially attractive to foreign visitors, the role of local governments is important in promoting inbound tourism. Although the data is still limited, this paper quantitatively proves this point and suggests that local governments should strategically prioritize their tourism policies.

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