

The Impact of the Designated Manager System and Educational Events on the Number of Visitors to Japanese Museums*

Miyuki Taniguchi

Graduate School of Economics, Keio University, Japan

E-mail: miyuki@z3.keio.jp

ABSTRACT

This paper attempts to examine the effect of the Designated Manager System (DMS) and educational events on the number of the visitors to museums, estimating aggregated demand functions. It is assumed that the effects of educational events can be observed immediately because educational events can provide new value added to museums in the same way that feature exhibitions do. Data from the “Social Education Surveys” conducted by the Japanese Ministry of Education, Culture, Sports, Science and Technology in 2008 and 2011 are used to investigate the factors which influence the number of museum visitors. The estimation results do not support any hypothesis. The estimated results also indicate that people with high incomes go to museums more. As a result, neither educational events nor the DMS have contributed to increasing the visitors to museums.

Keywords: cultural policy, social education, demand, museum, privatization

JEL Classification Codes: H30, H41, D12

* The author would like to thank Colin McKenzie for his helpful comments and suggestions on an earlier draft of this paper.

1. Introduction

Recently, the number of museums in Japan has grown faster than the number of visitors to museums in Japan. In 1990, there were 799 museums. As of 2010, there are 1,262 museums (the Ministry of Education, Culture, Sports, Science and Technology (2012), Reference [1]). In 1990, there were 244,980 visitors to museums. As of 2010, there are 276,652 visitors to museums (the Ministry of Education, Culture, Sports, Science and Technology (2012), Reference[1]).The number of museums in Japan has therefore increased by 1.5 times in just over two decades, but the number of visitors to museums has only increased by 1.1 times. As a consequence, the number of visitors per museum has decreased and museums have made many efforts to attract more visitors.

There are a number of economic and social conditions that might explain why there has not been a substantial increase in the number of museum visitors since 1990. The collapse of Japan's stock and real estate markets in 1991 marked the beginning of a recession that has lasted over twenty years. If there were no other factors, this recession might have resulted in a decrease in the number of visitors to museums. However, other factors seem to have offset the effects of the recession, leading to stagnation in museum attendance rather than decline. One possible factor is educational events in museums. Another possible factor is the Designated Manager System (DMS) which have been introduced into some public cultural facilities including public museums since 2006 (Reference [2]). The Designated Manager System enables the governments to designate private organizations to manage their public museums. According to a survey conducted by the Association of Public Theaters and Halls in Japan, in the case of public concert halls, over 50% of public concert halls introduced the DMS answered that they were succeeded in satisfying users' needs more by introducing the DMS (Reference [3], p. 12). This suggests that the DMS also may have the effect to satisfy users' needs and to increase the number of visitors to museums.

Many economic studies have used the number of visitors to museums as an independent variable to measure a museum's value, and some research has also investigated the possible factors that affect museum attendance. Bishop and Brand (2003) measure the technical efficiency with which 110 British museums increase the number of visitors, using stochastic frontier approach (SFA) (Reference [4]). Bishop and Brand (2003) estimate Cobb-Douglas production function, using data from a postal survey of the members or associate members of the South West Museums Council in 1998. Bishop and Brand (2003)'s results indicate that public funding and voluntary activity decrease technical efficiencies. Fujinami, Kakiuchi, and Tone (2010) investigate the factors which increase the number of visitors to educational events in Japanese museums, using Data Envelop Analysis (DEA) (Reference [5]). The results of Fujinami, Kakiuchi, and Tone (2010) indicate that larger budgets and more staffs increase the number of visitors to educational events in museums. It is also indicated that the museums which has introduced the DMS does not have more visitors to educational events than the museums which the prefectural board of education manage. Haruna,

Kuwahara, and Shiodu (2011) measure the inefficiencies of that public museums increase the museum attendances, using network DEA (Reference [6]). In other words, Haruna, Kuwahara, and Shiodu (2008) measure the management efficiencies of museums considering the mid-long term effects and the local characteristics where museums are located. Haruna, Kuwahara, and Shiodu (2008) argued that to control the local characteristics is important when the museum attendances are compared between prefectures. For example, the visitors' income is used as one of the input factors. Suhara (2011) measures the technical efficiency of 47 Japanese museums from 1998 to 2008, using SFA (Reference [7]). Suhara (2011) estimates Cobb-Douglas production function, using data from micro data of the Prefectural Art Museums Survey (*Todoufukeritsu Bijutsukan*) conducted by the Council of Deputy Director Generals and others of Prefectural Art Museums (*Todoufukeritsu Fukukanchoutou Sekininsyakaigi*). Suhara (2011)'s results indicate that prefectural educational events and the DMS have not affected the technical efficiency with which art museums increase the number of visitors. Only the distances from the central cities to museums improve technical efficiency. Skinner, Ekelund, and Jackson (2009) investigate the museum attendance has a counter cycle fashion, using an estimated index of aggregate attendance in the U.S. (Reference [8]).

