International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. X, Issue 11, Nov 2022

http://ijecm.co.uk/

INVESTMENT OF PUBLIC FUNDS IN LARGE-SCALE CULTURAL AND ARTISTIC PROJECTS AND ANALYSIS OF ECONOMIC IMPACT OF PUBLIC FUNDS WITH THE USE OF A PRODUCTION FUNCTION

Akitoshi EDAGAWA
Professor Emeritus, Tokyo University of the Arts, Japan
cloverclevercat@yahoo.co.jp

Abstract

In Japan, over 80% of the costs of large-scale cultural and artistic projects (operated on an annual budget of 100 million yen or more) targeting the general public are covered by the national and municipal governments concerned since projects defined as such are not organized by profit-making entities. National and local assemblies and members of the general public have been demanding, from the perspective of policy assessment, optimal utilization of public funds and efficiency analysis of such investment. In this study, the economic impact of public funding was analyzed with regard to the seven Projects for the Formation of Centers for Advanced Cultural and Artistic Creation and Application financed by the Agency for Cultural Affairs and concerned local governments for a period of five years. The study revealed the following: (1) Economies of scale did not occur in the projects since they were assemblies of collectively organized smaller events, with economic impact shrinking as the quantities of funds invested increased. (2) The local governments that registered higher levels of economic impact were found to be in socioeconomically and culturally more advanced environments. (3) In terms of cultural and artistic projects, the COVID-19 pandemic has impacted local governments less than for-profit event service providers since the former's efforts for attracting participants to their projects have proved effective.

Keywords: Covid-19, cultural activities, production function, panel data analysis, policy assessment

INTRODUCTION

Since the COVID-19 pandemic broke out in 2020, cultural and artistic activities have stagnated all over the world, and Japan is no exception. The consequences of this crisis in the country are reflected in the Indices of Tertiary Industry Activity issued by the Ministry of Economy, Trade and Industry (2022), as shown in Fig. 1, with the 2013 activity level set at 100. It indicates that Internet-based and -associated enterprises have continued to expand thanks to the government recommendation for staying home and social distancing. In stark contrast from other activity operators, theaters and performing arts groups (entities presenting live performances of drama, music, and so on) saw their activities plummet in 2020. Many activities by this category of tertiary industry entities are operated as non-profit projects, and their actual situations have not adequately been investigated thus far. As Taichi Sakaiya (2003) and Takafusa Nakamura (2007) have stated, since the establishment of Japan as a modern state, the government has always administered industries as classified by producer/supplier types, insufficiently focusing on the consumer side. For this reason, statistical data have not adequately been collected with regard to consumers. Surveys and studies covering cultural and artistic activities, which are considered as acts manifested on the consumer side, have only been sporadically conducted by the Agency for Cultural Affairs (ACA, 2020) and local governments as they have deemed necessary.

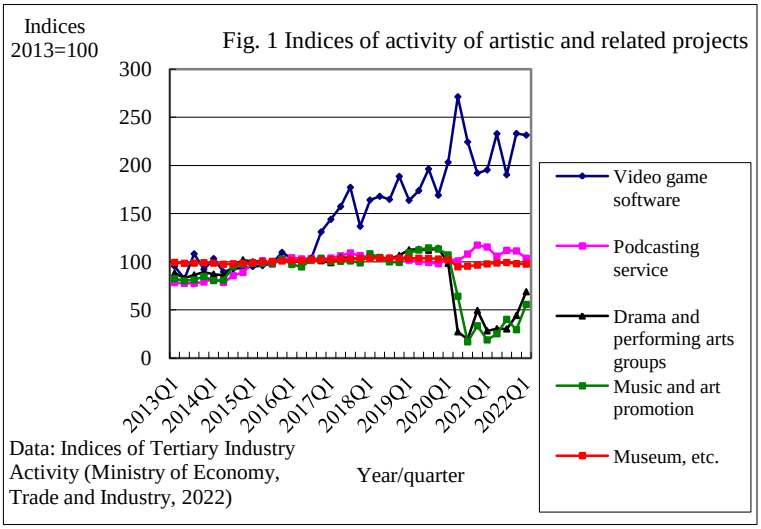


Fig. 1 Indices of activity of artistic and related projects

Data: Indices of Tertiary Industry Activity (Ministry of Economy, Trade and Industry, 2022)

On the question of the negative impact caused by the COVID-19 pandemic, the ACA conducted surveys jointly with artistic organizations—that is, from their standpoint as suppliers of arts and culture. In the face of the pandemic, the ACA and the Ministry of Economy, Trade and Industry of Japan (METI) have provided financial assistance to affected cultural and artistic organizations, including theaters, museums, drama troupes, orchestras, and individual artists, but have done very little to support the consumer side comprising participants, spectators, and so forth. In fact, they have only been given the instruction to restrict their visits to theaters and other facilities of cultural or artistic interest.

While the surveys conducted from the supplier's perspective clearly show that cultural and artistic activities have been considerably affected by the COVID-19 pandemic, few surveys

have been carried out in Japan to estimate the negative impact of the pandemic on those who "consume" arts and culture (participation, etc.). In view of this, in the study presented below, cultural and artistic projects designated by the ACA as Projects for the Formation of Centers for Advanced Cultural and Artistic Creation and Application were examined to quantitatively measure the change occurring to cultural and artistic activities on the consumer side due to the pandemic and clarify how the quantities of financial input are related to economic impact and participant actions, based on the income and expense analysis of the projects. It is hoped that findings thus obtained will serve as reference for future cultural policy making in Japan, especially to support activities on the consumer side.

SURVEY ON THE IMPACT OF THE COVID-19 PANDEMIC ON THE ACA PROJECTS

The Projects for the Formation of Centers for Advanced Cultural and Artistic Creation and Application were thus designated by the ACA within the framework of the agency's Plan for the Formation of Centers for Cultural and Artistic Creation ("Plan"), which involved the ACA subsidizing cultural and artistic programs organized by local governments to promote resident-participatory cultural and artistic activities within their respective local contexts. From the Plan's inaugural fiscal year 2017 (the Japanese fiscal year is from April 1 to the following March 31) to the final FY 2021, the ACA subsidized activities classified into three categories by scale and content. Those judged the richest in content and the most diverse among participating cultural/artistic entities were designated as Projects for the Formation of Centers for Advanced Cultural and Artistic Creation and Application ("ACA Projects"). The ACA Projects, organized in local areas and by seven local governments, received a total of 500 million yen in subsidies. (The largest amount per project was 100 million yen.) In March 2022, upon the closing of the Plan, the author conducted interviews and questionnaire surveys via the local governments concerned to study how the quantities of funding were related to the economic impact of, and participant behaviors concerning, the ACA Projects.

Survey

In Japan, the quantitative situations of cultural and artistic activities have been investigated (METI, 2020), albeit insufficiently, on the supplier side (concerning proceeds and the like). On the other hand, similar surveys focusing on consumers and their behaviors have been seldom carried out, except for administrative surveys implemented by the national government or local governments as the need arises. Therefore, it is impossible to discover chronological changes on the consumer side, although private-sector surveys have been

conducted on sporting event audiences at the times of the Olympic Games (Sasakawa Sports Foundation, 2022).