Similar with Suhara (2010), this study focuses on the impacts of educational events in Japanese museums and the DMS on the museum attendance. Suhara (2010) employs production function, while this study employs demand function. Therefore, the main contribution of this paper is to analyze the impact of educational events and the DMS on visitors to museums, estimating demand function. In addition to these factors, this study focuses on the working time. Generally, Japan has less attendance at performing arts events than the U.S. and European countries because of the work schedule in Japan. This study estimates demand function, using data on all Japanese museums in 2007 and 2010 which conducted by The Ministry of Education, Culture, Sports, Science and Technology.

The rest of this paper is organized as follows. Section 2 explains the definition of museums in Japan, educational events, and the DMS. Section 3 details the models to be estimated and their interpretation. Section 4 gives details of the data used in this paper. Section 5 presents the empirical results, and section 6 contains some brief concluding remarks.

2. Educational events in museum and introduction of the DMS into museums

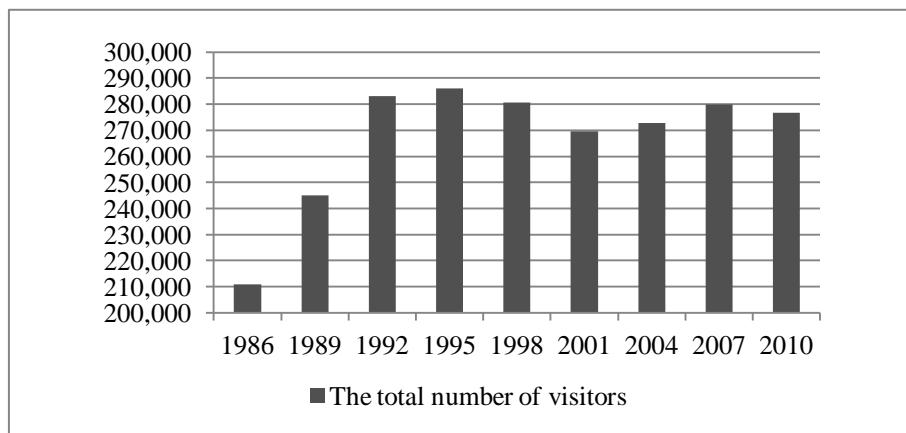
There are two main definitions of 'museums' in Japan; museums narrowly defined and museums broadly defined. Museums broadly defined are named 'museum-typed facilities (*Hakubutsukan oyobi Hakubutsukanruijisetsu*),' which includes general museums, science museums, historical museums, art museums, outdoor museums, zoological museums, botanical garden, zoological and botanical garden, and aquariums. Museum-typed facilities are officaly

defined as the institutions of which roles are provided by the Museum Act (*Hakubutsukan-hou*). According to Article 2 of the Museum Act, the roles of museum-typed facilities can be summarized as follows; (a) collect historical, artistic, ethnic, industrial or scientific material; (b) hold this materials for safekeeping; (c) exhibit these materials to the public for educational consideration; (d) engage in events that contribute to the cultivation of the public, survey and research, and recreation; and (e) study their collections. Community Centers specified by the Social Educaiton Act and libraries specifeied by the Library Act are explicitly excluded from the definition of museums. The Ministry of Education, Culture, Sports, Science and Technology devided museum-typed facilities into three categories; museums (*Touroku Hakubutsukan*), facilities equivalent to museums (*Hakubutukansoutou-shisetsu*), facilities that are similar to museums (*Hakubutsukanruiji-shisetsu*). The other facilities which are not categorized into the three museum types have not been the object of social education survey, even if they call themselves ‘museums.’

Table 1 shows the main differences between registered museums, facilities equivalent to museums, facilities that are similar to museums, and the others, which are defined by Museum Act. Museums narrowly defined are named ‘registered museums.’ Only the museum-typed facilities which were founded by Local governments, general incorporated associations, or religious corporations have qualifaication to register with Prefectural Board of Education. Therefore, any national museums cannot be registered museums. Additionally, to be resistered museums, the museum-typed facilities must have at least one director and one curator and must be open over 150 days per year. The requirements to be facilities equivalent to museums are less strict than that to be registered museum. The museum typed facilities which have at least one curator and which are open over 100 days per year can be designated as facilities equivalent to museums by Prefectural Board of Education or the minister of Education, Culture, Sports, Science and Technology. National museum-typed facilities, for example, the National Art Center Tokyo (*Kokuritsu Shin Bijutsukan*), belong to facilities equivalent to museums. If the activities are similar to registered museums, the facilities satisfy qualifications to be facilities that are similar to museums.

In this paper, the broadly definition of museums is employed. In other words, museums means registered museums, facilities equivalent to museums, and facilities that are similar to museums in this paper. Therefore, demands for exhibitions in these three museum-typed facilities are analysed. Figure 1 shows the total number of visitors to museums. In Figure 1, the number of visitors to museums increased rapidly from the late 1980s to 1992. In 1980, Japan experienced a business boom. Accompanied with the economic growth, demand of exhibitons increased in 1980s. From the collapse of the bubble economy in 1991 to 2001, the number of visitors to museums decreased. After then, the numbers of visitor to museums tended to recover. Therefore, the museum attendance is strongly influenced by business fluctuations.

Figure 1: The total number of visitors to museums



Source: Constructed by author using the “Social Education Survey” (the Japanese Ministry of Education, Culture, Sports, Science and Technology)

Table1: The classification of museums by Museum Act

Types of facilities	Activities	Founders	Agent designating these facilities	Main Requirements	
				Required Staff	Annual opening days
Registered museums	Defined by Article 2 of the Museum Act	Local governments, general incorporated associations, or religious corporations	Prefectural Board of Education	A director and a curator	Over 150 days
Facilities equivalent to museums	Similar to Registered Museums	No limitations	Prefectural Board of Education, or the Minister of Education, Culture, Sports, Science and Technology	A staff member equivalent to a curator	Over 100 days
Facilities that are similar to museums	Similar to Registered Museums.	No limitation	Not necessary	No limitation	No limitation
The others	No limitation	No limitation	Not necessary	No limitation	No limitation

Source: Constructed by author, based on information from the Japanese Ministry of Education, Culture, Sports, Science and Technology's home page.

(http://www.mext.go.jp/a_menu/01_l/08052911/1313125.htm)

In this study, it is hypothesized that educational events in museums and the introduction of the Designated Manager System into public museums might increase museum attendance. The main purpose of educational events is to increase the public's knowledge of the topic and of the activities of the museum. In Social Education Survey, educational events in museums are divided into four groups; lectures (*Kouenkai*), *Seminar* (Kenkyukai), class or course (Gakkyu Kouza), and video shows (*Eishakai*). Every museum chooses what type of educational events they will offer, and museums are not required to have a certain number of each type of educational event each year. On account of this, this study focuses on the impacts of the total number of educational events on the museum attendance.

The Designated Manager System was introduced into some museums in 2006, as a part of the Koizumi Government's structural reforms. Generally, it was considered that there was a lot of wasteful expenditure associated with Japanese public halls, so it was rather natural that the DMS was applied to public halls. One of the main purposes of the DMS was to reduce the public sector's role so the private sector could play a greater role. For example, public museums which have introduced the DMS would increase their visitors and could expand potential demand for exhibitons in museums by more effective advertisements.

3. Estimated model

In this study, it is assumed that registered museums, facilities equivalent to museums, and facilities that are similar to museums have the same demand function. The reason for this is that these three museums are considered to be non-profit organizations. Table 2 shows that the amount of the admission fee of museums in 2007 and 2010. In both 2007 and 2010, about 14% of registered museums had not introduced the charging system. On the other hand, about 44% of facilities that are similar to museums have not introduced the charging system. Moreover, about half of facilities that are similar to museums had admission fees that were 200 yen or less in 2007 and 2010. All registered museums are public museums, while facilities equivalent to museums consists of the largest percentage of private museums among three museum types. It suggests that both public museums and private museums could be treated as non-profit organizations.