Table 1 Studied local governments (project organizers) and their natural and social conditions

Organizer local govt	Population (in 1000 persons)	Surface area (km2)	Population density (persons/km2)	Average temperature	Average income (in 1000 yen)	Industrial structure (percentages of persons working in the primary, secondary and tertiary industries); 2017 survey data			Persons aged 65 and older (%)
Toyama Pref.	1,056	2,046	516	15.2	3,398	3.3	33.6	63.1	31.7
Ishikawa Pref.	1,147	4,186	274	15.8	3,023	6.6	28.5	64.9	29.2
Fukui Pref.	779	4,190	186	15.6	3,280	3.8	31.3	64.9	29.8
Gifu Pref.	2,008	9,768	206	17	2,919	3.2	33.1	63.7	29.6
Kani City	100	88	1,146	15.8	3,134	1.4	39.5	59.1	28.6
Shiga Pref.	1,413	3,767	375	15.8	3,318	2.7	33.8	63.5	25.7
Kyoto City	1,450	827.83	1,751	16.2	3,635	0.1	16.7	83.2	28.4
Japan	126,706	377,962	335	16.2	3,317	5.1	25.9	67.3	27.9

NB: 2020 data unless otherwise specified

The author thus conducted a fact-finding survey to find out how the behavior of consumers of arts and culture has changed due to the COVID-19 pandemic and, using the results, analyzed the correlation of funding, participant actions, and economic impact, based on the income and expenses of the studied projects. The author (Edagawa, 2001, 2006, 2016), who had already carried out nationwide surveys on cultural activities from a consumer perspective, chose the ACA Projects for this study for several reasons: The ACA Projects were conducted on the same scale for a period of five years. They were in progress in 2020, when the pandemic broke out. They encompassed activities that covered almost all artistic genres, from performing arts to fine arts. Despite a relatively small number of samples, the Projects enabled panel data analysis, which is rarely feasible in studies on cultural and artistic activities.

That is to say, these conditions would facilitate capturing the impact of the pandemic on the consumers of culture. Cultural activities are rarely continued for an extended period without any change in scale or content, and they do not withstand time series analysis when they are held once every few years or so. The ACA Projects were continuously held for five years with their scale and content unchanged, thus facilitating time series analysis. On top of that, the locales where the Projects took place were diverse in terms of natural environment, industry, population density, and so forth, constituting a representative amalgam of Japanese local communities and therefore guaranteeing a higher degree of universality of analysis results. Table 1 summarizes the characteristics of the locales of the local governments that hosted the ACC Projects: They include cold and warm areas. Their socioeconomic conditions vary, from densely populated large urban centers to underpopulated districts, from Kyoto City (large city) to Kani City (small/medium-sized city). The elderly make up a large percentage of the population in some of those locales, and a small percentage in others. The industrial lives in the locales cover

the whole spectrum, with the primary industry predominant in some and the service industry in others. The survey could represent a microcosm of Japan, so to speak.

Furthermore, cultural and artistic projects organized by local governments for the general public usually have relatively small numbers of participants (several hundred persons at the maximum) in Japan. This means that a slight change in the number of participants can considerably fluctuate analysis results. The ACA Projects, on the other hand, had large numbers of participants (dozens of thousand persons), more likely to lead to statistically significant analysis results.

Survey subjects and methodology

While the projects studied are collectively referred to as "ACA Projects," they were individually titled as listed in Table 2. These projects were favorably evaluated for their high levels of content quality, having been screened and approved by experts in the process of selection as subsidy recipients.

Table 2 Studied local governments and their projects

Organizer local government	Project title
Toyama, Ishikawa, and Fukui Prefectures	International Hokuriku Kogei (craft) Summit (joint organization)
Gifu Prefecture, Kani City (Gifu Pref.)	Harmonious community building through cultural and artistic activities (joint organization)
Shiga Prefecture	Harmonious community building through cultural and artistic activities mainly conducted by people with disabilities
Kyoto City	Kyoto Cultivates Project

Under the national government's order to restrict certain types of activities due to the pandemic, the on-site portion of the survey was replaced by online interviews with representatives of the organizer local governments, participating cultural/artistic organizations, and performers.

The survey was conducted in the following steps:

① Preliminary survey in preparation for the on-site survey (online or paper-medium questionnaire survey): Collect ranges of information on the cultural and artistic activities concerned (income and expenses, participants, mode of organization, project results) from organizer entities, main participating groups, and performers (participants). There were 643 respondents to online or paper-medium questionnaire survey. The response rates were 68.3%.

② On-site fact-finding and interviews (online one-on-one interviews): Interview organizer entities, main participating groups, and performers (participants) about the outcomes and achievements of their activities. The author conducted interview surveys with 83 groups and performers.

Survey content and analysis

Project implementation and content

Table 3 outlines the ACA Projects in terms of content and participants. Since the Projects were held for the principal objective of promoting local cultural and artistic activities, there were no restrictions on their genres. Therefore, the Projects varied in terms of event contents, venues and participants. As indicated in Table 3, the event modes covered almost the whole spectrum of artistic expressions and communication means, ranging from live performances to exhibitions. As for venues, the most frequently used facilities were theaters for live performing arts, followed by museums of art and other genres. In Kyoto City and Shiga Prefecture, temples and shrines were used as venues for exhibitions and performing arts. The participants involved in the Projects included large numbers of artists and researchers whose interest corresponded to the means of expression explored in the respective projects.

Table 3 Project description (content, mode, etc.)

Organizer	Event modes	Facilities used	Participants
Toyama Pref.	Exhibition of publicly solicited works of art, drama festival, sale of goods prepared on-site, workshop, symposium	Theater, art museum, museum, park	Design centers, traditional craft artists, actors, culture-sponsoring institutions
Ishikawa Pref.	Exhibition, symposium, lecture, cooking lesson, display and sale of goods, business matching event	Park, art museum, craft training center	Art museums, design centers, Budapest Arts and Crafts Museum, craft-related universities, craft artists, traditional crafts unions, prefectural craft training center
Fukui Pref.	Exhibition, workshop by carft artists, craft producer training school, joint video podcasting with overseas artists	Museum, design center	Traditional craft artists, culture-sponsoring institutions
Gifu Pref.	Drama (kabuki) performance and lecture, workshop, exhibition, concert, lecture on contemporary drama	Theater (historic monument)	Kabuki Theater Conservation Association, kabuki actors, amateur actors, professional actors' organizations, organizations supporting the disabled
Shiga Pref.	Exhibition, theatrical recitation, concert, film screening, craft work, contemporary drama production and performance	Theater, museum, Shinto shrine	Social welfare corporations, "art brut" artists, culture-sponsoring institutions
Kyoto City	Exhibition, discussion, networking event, concert, theatrical performance production, anime production workshop and commendation, film screening	Art museum, museum, Shinto shrine, Buddhist temple, park, zoo, art laboratory	Private businesses, culture-sponsoring institutions, art colleges, stage directors, art researchers, zoologists
Kani City	International joint drama production and performance, workshop, exhibition, trial tea ceremony	Theater, primary and middle schools	People with disabilities, organizations supporting the disabled

What is noteworthy in this regard is the participation of public design centers and private businesses interested in economic application of arts, which might eventually lead to industrialization. The forms of organization also varied, including some not usually found in conventional cultural and artistic projects, such as an exhibition and sale of traditional craft products in Ishikawa Prefecture in concurrence with a business matching event. Project locations away from a large urban center can put limits on participant human resources and available facilities, which in turn restricts cultural and artistic activities that could be implemented.

Table 3 suggests that Kyoto City, a large tourist city with ample, well-developed cultural and artistic facilities and rich human and cultural resources, was able to fully exploit these assets to diversify event modes and project organization. In the other locales, the available cultural resources were utilized to the limit. This means that local cultural and artistic vitalization would require not only short-term financial investment but also cultural and artistic capital accumulated over time. Comparing the projects in Kyoto City and Ishikawa Prefecture, which includes Kanazawa City, a historic city with rich traditions not unlike Kyoto, one quickly notices the difference in that Kyoto took a daring, innovative approach to its “Kyoto Cultivates” Project, described as “the first project of its kind in Japan to internationally promote innovative lifestyles, ideas, industries, etc. founded on art, science, and technology, as well as their systematization,” while Ishikawa Prefecture’s project was simply presented as “continuation and development of traditional craft products” (both excerpts from the respective local governments’ PR documents).

Project budget breakdown

i) Expenses

Table 4 provides the annual itemized expenses of the ACA Projects (the annual totals of all local governments combined). The expense items were known when the expenses were directly covered by the ACA’s subsidies. On the other hand, those not covered by the subsidies (“expenses other than [a]”) were unknown, which did not reach 10% of any of the annual totals, except in FY 2021. In this final year of the Projects, they accounted for 27.7%, a marked increase. It should be noted that the expenses of ACA-subsidized projects are not entirely covered by the agency’s subsidies, which are only allotted to some portion of the expenses of each project. The expenses not covered by the ACA subsidies are provided under separate income items (see ii below). The total annual expenses differed from one year to another, the inaugural and final years registering the largest and the middle years less. Nevertheless, the difference was not considerable, with the annual coefficient of variation at 0.16. This is probably because it was not possible to significantly alter the expenses once the Projects were launched

since the maintenance of a certain level of project content would be expected. The expense items other than “appearance, music, and literary art” did not fluctuate much throughout the years, pointing to the continuity of the projects. It is not clear whether or not the COVID-19 pandemic, which concerns FY 2020 and FY 2021 within the studied period, affected the total amounts of expenses in these years. In the cases of typical profit-making entities, reduced business activities due to the pandemic would be reflected clearly in reduced expenses (MOF, 2022).

Table 4 Annual itemized expenses of the ACA Projects of all local governments combined (in million yen)

FY		Expenses covered by ACA subsidies (a)					Total of (a)	Expenses other than (a)	Total
		Appearance, music, and literary art	Stage, venue, and installation	Wages, travel, and honorarium	Miscellaneous services, consumables, etc.	Commission fees and subventions			
2017	Total	0.00	3.10	6.22	3.57	384.48	397.32	17.01	414.32
	Average	0.00	0.44	0.89	0.51	54.93	56.76	2.43	59.19
	Above as % of total	0.0%	0.7%	1.5%	0.9%	92.8%	95.9%	4.1%	100.0%
2018	Total	2.00	4.40	15.45	4.90	214.52	241.24	9.01	250.25
	Average	0.28	0.63	2.21	0.70	30.65	34.46	1.29	35.75
	Above as % of total	0.8%	1.8%	6.2%	2.0%	85.7%	96.4%	3.6%	100.0%
2019	Total	0.00	1.10	17.54	0.34	335.80	354.80	24.92	379.73
	Average	0.00	0.16	2.51	0.05	47.97	50.69	3.56	54.25
	Above as % of total	0.0%	0.3%	4.6%	0.1%	88.4%	93.4%	6.6%	100.0%
2020	Total	0.00	0.70	15.13	0.87	175.41	192.08	12.89	204.97
	Average	0.00	0.09	2.16	0.12	25.06	27.44	1.84	29.28
	Above as % of total	0.0%	0.3%	7.4%	0.4%	85.6%	93.7%	6.3%	100.0%
2021	Total	1.00	10.90	21.27	7.81	311.85	352.70	135.04	487.75
	Average	0.13	1.55	3.04	1.12	44.55	50.39	19.29	69.68
	Above as % of total	0.2%	2.2%	4.4%	1.6%	63.9%	72.3%	27.7%	100.0%
Total	5-yr total	3.00	20.10	75.61	17.49	1,422.06	1,538.15	198.87	1,737.02
	Above as % of total	0.2%	1.2%	4.4%	1.0%	81.9%	88.6%	11.4%	100.0%
	5-yr average	0.60	4.02	15.12	3.50	284.41	307.63	39.77	347.40
	5-yr standard deviation	0.80	3.68	4.96	2.74	77.68	86.69	53.58	57.03
	Coefficient of variation	1.33	0.92	0.33	0.78	0.27	0.28	1.35	0.16

NB (1) The "Average" figure provided below the "Total" in each box is the average for the year concerned.
(2) The figures are rounded up; the sum of individual figures does not necessarily match the corresponding "total."

With regard to the ACA Projects, which were *public-interest cultural and artistic projects* organized by the ACA and local governments, it is possible to interpret the change in the total amounts of expenses as the organizers’ choice of project continuation over downsizing. Among the expense items covered by the ACA subsidies, the largest was “commission fees and subventions,” which claimed 81.9% of the total ACA subsidies received in the five-year period. In the years in which the total amount of expenses increased, it was mainly attributable to an increase in the amount of “commission fees and subventions” paid to cultural and artistic organizations. This increase suggests expansion of the cultural and artistic activities (the

correlation coefficient between the total expenses and the “commission fees and subventions”: 0.848). The elasticity coefficient between the total expenses and this expense item, 1.14, points to the tendency that the former increases when the latter increases. The item “commission fees and subventions” is understood as the payment of fees and supplementary monetary assistance made to cultural and artistic organizations and individual artists commissioned to participate in the Projects. In the survey conducted with the local governments, it was not possible to find out under what expense items the commission fees and subventions were actually spent by the commissioned organizations and individuals; it was only possible to know the breakdown of expenses for the parts of the Projects directly executed by the local governments. The extremely small percentages of the expense item “appearance, music, and literary art,” despite the Projects’ being cultural and artistic in nature, are explained by the fact that they were not implemented directly by the local governments but were mostly commissioned to external groups and individuals. This process defies one of the official objectives of the ACA Projects, that is, the accumulation by and transfer of knowhow required to organize cultural and artistic projects to local governments. That is to say, the local governments that organized the ACA Projects principally served as commissioners contracting external service providers rather than working firsthand as event producers.

Table 5 shows the itemized expenses registered by the respective local governments for the Projects. Examination of these expenses using the coefficient of variation shows that dispersion is large under the expense items “stage, venue, and installation,” “wages, travel, and honorarium,” “miscellaneous services, consumables, etc.,” and “appearance, music, and literary art” and smaller under the item “commission fees and subventions.” This points to considerable diversity in the manner the municipalities spent the ACA subsidies.

With regard to the distribution of the ACA subsidies among the expense items (a) by the respective local governments, they can be divided into those that spent almost 100% of their subsidies for “commission fees and subventions” and the others. The local governments of the latter type can be further divided into “active” ones such as Gifu and Shiga Prefectures, which spent about 30% of the expenses (a) for their own project implementation, and “somewhat active” ones such as Toyama Prefecture and Kani City, which only spent about 10% for the same purpose. Furthermore, even the “active” and “somewhat active” local governments spent the subsidies mainly under the items “miscellaneous services, consumables, etc.” and “wages, travel, and honorarium,” that is, costs for administrative and clerical work, and much less under the item “appearance, music, and literary art,” which is more directly associated with cultural and artistic activities. This confirms one common tendency among the local governments: their

ACA Projects were realized mainly by commissioning them to cultural and artistic organizations, individual artists, cultural establishments and the like.

Table 5 Itemized ACA Project expenses and other related expenses by the local governments (in million yen)