Table 2: The admission fee in museums

classifications / The fiscal year	2010			2007		
	Registered Museums	Facilities equivalent to museums	Facilities that are similar to museums	Registered Museums	Facilities equivalent to museums	Facilities that are similar to museums
According to the charging system						
The total number of museums	902 (100%)	341 (100%)	4,310 (100%)	902 (100%)	338 (100%)	4,436 (100%)
The number of museums which <u>have not introduced</u> the charging system	126 (14.0%)	96 (28.2%)	1,922 (44.6%)	127 (14.1%)	88 (26.0%)	1,942 (43.8%)
The number of museums which <u>have introduced</u> the charging system	776 (86.0%)	245 (71.8%)	2,388 (55.4%)	775 (85.9%)	250 (74.0%)	2,494 (56.2%)
The amount of the admission fee						
1 - 199 yen	183	104	2,236	195	102	2,303
200 - 299 yen	145	24	626	142	31	648
300 - 499 yen	240	78	819	243	70	825
500 - 699 yen	175	68	433	172	63	436
700 - 999 yen	96	20	119	95	19	137
1000 - 1499 yen	50	19	58	43	24	67
1500 yen and over	13	28	19	12	29	20

Source: Constructed by author using the “Social Education Survey” (the Japanese Ministry of Education, Culture, Sports, Science and Technology)

When the differences of the three categories of museums are not considered, the aggregate demand function for exhibitions in museums can be written as follows:

$$\ln Q_{ijt} = \alpha + \beta_1 \ln P_{it} + \beta_2 \ln edu_events_{ijt} + \beta_3 dms_{ijt} + \sum_{r=4}^m \beta_r \ln E_{it_r} + \beta_{r+1}t + \beta_{r+2}MUSEUM_2 + \beta_{r+3}MUSEUM_3 + \varepsilon_{ijt}, \quad (1)$$

where Q_{it} is the total number of visitors to type j museums in prefecture i in the t -th year, P_{it} is the average price of the admission fees of museums in prefecture i in the t -th year, edu_events_{ijt} is the number of events for educational events per capita in the j -th museum group in the i -th prefecture in the t -th year, dms_{ijt} is the percentage of the museums which have introduced the

DMS in the j -th museum group in the i -th prefecture in the t -th year, E_{it_r} are the other factors which influence the demand in the i -th prefecture in the t -th year, t is a liner time trend, $MUSEUM_2$ is a 0-1 dummy variable taking value of 1 if museums are categorized into facilities equivalent to museums, $MUSEUM_3$ is a 0-1 dummy variable taking value of 1 if museums are categorized into facilities that are similar with museums, ε_{ijt} is a disturbance that is assumed to follow a normal distribution, and α , β_1 , β_2 , β_3 , β_r , β_{r+1} , β_{r+2} , and β_{r+3} are unknown coefficients. There are three typed of museums; registered museums, facilities that equivalent to museums, and facilities that are similar to museums.

The estimated coefficient of edu_events_{ijt} is expected to be positive because educational events themselves would motivate people to visit museums. In general, museum exhibit their collections. If exhibitions never changed, visitors would not visit museums repeatedly. However, if museums have special events, visitors could enjoy museums again and again. The estimated coefficient of dms_{ijt} is expected to be positive because the museums that have introduced the DMS would make more effort to expand visitors than the other museums. For example, they may make their exhibitions and educational events more attractive, and may advertise more effectively. The variables which are included in $\ln E_{it_r}$ are per capita income and the average working hours per week. Since museum visits are expected to be a ‘normal’ good, an increase in income is expected to increase the number of visitors in museums. Because it is expected that average longer working time must will reduce the possible leisure time to visit museums, a longer working time would reduce the number of visitors to museums.

4. Data

Data on museums except admission fees is drawn from the “Social Education Surveys (*Shakaikyoiiku chousa*)” undertaken by the Japanese Ministry of Education, Culture, Sports, Science and Technology in 2008 and 2011. Since 0 cannot be transformed into a natural logarithm, the observations which have no visitors or no social education are eliminated from the dataset. This results in the elimination of 7 observations out of a total of 282 observations which leaves a sample size of 275. This data set is an unbalanced panel dataset which contains annual data from 2007 to 2010.