Local govt		Expenses covered by ACA subsidies (a)					Total of (a)	Expenses other than (a)	Total
		Appearance, music, and literary art	Stage, venue, and installation	Wages, travel, honorarium	Miscellaneous services, consumables, etc.	Commission fees and subventions			
Fukui Pref.	Total	1.00	2.70	4.54	3.11	192.81	204.00	3.56	207.57
	Average	0.17	0.53	0.91	0.62	38.56	40.80	0.71	41.51
	Above as % of total	0.00	1.3%	2.2%	1.5%	92.9%	98.3%	1.7%	100.0%
Toyama Pref.	Total	0.00	0.00	0.00	0.00	83.51	83.50	116.23	199.75
	Average	0.00	0.00	0.00	0.00	16.70	16.70	23.25	39.95
	Above as % of total	0.00	0.0%	0.0%	0.0%	41.8%	41.8%	58.2%	100.0%
Ishikawa Pref.	Total	0.00	0.00	0.00	0.00	142.71	142.70	3.71	146.42
	Average	0.00	0.00	0.00	0.00	28.54	28.54	0.74	29.28
	Above as % of total	0.00	0.0%	0.0%	0.0%	97.5%	97.5%	2.5%	100.0%
Gifu Pref.	Total	1.00	1.40	58.75	1.52	172.80	235.00	35.61	270.60
	Average	0.11	0.28	11.75	0.30	34.56	47.00	7.12	54.12
	Above as % of total	0.00	0.5%	21.7%	0.6%	63.9%	86.8%	13.2%	100.0%
Shiga Pref.	Total	1.00	16.10	9.00	12.51	102.60	141.60	1.51	143.13
	Average	0.29	3.21	1.80	2.50	20.52	28.32	0.30	28.63
	Above as % of total	0.01	11.2%	6.3%	8.7%	71.7%	98.9%	1.1%	100.0%
Kyoto City	Total	0.00	0.00	0.00	0.00	625.98	626.00	35.28	661.26
	Average	0.00	0.00	0.00	0.00	125.20	125.20	7.06	132.25
	Above as % of total	0.00	0.0%	0.0%	0.0%	94.7%	94.7%	5.3%	100.0%
Kani City	Total	0.00	0.00	3.32	0.35	101.65	105.30	2.96	108.29
	Average	0.00	0.00	0.66	0.07	20.33	21.06	0.59	21.66
	Above as % of total	0.00	0.0%	3.1%	0.3%	93.9%	97.2%	2.7%	100.0%
Total	Total	2.90	20.09	75.60	17.49	1,422.07	1,538.15	198.87	1,737.01
	Above as % of total	0.00	1.2%	4.4%	1.0%	81.9%	88.6%	11.4%	100.0%
	Local govt average	0.43	2.89	10.80	2.50	203.15	219.73	28.41	248.15
	Standard deviation of above	0.53	5.92	21.40	4.56	190.70	186.74	41.65	189.78
	Coefficient of variation	1247219129	2.05	1.98	1.83	0.94	0.85	1.47	0.76

NB (1) The "Average" figure provided below the "Total" in each box is the five-year average for the local government.

(2) The figures are rounded up; the sum of individual figures does not necessarily match the corresponding "total."

At the beginning of the 21st century, Japan underwent an administrative reform modeled after the British governmental agency system, resulting in the separation of policy-making and project-executing departments within government offices. Consequently, in an increasing number of governmental projects, policy-making personnel are uninformed of the realities of the

fields in which their projects are to be implemented, failing to design and offer local government services that meet actual resident needs. With the breakdown of the ACA Project expenses pointing to the high prevalence of almost wholesale commissioning in the administration of cultural and artistic activities, as observed above, there is concern whether or not the local governments assure adequate service in the cultural and artistic domains.

ii) Income

Table 6 indicates the annual expenses of the ACA Projects not covered by the ACA [(a) and (b)] classified by source of income. Throughout the five-year period, the ACA was the largest source of income, funding 53.1% of all ACA Project expenses combined, followed by the local governments footing the bill for 35.4%, that is, over 75% of the portion not subsidized by the ACA. The funding by the ACA and the local governments accounted for 88.5% of all Project expenses, and the remaining 10% or so was covered by co-organizers/sponsors, participating artists, donations, operational income (admission fees, proceeds from the sale of art works and the like organized as part of the Projects, etc.) and the like.

Table 6 Breakdown of annual funding (income) for the Project and related expenses (in million yen)

Year		Breakdown of funding by the local governments (a)						Total local government funds (b)	ACA subsidies (c)	Total income (b+c)	Public funds (ACA subsidies/ local gov't funds) (a+c)	% of public funds in total
		Local government own funds (a)	Co-organizer/ sponsor funds	Subventions	Donations and contributions	Operational income	Other					
2017	Total	111.91	3.40	3.50	11.00	47.75	0.00	177.41	237.00	414.32	348.82	57.2%
	Average	15.99	0.49	0.50	1.55	6.82	0.00	25.34	33.84	59.19	49.83	
	%	27.0%	0.8%	0.8%	2.6%	11.5%	0.0%	42.8%	57.2%	100.0%	84.2%	84.2%
2018	Total	93.42	1.80	0.00	0.00	3.11	0.00	98.31	152.00	250.25	245.38	60.7%
	Average	13.35	0.25	0.00	0.00	0.44	0.00	14.04	21.71	35.75	35.05	
	%	37.3%	0.7%	0.0%	0.0%	1.2%	0.0%	39.3%	60.7%	100.0%	98.1%	98.1%
2019	Total	159.93	10.30	0.00	10.00	23.07	0.00	203.14	177.00	379.73	336.52	46.6%
	Average	22.85	1.47	0.00	1.41	3.30	0.00	29.02	25.23	54.25	48.07	
	%	42.1%	2.7%	0.0%	2.6%	6.1%	0.0%	53.5%	46.5%	100.0%	88.6%	88.6%
2020	Total	39.49	9.70	0.00	2.00	8.93	0.00	60.41	145.00	204.97	184.06	70.7%
	Average	5.64	1.38	0.00	0.33	1.28	0.00	8.63	20.65	29.28	26.29	
	%	19.3%	4.7%	0.0%	1.1%	4.4%	0.0%	29.5%	70.5%	100.0%	89.8%	89.8%
2021	Total	210.69	23.20	20.80	7.00	13.07	1.00	274.80	213.00	487.75	423.64	43.7%
	Average	30.10	3.32	2.96	0.94	1.87	0.07	39.26	30.42	69.68	60.52	
	%	43.2%	4.8%	4.3%	1.3%	2.7%	0.1%	56.3%	43.7%	100.0%	86.9%	86.9%
Total	Total	615.44	48.40	24.30	30.00	95.93	1.00	814.07	923.00	1,737.02	1,538.42	0.5
	Above as %	35.4%	2.8%	1.4%	1.7%	5.5%	0.1%	46.9%	53.1%	100.0%	88.6%	
	Average	17.58	1.38	0.69	0.84	2.74	0.02	23.26	26.37	49.63	43.95	
	Standard deviation	123.09	9.68	4.86	6.00	19.19	0.20	162.81	184.80	347.40	307.68	
	Coefficient of variation	0.53	0.87	1.86	0.81	0.91	2.24	0.52	0.21	0.34	0.30	88.6%

NB (1) The "Average" provided immediately below the "Total" in the boxes is the average among the local governments.
(2) The figures are rounded up; the sum of individual figures does not necessarily match the corresponding "total."
(3) Of the two figures provided under "% of public funds in total," the upper one is of ACA subsidies, and the lower one is of all public funds.

Some ACA Projects included programs designed to directly generate operational income, such as the simultaneous display and sale of exhibits, but most Projects were admission-free. With the small amounts of “donations and contributions” and “subventions” (received mainly from cultural/artistic promotional organizations), the ACA Projects were indeed *public-interest cultural and artistic projects*, principally funded by the ACA and the local governments concerned, also in terms of financial burden sharing. The composition of different sources of income did not change much from year to year, except for the item “operational income” in FY 2020 and FY 2021, which dropped from the FY 2017-2019 level due to restrictions on the general population’s non-essential activities due to the COVID-19 pandemic.

The percentage of funding by the ACA in the total income accounted for 53.1% for the five-year period, but year on year, it ranged from 43.5% (FY 2021) to 70.5% (FY 2020). In Japan, public financial aid is provided either in a fixed amount or at a fixed rate. In 1999, then the Prime Minister Keizo Obuchi’s cabinet instituted a new mode of public project funding with partial participation by private-sector entities. The subsequent cabinet under Prime Minister Junichiro Koizumi reformed local administration, officially adopting, among other things, a matching grant scheme for cultural and artistic projects organized by local governments. In this matching grant scheme, premised on the recognition of private-sector entities as the primary experts in projects in their respective fields, private-sector entities that raise a designated sum of funds for their project implementation are entitled to public funds offered by the national and/or local government for the purpose of promoting the projects. The scheme can be highly effective in the domain of cultural and artistic projects, in which large numbers of cultural or artistic organizations and profit-making companies operate. In reality, however, cultural and artistic projects held in the provinces are organized predominantly by local governments because, unlike in urban centers, there are not sufficient numbers of cultural/artistic organizations or for-profit companies capable of planning, producing, and implementing large-scale events and attracting large numbers of visitors. The large percentage of public funds for the ACA Projects is also an indicator of the central role played by the ACA and the local governments in project organization.

Table 7 shows the breakdown of different sources of income for the Project and related expenses of the respective local governments. The percentage of ACA subsidies in the total funding was the largest for Shiga Prefecture at 75.7% and the smallest for Ishikawa Prefecture at 30.5%, with the average at 53.1% (the upper figure in the lowest right-hand box in Table 7). The sources of income other than the subsidies included “co-organizer/sponsor funds” (including funds provided by participants), “subventions” from

cultural and artistic promotional organizations, “donations and contributions,” and “operational income.” Among them, “operational income” made up the largest percentage at 6.2% (see “%” in “Total”) in the sum total of all local governments combined. The amounts of income other than “local government own funds” varied greatly among the local governments. For example, Gifu Prefecture bore the Project expenses almost entirely with its own funds, whereas Kyoto City covered about one-third of the expenses not covered by the ACA subsidies with “donations and contributions” and “operating income,” thus spending its own funds on no more than two-thirds of the expenses (see Kyoto City’s “Total” figures). The percentage of local government own funds in the five-year total Project expenses was 35.4%, with Gifu and Ishikawa Prefectures spending considerably more than the average, Toyama and Fukui Prefectures in the average range, and Shiga Prefecture and Kyoto and Kani Cities markedly below the average. With regard to these last three local governments, their much smaller own funding rate than the average does not necessarily indicate larger funds provided by other non-governmental entities since the percentage of ACA subsidies in their Project expenses were larger than the other local governments by 10 to 45 points. In terms of the percentage of expenses covered by “operational income,” the local governments can be divided into a high-income group (Toyama and Fukui Prefectures and Kyoto City) and a low-income group (Ishikawa, Gifu and Shiga Prefectures and Kani City). The local governments can also be classified otherwise based on the percentages of expenses covered by different sources of income, such as “co-organizer/sponsor funds” (including participation expenses) and “subventions.” In the case of Kyoto City, the division of funding is well balanced among “co-organizer/sponsor funds,” “donations and contributions and “operational income,” demonstrating the acquisition of private-sector funds and thus a measure of success in incorporating the matching grant scheme. Kyoto City has an established history of donations and fund-raising: in the Meiji period (1868-1912), its citizens made voluntary donations to have school buildings built and remunerate teachers so as to improve primary education in their city. It is probable that such community history and mentality showing the willingness to support the local government were translated into the relatively large number of private-sector entities sharing the costs of Kyoto’s ACA Project and the amount of funds thus provided. To the contrary, Gifu and Ishikawa Prefectures show a strong tendency to promote cultural and artistic projects under local government leadership.

Table 7 Breakdown of funding (income) for the Project and related expenses by each local government (in million yen)

Local government		Breakdown of funding by the local government						Total local government funds (b)	ACA subsidies (c)	Total income (b+c)	Public funds (a)+©	% of public funds in total
		Local government own funds (a)	Co-organizer/ sponsor funds	Subventions	Donations and contributions	Operating income	Other					
Toyama Pref.	Total	75.88	2.50	3.50	0.00	20.57	0.00	102.44	105.12	207.56	181.00	50.6%
	%	41.9%	1.4%	1.9%	0.0%	11.4%	0.0%	56.6%	58.1%	114.7%	100.0%	
	Standard deviation	26.17	1.12	1.57	0.00	9.20	0.00	38.04	39.72	77.75		87.2%
Ishikawa Pref.	Total	97.20	18.00	20.80	0.00	2.44	1.00	138.89	60.86	199.74	158.06	30.5%
	%	61.5%	11.4%	13.2%	0.0%	1.5%	0.6%	87.9%	38.5%	126.4%	100.0%	
	Standard deviation	40.18	8.05	9.28	0.00	1.09	0.22	58.82	24.05	82.87		79.1%
Fukui Pref.	Total	59.79	0.00	0.00	0.00	22.35	0.00	82.15	64.28	146.43	124.07	43.9%
	%	48.2%	0.0%	0.0%	0.0%	18.0%	0.0%	66.2%	51.8%	118.0%	100.0%	
	Standard deviation	14.56	0.00	0.00	0.00	8.82	0.00	23.31	21.92	45.22		84.7%
Gifu Pref.	Total	161.16	0.00	0.00	0.00	0.94	0.00	162.10	108.50	270.60	269.66	40.1%
	%	59.8%	0.0%	0.0%	0.0%	0.3%	0.0%	60.1%	40.2%	100.3%	100.0%	
	Standard deviation	20.37	0.00	0.00	0.00	0.26	0.00	20.39	7.45	23.04		99.7%
Shiga Pref.	Total	26.59	0.80	0.00	0.00	7.32	0.00	34.73	108.40	143.13	134.99	75.7%
	%	19.7%	0.6%	0.0%	0.0%	5.4%	0.0%	25.7%	80.3%	106.0%	100.0%	
	Standard deviation	2.82	0.12	0.00	0.02	2.80	0.01	4.33	20.82	22.93		94.3%
Kyoto City	Total	165.86	25.10	0.00	30.00	39.82	0.00	260.29	400.97	661.26	566.83	60.6%
	%	29.3%	4.4%	0.0%	5.3%	7.0%	0.0%	45.9%	70.7%	116.7%	100.0%	
	Standard deviation	16.11	4.41	0.00	4.69	11.15	0.00	6.81	18.57	17.93		85.7%
Kani City	Total	28.96	2.00	0.00	0.00	2.49	0.00	33.43	74.85	108.29	103.81	69.1%
	%	27.9%	1.9%	0.0%	0.0%	2.4%	0.0%	32.2%	72.1%	104.3%	100.0%	
	Standard deviation	9.23	0.15	0.00	0.00	1.11	0.01	10.37	12.63	22.45		95.9%
Total	Total	615.44	48.40	24.30	30.00	95.93	1.00	814.04	923.00	1,737.01	1,538.44	53.1%
	%	40.0%	3.1%	1.6%	2.0%	6.2%	0.1%	52.9%	60.0%	112.9%	100.0%	
	Average	119.45	11.45	3.47	9.25	21.51	0.14	160.82	131.86	248.15	219.77	
	Standard deviation	57.30	10.25	7.75	11.34	14.49	0.38	186.74	120.49	189.78	162.30	
	Coefficient of variation	0.65	1.48	2.23	2.65	1.06	2.65	0.85	0.91	1.31	0.74	88.6%

NB (1) The "Average" provided immediately below the "Total" in the boxes is the average among the local governments.
(2) The figures are rounded up; the sum of individual figures does not necessarily match the corresponding "total."
(3) Of the two figures provided under "% of public funds in total," the upper one is of national subsidies, and the lower one is of all public funds.

Funding by the local governments and its factors

The amounts and percentages of expenses borne by the local governments for the ACA Projects (local government own funds, [a] in Table 7, excluding the ACA subsidies) widely vary from one locale to another, ranging from figures above 160 million yen (Kyoto City and Gifu Prefecture) to 33 million yen (Kani City) and from 59.6% (Gifu Prefecture) to slightly above 25% (Kyoto and Kani Cities). These differences are presumably related to the socioeconomic conditions of the local governments, including their financial scale, population, and resident income level. Differences emerge in financial support by the local governments even in the implementation of similar projects with assistance from the same national government agency also due to different attitudes toward arts and culture on the part of the local governments involved (as reflected in their policy on the promotion of arts and culture). In Japan, local governments enjoy a great scope of discretion when it comes to policy making on cultural and artistic affairs. As a result, the general public experiences varying degrees of access to cultural and artistic activities, depending on the place of residence. It is mainly for this reason that even some large urban cities offer only a limited menu of cultural and artistic activities. With regard to the ACA Projects, it is surmised that the budgetary differences among the local governments resulted from their attitudes toward cultural and artistic affairs, which were in turn reflected in the

varying degrees of access that local residents could have to opportunities for cultural and artistic activities.