As the proxy variable for the average price of the admission fees to museums P_{it} , the estimated price index of admission fees to museums are calucrated as follows;

$$P_i = \{(price\ index)_t \times (index\ of\ regional\ price\ differences)_i\}/100, \quad (3)$$

where $(price\ index)_t$ is the consumer price index for the admission fees to art museums in year t ,

and $(index\ to\ regional\ difference\ of\ price)_i$ is the index to regional difference of price in Japan (*Zenkoku Bukka Chiikisa Shisuu*) in the prefecture where the i -th group of museums is located. The index of regional price differences represents the price difference across prefectures. The average value of $(index\ to\ regional\ difference\ of\ price)_i$ is 100. Data on the price index of admission fees to art museums are drawn from the Consumer Price Index (*Syouhisya bukka shisuu*) for 2007 and 2010 collected by the Japanese Statistics Bureau. Data on the index to regional differences of price are drawn from the National Survey of Prices (*Zenkoku bukka toukei chousa*) 2007 conducted by the Statistics Bureau. Table 3 shows the estimated values of P_{it} . As can be seen from this Table, urban prefectures tend to have higher prices while rural prefectures tend to have lower prices. Most of the prefectures which have an above average price index belong to one of the three major metropolitan areas in Japan: the greater Tokyo area made up of Tokyo prefecture, Kanagawa prefecture, and Chiba prefecture; the greater Osaka area made up of Kyoto prefecture, Hyogo- prefecture, Nara prefecture, and Osaka prefecture; and the greater Nagoya area made up of Aichi prefecture and Gifu prefecture. One possible reason for this is that the price of the land where museums are located influences the ticket fees charged for exhibitions. Table 4 provides some descriptive statistics on all the relevant variables.

Table 3: The estimated price index of the admission fees to art museums

prefecture / the fiscal year	The estimated price index (%)		
	2007	2010	average
Tokyo-to	106.8	107.1	106.9
Kanagawa-ken	103.5	103.8	103.6
Chiba-ken	102.4	102.7	102.5
Kyoto-fu	101.8	102.1	101.9
Hyogo-ken	101.8	102.1	101.9
Nara-ken	101.7	102.0	101.8
Aichi-ken	101.1	101.4	101.2
Osaka-fu	100.9	101.2	101.0
Gumma-ken	100.7	101.0	100.8
Hiroshima-ken	100.4	100.7	100.5
Miyagi-ken	100.0	100.3	100.1
Gifu-ken	100.0	100.3	100.1
Ibaraki-ken	99.9	100.2	100.0
Shiga-ken	99.7	100.0	99.8
Niigata-ken	99.6	99.9	99.7
Shizuoka-ken	99.6	99.9	99.7
Saitama-ken	98.9	99.2	99.1
Tochigi-ken	98.8	99.1	99.0
Fukuoka-ken	98.6	98.9	98.8
Iwate-ken	98.5	98.8	98.7
Nagano-ken	97.8	98.1	98.0
Mie-ken	97.8	98.1	98.0
Hokkaido	97.7	98.0	97.9
Yamanashi-ken	97.6	97.9	97.8
Okinawa-ken	97.3	97.6	97.5
Okayama-ken	96.8	97.1	97.0
Saga-ken	96.8	97.1	97.0
Tokushima-ken	96.7	97.0	96.9
Wakayama-ken	96.6	96.9	96.8
Ishikawa-ken	96.2	96.5	96.4
Miyazaki-ken	96.2	96.5	96.4
Ehime-ken	96.0	96.3	96.2

Aomori-ken	95.8	96.1	96.0
Nagasaki-ken	95.7	96.0	95.9
Fukushima-ken	95.0	95.3	95.2
Toyama-ken	95.0	95.3	95.2
Oita-ken	94.9	95.2	95.1
Yamagata-ken	94.6	94.9	94.8
Akita-ken	94.5	94.8	94.7
Kumamoto-ken	94.5	94.8	94.7
Kochi-ken	94.4	94.7	94.6
Kagawa-ken	94.3	94.6	94.5
Tottori-ken	94.0	94.3	94.2
Yamaguchi-ken	93.8	94.1	94.0
Shimane-ken	93.5	93.8	93.7
Fukui-ken	92.4	92.7	92.6
Kagoshima-ken	92.3	92.6	92.5