As stated above, the considerable differences among the local governments in the sum of their own funds for the Projects are likely attributable largely to their socioeconomic situations. Table 8 shows the items of income covering the ACA Projects and the related socioeconomic and cultural indicators of the local governments. The indicator deemed most closely reflective of the degree of interest in and enthusiasm for the Projects on the part of the local governments is “local government own funds” (the far-left column in Table 8).

Table 8 Correlation between the Project income items and related socioeconomic and cultural indicators (Pearson correlation)

	Cultural project indicators						Socioeconomic and cultural indicators					
	Local govt own funds	Co-organizer/ sponsor funds	Subventions	Donations and contributions	Operational income	ACA subsidies	Facility operation expenses (a)	Arts and culture expenses (b)	Facility operation expenses (a+b)	Total settled expenses (c)	Ratio of arts and culture expenses to total (a+b)/c	Per capita income
Local government own funds	1.00	0.641(**)	0.625(**)	0.16	0.29	0.625(**)	0.11	-0.06	0.08	0.16	0.18	0.01
Co-organizer/ sponsor funds	0.641(**)	1.00	0.781(**)	0.33	0.08	0.454(**)	0.19	0.04	0.18	-0.13	0.359(*)	0.14
Subventions	0.625(**)	0.781(**)	1.00	-0.06	0.07	0.22	0.00	0.05	0.01	0.12	-0.08	-0.02
Donations and contributions	0.16	0.33	-0.06	1.00	0.420(*)	0.552(**)	0.31	-0.04	0.27	-0.33	0.660(**)	0.20
Operational income	0.29	0.08	0.07	0.420(*)	1.00	0.695(**)	0.13	0.01	0.12	-0.12	0.23	0.14
ACA subsidies	0.625(**)	0.454(**)	0.22	0.552(**)	0.695(**)	1.00	0.24	-0.02	0.22	-0.24	0.550(**)	0.23
Facility operation expenses	0.11	0.19	0.00	0.31	0.13	0.24	1.00	0.13	0.951(**)	0.07	0.704(**)	0.407(*)
Arts and culture expenses	-0.06	0.04	0.05	-0.04	0.01	-0.02	0.13	1.00	0.431(**)	0.27	0.15	0.422(*)
Facility operation expenses	0.08	0.18	0.01	0.27	0.12	0.22	0.951(**)	0.431(**)	1.00	0.15	0.686(**)	0.502(**)
Total settled expenses	0.16	-0.13	0.12	-0.33	-0.12	-0.24	0.07	0.27	0.15	1.00	-0.432(**)	0.05
Ratio of arts and culture expenses to total	0.18	0.359(*)	-0.08	0.660(**)	0.23	0.550(**)	0.704(**)	0.15	0.686(**)	-0.432(**)	1.00	0.423(*)
Per capita income	0.01	0.14	-0.02	0.20	0.14	0.23	0.407(*)	0.422(*)	0.502(**)	0.05	0.423(*)	1.00

NB (1) ** =The correlation coefficient is significant at 1% (both sides); * =The correlation coefficient is significant at 5% (both sides).

(2) "Facility operation expenses" denote the expenses for the operation of theaters and other cultural/artistic facilities, including expenses for performances, utilities, and labor.

(3) "Arts and culture expenses" denotes the total sum of expenses that the local government spent in connection with culture and arts from FY 2010 to FY 2016, before the start of the ACA Projects, divided by the number of years in the period.

(4) "Ratio of arts and culture expenses to total" denotes the "Arts and culture expenses" from FY 2010 to FY 2016 divided by the total sum of settled local government expenses for the same period, and divided by the number of years in the period to obtain the average.

Data: "Survey on Cultural Administration by Local Governments" by ACA and "Survey on Local Government Finances" by the Ministry of Internal Affairs and Communications, covering all years concerned

Since Japanese local governments are basically free to implement their policy measures concerning cultural and artistic activities, it is possible to say that the funds they expend for such activities are proportional to the degree of their enthusiasm for arts and culture, greater enthusiasm leading to more funding and less enthusiasm resulting in little or no financial commitment. Therefore, the ratio of its own funds spent for that purpose to the total sum of settled local government expenses was adopted as the indicator of a local government’s

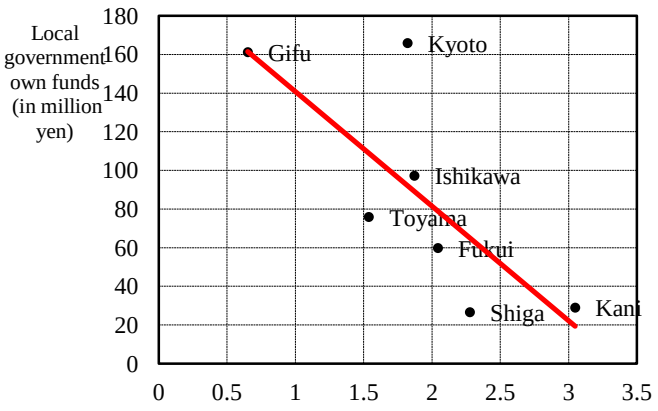
enthusiasm for arts and culture in this study. The absolute value of expenses was not adopted due to extremely large differences among the local governments in terms of various attributes of the locales, such as population, surface area, and financial condition. For example, Kyoto City, with a population over 20 times larger than that of Kani City and an accumulation of cultural industries, benefits from the effect of economies of scale in the implementation of cultural and artistic activities. For this reason, larger-scale local governments can usually expect greater efficiency out of a fixed amount of expenditure. The ratio was chosen over the absolute value as the indicator also to eliminate time effects such as price hikes. Since the number of samples, only seven Projects (seven local governments), is too small for thoroughly sound statistical analysis, the results below should be viewed as findings pointing to general trends.

In Table 8, the item “arts and culture expenses” designates the annual average of the expenses the local governments spent in connection with arts and culture during the 10-year period from FY 2007 to FY 2016, before the launch of the ACA Projects, excluding expenses for the development of theaters, museums, and other cultural/artistic facilities. The development expenses were not included to eliminate time-related biases that can be generated when a local government’s expenditure for arts and culture explodes during the development and construction of cultural/artistic facilities, which are usually costly due to building construction and site acquisition. The period of the ACA Projects was also excluded to eliminate time-related biases; the 10-year period prior to the Projects was chosen to gauge the habitual degree of enthusiasm for arts and culture. The use of data from the years before the Projects was essentially to determine the local governments’ medium-term interest in arts and culture. Naturally, data on the total amount of settled local government expenses and the income per resident were taken from the same period. In obtaining averages, the amount of settled expenses and the per-capita income were substantiated by applying the consumer price index and the GDP deflator, respectively.

As indicated in Table 8, a positive correlation is found between “donations and contributions,” “operational income,” and “ACA subsidies,” and between “operational income” and “ACA subsidies” at the significant level of 5% or 1%. This can be interpreted as a tendency that resonates with the concept of the matching grant scheme in that private-sector funding increases in line with an increase in public subsidies for arts and culture. The positive correlation between “operational income,” which denotes results from private sector-inspired profit-making enterprises, and “ratio of arts and culture expenses to the total,” which indicates the degree of enthusiasm for arts and culture, relates enthusiasm for arts and culture with orientation toward the matching grant scheme. As for the positive correlation between “ACA subsidies” and “ratio of arts and culture expenses to the total,” it can be viewed as an indicator

of the degree of enthusiasm or determination on the part of the local government concerned for acquiring external funds while not solely relying on the matching grant scheme.

Fig. 2 Local governments' own funds and ratio of arts and culture expenses to the total



On the other hand, there is no correlation between “local government own funds” and “total settled expenses” and between “local government own funds” and “per-capita income.” In general, an increase in local government spending is expected to accompany an expansion in the scope of discretionary spending, which often includes expenses for arts and culture. Likewise, an increase in the residents’ income would usually raise the local government’s spending for cultural and artistic programs offered as part of its general-public services to accommodate people’s growing demand for arts and culture as objects of consumption and leisure activities. How could, then, a negative correlation between “local government own funds” and “ratio of arts and culture expenses to the total” be interpreted? This correlation is shown in Fig. 2. The negative correlation is clear between the two indicators. All local governments, excluding Kyoto City, are on a linear approximation line. Kyoto City’s arts and culture expenses are markedly large, as compared to the ratio of arts and culture expenses to the total, suggesting the city’s high degree of enthusiasm for cultural and artistic activities, which may be explained by its socioeconomic and cultural environment. The same can be said about all local governments.

Table 9 summarizes the characteristics of the locales of the seven local governments in terms of cultural history and present-day policy on arts and culture. They all have historical culture and industry, including traditional performing arts and craftwork. While there is little difference in their cultural history, they greatly differ in terms of attitude toward arts and culture as administrators. For example, Gifu and Toyama Prefectures, whose ratio of arts and culture expenses to the total is low, have established prefectural ordinances for cultural promotion, but they are mostly abstract regulations with no specific policy measures. Only two departments within the prefectural governments, mainly in charge of tourism and culture, handle matters related to arts and culture, unlike other local governments, which oversee cultural and artistic affairs with several related departments working in collaboration. The ACA Projects of Gifu and Toyama mainly comprised programs involving extensions of the local traditional craftwork,

performing arts and the like as they had always been presented, with no brand-new programs as in the ACA Projects of Ishikawa and Shiga Prefectures and Kyoto and Kani Cities.

In other words, the two Prefectures implemented their ACA Projects exactly as their previous cultural/artistic projects with no specific planning. In the vocabulary of business management, one can say that they were like companies that simply continued their business in the conventional way, with no freshly adopted management policy, goals or approaches, incapable of adequately responding to current socioeconomic situations, due to the lack of entrepreneurial spirit. Consequently, no organizational growth or sales increase was to be expected.

Let us now reflect on the promotion of arts and culture by local governments from the perspective of business growth. Examining the growth of a firm by focusing on its resources began with research by Penrose (1959) and Chandler(1962). This approach, in which a firm is understood as an assembly of resources that are controlled in an integrative management mechanism, has been carried on as the resource-based view (RBV) (Wernerfelt, 1984; Peteraf, 1993; Barney, 2002) . Its basic concept proposes that the managerial resources specific to an individual firm regulate the outcome of its business. The focus is placed on managerial resources as an essential factor for growth because it is believed that the firm's competitive superiority basically lies in its internal resources, since managerial resources are accumulated as the firm goes on conducting its business. From this perspective, it can be said that local governments that have been enthusiastically conducting cultural and artistic projects since a long while ago are bound to accumulate and preserve related skills and human resources over an extended period, which in turn facilitates and accelerates their cultural and artistic endeavors.

The local governments of the ACA Projects other than Gifu, Toyama, and Fukui Prefectures were found in the study to have accumulated abundant managerial resources, which proved useful for the Projects. As a result, they must have had greater ease in collecting "co-organizer/sponsor funds" and "donations and contributions," thereby reducing a part of their burden sharing. This is most likely why these two items had a positive correlation (though not statistically significant) with "local government own funds." Had Gifu, Toyama and Fukui accumulated ample managerial resources related to arts and culture like the others, their own funding for the Projects would have been similar to that of Shiga Prefecture and Kani City. The trend line in Fig. 2 could have been downward to the left, instead of going downward to the right, indicating a positive correlation.

Table 9 Situations of arts and culture in the local governments

Locale	Arts and culture	Policy measures	Departments in charge
Toyama	Traditional industrial arts, such as lacquerware, casting, wood carving, and maki-e, are well preserved, but traditional performing arts are not active. Toyama is well known for modern drama as represented by the internationally active Suzuki Company of Toga (SCOT). In the 1920s, many folk craft artists settled there; their glass craft creations have remained active to date.	A vision is being drawn up based on the prefectural ordinance for cultural promotion adopted in 2008, which is still a body of abstract regulations.	Cultural Promotion Section in charge of cultural policy; Tourism Promotion Office within Tourism Bureau
Shiga	Shiga has a well-established traditional culture centering on Lake Biwa. Traditional performing arts are mainly preserved by temples and shrines in their ceremonies and festivals. Since the end of World War II, drama and craftwork targeting socially vulnerable people, such as the disabled and young children, have been promoted by some artists and professionals. With the development of museums and concert halls from 1990, Shiga promotes arts and culture to be a harmonious society conscious of SDGs.	Concrete goals and project plans are adopted in line with the prefectural ordinance for cultural promotion, as well as ordinance-based activity plans, basic policies, plans for handicapped persons, and so on.	Culture and Art Promotion Section in charge of cultural policy; Accessibility and Welfare Section
Fukui	Traditional industrial arts, such as paper making, lacquerware, knife forging, and pottery, are preserved at the moment, but future prospects are problematic. The development of new cultural projects seems difficult.	No ordinance for cultural promotion; the promotion of traditional industrial arts is mentioned in the prefecture's economic strategies.	Board of Education and Tourism Bureau (Tourist Attraction Section)
Ishikawa	Traditional performing arts, industrial arts, and painting have been preserved since the Edo period and are well-integrated in the population's daily lives. With many historical buildings, temples and shrines, it is often called "Kyoto of the Hokuriku region." Many tourists visit to appreciate its traditional culture.	The prefecture adopted its ordinance for cultural promotion in 2015, in which prefectural citizens are defined as the leader of local cultural life. Theaters, concert halls, and other facilities are being developed to promote traditional and new cultural activities among the residents.	All departments are involved in arts and culture, including the Industrial Policy Section in charge of culture and industry; Citizens Culture and Sports Section; Planning Section in charge of policy in general; Park and Green Space Section, overseeing public parks; Tourism Bureau; Board of Education; and Production and Distribution Section in charge of occupational affairs.
Gifu	Traditional industrial arts, such as knife forging, paper making, woodwork, ceramic ware, and traditional performing arts, including bunraku and kabuki, are well preserved. New cultural facilities have been recently opened to increase opportunities for cultural and artistic activities responsive to SDGs.	The prefectural ordinance for cultural promotion was adopted in 2008, but it remains a body of abstract regulations for cultural promotion, with few concrete measures being planned.	Tourism Bureau; Cultural Creation Section in charge of cultural promotion in general; Board of Education
Kyoto City	Kyoto has an over 1200-year history and cultural traditions, as well as expertise founded on this background and an accumulation of higher education institutions and venture businesses launching new industries since the Meiji period. The local population consciously incorporates traditional arts, particularly performing arts, into daily lives. Kyoto has the country's largest ratio of tertiary students to total population and a high concentration of museums, temples and shrines, libraries, and theaters.	"Declaration of Kyoto as a City Open to the Free Exchange of World Cultures," Kyoto City ordinance for Kyoto as a city of arts and culture, and ordinance-based activity plans are in place to draw up concrete projects and project goals to strengthen Kyoto as a city of culture for the future.	Industry and Tourism Division of Tourism Bureau; Industrial Planning Office in charge of cultural innovation; General Planning Bureau in charge of specific projects; Arts and Culture Planning Section in charge of cultural policy
Kani City	As a satellite city of Nagoya and Gifu Cities, Kani has seen an increase in new residents. To respond to their cultural needs, the city began the development of new cultural facilities in 2002, until which it was a rural, predominantly agricultural area.	No municipal ordinance for cultural promotion is in place, but the comprehensive strategic plan contains regulations for the promotion of popular participation in artistic activities as part of community building.	Culture and Sports Section

Connection between investment in projects and social conveniences realized by them

ⅰ) Overview of indicators

The objective of the ACA Projects was “the formation of centers for cultural and artistic creation and the improvement of local public entities’ ability to implement cultural and artistic projects, thereby contributing to their tourism strategy.” That is to say, attracting tourists was an essential element of the purpose of the Projects. In fact, all local governments cited the attraction of tourists to their locales as a principal outcome of their ACA Projects. Table 10 shows the Pearson correlation between Input (invested funds classified by source) and Outcome (“number of participants” and “economic impact”) of the ACA Projects. As stated below the table, the upper figure in each of the boxes denotes the coefficient for the entire Project period, the middle figure for the pre-pandemic years of the Project period, and the lower figure during the pandemic. The figures are thus arranged so as to facilitate comparison and analysis for the full Project period and the period demarcated by the pandemic.