Table 4: Descriptive statistics

Variable	Mean	Std.Dev.	Minimum	Maximum	Cases
Total					
LN Q	-1.528	1.470	-7.078	0.851	275
LN P	4.584	0.032	4.526	4.674	275
LN EDU_EVENTS	-1.953	1.411	-8.177	0.590	275
DMS	0.156	0.129	0.000	0.526	275
LN INCOME	7.912	0.144	7.613	8.550	275
LN WORK	5.421	0.046	5.313	5.509	275
M_TO	0.342	0.475	0	1	275
M_RU	0.335	0.473	0	1	275
M_SO	0.324	0.469	0	1	275
YEAR	2009.505	1.503	2008	2011	275
Registered Museums					
LN Q	-0.834	0.625	-2.438	0.851	94
LN P	4.583	0.032	4.526	4.674	94
LN EDU_EVENTS	-1.679	0.835	-3.645	0.325	94
DMS	0.123	0.135	0.000	0.526	94
LN INCOME	7.911	0.144	7.613	8.550	94
LN WORK	5.422	0.046	5.313	5.509	94
Facilities equivalent to museums					
LN Q	-2.308	1.523	-7.078	0.357	89
LN P	4.584	0.032	4.526	4.674	89
LN EDU_EVENTS	-3.165	1.607	-8.177	0.210	89
DMS	0.117	0.128	0.000	0.526	89
LN INCOME	7.913	0.145	7.613	8.550	89
LN WORK	5.420	0.047	5.313	5.509	89
Facilities that are similar to museums but which are not registered					
LN Q	-1.482	1.663	-7.078	0.737	92
LN P	4.584	0.031	4.526	4.674	92
LN EDU_EVENTS	-1.062	0.682	-2.836	0.590	92
DMS	0.228	0.090	0.053	0.472	92
LN INCOME	7.913	0.144	7.613	8.550	92
LN WORK	5.421	0.047	5.313	5.509	92

5. Estimated Results

Before models are estimated, the correlation between per capita income and working time are checked. Because the correlation coefficient between per capita income and working time are 0.073, no correlation between income and working time are confirmed.

LIMDEP 10 is used obtain all the estimates presented in Table 5. In all models in Table 5 (models (1) – (4)), the coefficients of the admission fees in museums are negative, but insignificant except in Model (3). This suggests that the lower prices of the admission fees in museums have increased the number of visitors to museums. The estimated coefficients associated with the number of social educations in museums are positive in all models, and significant except in Model (2). This suggests that the number of social educations in museums can increase the visitors when the difference of museum-types are considered in model (4). The coefficients of the DMS are negative but insignificant in models (1), (2), and (3) while the coefficient of the DMS is positive but insignificant in Model (4). This suggests that the DMS has not contributed to increase the visitors in museums. In all models, the coefficients of incomes are positive and significant. This suggests that higher income influence strongly on whether people come to museums or not. In models (4), the coefficients of the dummy variables associated with facilities equivalent to museums and facilities that are similar with museums are negative and significant. This suggests registered museums have more visitors than other museum types. The coefficients of the liner time trend are negative and significant in Model (4). This suggests that the museum attendance tends to decrease.

In choosing between models (1) – (3), the fixed-effects model (Model (2)) is supported since the F test testing the null hypothesis that individual fixed effects are absent rejects the pooling models with a p-value of 0.000, and since the log likelihood of the fixed-effects model is the largest among the usual panel models. In a comparison of Model (2) to Model (4), it is considered that Model (2) is more supported than Model (4) because of the larger value of loglikelihood in Table 5. As a result, it is considered that neither educational events nor the DMS have no effects on the museum attendance. It is consistent with the result of Suhara (2011). In fixed-effects model (Model (2)), only income affect the museum attendance. The estimated elasticity of income indicates that 1% increase of income lead to 6% decrease of the number of visitors to museums. It is well-known that income correlates with educational background and that those who have achieved higher levels of education tend to enjoy more exhibitions and performing arts. This implies the importance of educational events which are planned from a long term perspective.

Table 5: Estimated Results

Model	(1)	(2)	(3)	(4)
	pooling	fixed-effects	random-effects	pooling
LN P	-4.366 (3.266)	-27.105 (82.766)	-7.474** (3.740)	-1.550 (3.167)
LN Social_Edu	0.375*** (0.063)	0.000 (0.230)	0.334*** (0.072)	0.264*** (0.072)
DMS	-0.547 (0.698)	-1.538 (2.965)	-0.562 (0.817)	0.504 (0.686)
LN INCOME	1.797** (0.707)	6.198** (2.795)	2.852*** (0.763)	1.178* (0.701)
LN WORK	-5.717*** (1.849)	-1.140 (3.375)	-5.184*** (1.954)	-5.216*** (1.743)
MUSEUM_2				-0.868*** (0.201)
MUSEUM_3				-1.087*** (0.216)
YEAR				-0.162*** (0.055)
Constant	36.0715** 17.641		39.0086** 19.703	350.182*** 108.030
Hausman test (p-value)			Reject (0.001)	
F test (p-value)	Reject (0.000)			
R ²	0.159	0.781	0.150	0.27463
log likelihood	-471.727	-286.948	-459.54	-456.77

Notes:

- 1 For each explanatory variable, the first line reports the estimated coefficient, and the second line reports the standard error.
- 2 *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

6. Concluding Remarks

This study aims to investigate whether educational events and the Designated Manager System increase the number of visitors to museums. Educational events are intended to increase public knowledge about the topic and about the activities of the museums. Generally, the educational effects of educational events appear a few years later. However, this paper investigates the possibility of the instant effects of educational events which increase visitors because educational events add value to museums. Demand functions for museums are estimated, using panel data of registered museums, facilities equivalent to museums, and facilities that are similar with in 2007 and 2010. The results do not support the hypothesis that educational events and the DMS increase the number of visitors to museums. Educational events and the DMS do not affect museum attendance, but a higher income level increases museum attendance. It is considered that higher educational background leads to higher income and more interest in museums. The admission fees also do not affect the museum attendance. In order to increase the museums attendance, not only low price of the admission fee but also to equal opportunity to cultivate is needed.

This study does not investigate the impacts of the long term effects of educational events on museum attendance because the data used in this study is too limited to allow analysis of long term effects. In future research, the long term effects should be examined.

Reference

- [1] The Ministry of Education, Culture, Sports, Science and Technology (2012). *Statistical Abstract 2012 Edition 2 Social Education*. (Some information is available only in Japanese.)
(<http://www.mext.go.jp/english/statistics/1302981.htm>) (in English)
(http://www.mext.go.jp/b_menu/toukei/chousa02/shakai/) (in Japanese)
- [2] The Association of Public Theaters and Halls in Japan (2012). *A Research Report on the circumstances especially introducing of the Designated Manager System which have surrounded public cultural facilities*. The Association of Public Theaters and Halls in Japan. (in Japanese)
(http://www.zenkoubun.jp/siteikanri/h22_shiteikanri.pdf)
- [3] Taniguchi, M. (2013). “The Impact of Liberalization on the Production of Electricity in Japan, Keio/Kyoto Global COE Discussion Paper Series, DP2012-027.
(http://ies.keio.ac.jp/old_project/old/gcoe-econbus/pdf/dp/DP2012-027.pdf)
- [4] Bishop, P., and Brand, S. (2003). “The efficiency of museums: a stochastic frontier production function approach,” *Applied Economics*, 35(17), 1853-1858.
- [5] Fujinami, K., Kakiuchi, E., and Tone, K. (2010). “The study on effective use of public museums based on DEA; Human resource development in decentralized governance,” GRIPS Policy Research Center, Discussion Paper 10-16. (in Japanese with English abstract)
(<http://r-center.grips.ac.jp/gallery/docs/10-16.pdf>)
- [6] Haruna, R., Kuwahara, M., and Shiotsu, Y. (2011). “Evaluation of Middle and Long Term Management Efficiency of Public Museums by Network DEA”, *Biomedical Soft Computing and Human Sciences*, 17(1), 11-17.
(http://www.bmfsa.org/jpn/index.php?action=pages_view_main&page_id=36)
- [7] Sahara, M. (2011). “The efficiencies of prefectural art museums; an empirical analysis using stochastic frontier model,” *Green New Deal and Fiscal Policy*, 191-208. (in Japanese)
- [8] Skinner, S., Ekelund, JR., R. B., and Jackson J. D. (2009). “Art museum attendance, public funding, and the business cycle,” *The American Journal of Economics and Sociology*, 68(2), 491-516.
- [9] The Ministry of Education, Culture, Sports, Science and Technology (2007) and (2011). *Social Education Survey*. (The detailed statistic data is available only in Japanese)
(http://www.mext.go.jp/b_menu/toukei/chousa02/shakai/)