Table 10 Correlation between cultural and artistic projects and number of participants/economic impact (Pearson correlation)

	Local government own funds	Co-organizer/ sponsor funds	Subventions	Donations and contributions	Operational income	ACA subsidies	Income = expenses	Public funds	No. of participants (in 1000 persons)	Economic impact (in million yen)
Local govt own funds (a)	1	0.641(**)	0.625(**)	0.16	0.285	0.625(**)	0.850(**)	0.867(**)	-0.049	0.007
	1.000	0.418	0.531(*)	0.123	0.407	0.695(**)	0.826(**)	0.869(**)	-0.121	-0.082
	1.000	0.789(**)	0.774(**)	0.276	0.164	0.595(*)	0.901(**)	0.897(**)	0.420	0.404
Co-organizer/ sponsor funds	0.641(**)	1	0.781(**)	0.332	0.075	0.454(**)	0.635(**)	0.590(**)	-0.05	0.067
	0.418	1.000	0.187	0.633(**)	0.030	0.429	0.469(*)	0.459(*)	-0.100	0.038
	0.789(**)	1.000	0.865(**)	0.246	0.443	0.641(*)	0.862(**)	0.802(**)	0.686(**)	0.671(**)
Subventions	0.625(**)	0.781(**)	1	-0.064	0.072	0.224	0.486(**)	0.435(**)	0.03	0.024
	0.531(*)	0.187	1.000	-0.072	0.481(*)	0.441(*)	0.520(*)	0.511(*)	0.219	0.179
	0.774(**)	0.865(**)	1.000	-0.102	0.097	0.323	0.685(**)	0.618(*)	0.549(*)	0.265
Donations and contributions	0.16	0.332	-0.064	1	0.420(*)	0.552(**)	0.471(**)	0.427(*)	-0.108	0.092
	0.123	0.633(**)	-0.072	1.000	0.437(*)	0.550(**)	0.501(*)	0.426	-0.159	0.026
	0.276	0.246	-0.102	1.000	0.299	0.578(*)	0.448	0.476	0.242	0.614(*)
Operational income	0.285	0.075	0.072	0.420(*)	1	0.695(**)	0.628(**)	0.577(**)	0.128	0.167
	0.407	0.030	0.481(*)	0.437(*)	1.000	0.734(**)	0.738(**)	0.664(**)	0.082	0.102
	0.164	0.443	0.097	0.299	1.000	0.744(**)	0.517	0.503	0.461	0.670(**)
ACA subsidies (b)	0.625(**)	0.454(**)	0.224	0.552(**)	0.695(**)	1.000	0.932(**)	0.931(**)	-0.066	0.091
	0.695(**)	0.429	0.441(*)	0.550(**)	0.734(**)	1.000	0.972(**)	0.960(**)	-0.111	0.022
	0.595(*)	0.641(*)	0.323	0.578(*)	0.744(**)	1.000	0.873(**)	0.890(**)	0.322	0.639(*)
Income = expenses	0.850(**)	0.635(**)	0.486(**)	0.471(**)	0.628(**)	0.932(**)	1.000	0.992(**)	-0.047	0.081
	0.826(**)	0.469(*)	0.520(*)	0.501(*)	0.738(**)	0.972(**)	1.000	0.992(**)	-0.103	0.005
	0.901(**)	0.862(**)	0.685(**)	0.448	0.517	0.873(**)	1.000	0.994(**)	0.486	0.614(*)
Public funds (a+b)	0.867(**)	0.590(**)	0.435(**)	0.427(*)	0.577(**)	0.931(**)	0.992(**)	1.000	-0.065	0.061
	0.869(**)	0.459(*)	0.511(*)	0.426	0.664(**)	0.960(**)	0.992(**)	1.000	-0.123	-0.017
	0.897(**)	0.802(**)	0.618(*)	0.476	0.503	0.890(**)	0.994(**)	1.000	0.416	0.581(*)
No. of participants (in 1000 persons)	-0.049	-0.050	0.030	-0.108	0.128	-0.066	-0.047	-0.065	1.000	0.965(**)
	-0.121	-0.100	0.219	-0.159	0.082	-0.111	-0.103	-0.123	1.000	0.971(**)
	0.420	0.686(**)	0.549(*)	0.242	0.461	0.322	0.486	0.416	1.000	0.790(**)
Economic impact (in million yen)	0.007	0.067	0.024	0.092	0.167	0.091	0.081	0.061	0.965(**)	1.000
	-0.082	0.038	0.179	0.026	0.102	0.022	0.005	-0.017	0.971(**)	1.000
	0.404	0.671(**)	0.265	0.614(*)	0.670(**)	0.639(*)	0.614(*)	0.581(*)	0.790(**)	1.000

NB (1) **: Correlation is significant at 1% standard (both sides); *: Correlation is significant at 5% standard (both sides).

(2) The upper figures in the boxes denote Pearson correlation coefficients for the entire Project period, the middle figures for the pre-pandemic years of the same period, and the lower figures during the pandemic.

The variables comprising Outcome, “number of participants” and “economic impact,” have an extremely strong positive correlation, but there is almost no correlation between them and the fund-related variables that make up Input. The “economic impact” discussed here was not actually measured but calculated by the respective local governments using Wassily Leontief input-output tables drawn up by themselves, with Input variables such as “number of participants” and “arts and culture expenses.” In general, the economic impact of cultural and artistic activities is largely determined by the number of participants since the impact is expressed as a numerical value combining the economic impact of consumption by participants and performers and that of consumption and expenses spent for the activities. An extremely strong correlation can be identified between the number of participants and economic impact because they are linear in the input-output table due to its particulars. The input-output table used by the local governments was premised on the pre-COVID-19 industrial structure, with no adjustment to changes brought about by the pandemic to the structure. At the time of writing (September 2022), the FY 2015 version was the latest available as input-output tables covering all of Japan and also for local governments. Since it is highly probable that the pandemic significantly modified the industrial structure of the service sector, the actual economic impact should be smaller than the calculated one.

Table 11 Correlation coefficients between Input and Output before and during the pandemic

		Input						
		Co-organizer/sponsor funds	Subventions	Donations and contributions	Operating income	ACA subsidies	Income = expenses	Public funds
Input	Co-organizer/sponsor funds		0.187 0.865(**)	0.633(**) 0.246	0.030 0.443			
	Co-organizer/sponsor funds				0.030 0.443			
	Subventions				0.481(*) 0.097			
	Operating income		0.481(*) 0.097					
Outcome	No. of participants (in 1000s)	-0.100 0.686(**)	0.219 0.549(*)	-0.159 0.242	0.082 0.461	-0.111 0.322	-0.103 0.486	-0.123 0.416
	Economic impact (in million yen)	0.038 0.671(**)		0.026 0.614(*)	0.102 0.670(**)	0.022 0.639(*)	0.005 0.614(*)	-0.017 0.581(*)

NB: The upper figures in the boxes are Pearson correlation coefficients before the pandemic, the lower figures during the pandemic.

Table 11 compares the correlation coefficients between the years before and during the COVID-19 pandemic. The coefficients between Input and Outcome greatly changed, with a reversal of signs in many. The coefficients that indicated little or no correlation between Input and Outcome before the pandemic turned significantly positive during the pandemic. During this period, restrictions were imposed on people's social activities and the numbers of participants allowed at large-scale events all over Japan. Therefore, it is surmised that only the permissible minimum numbers of spectators and performers were able to participate in the ACA Projects and that those participants were mostly co-organizers/sponsors and groups and individuals who donated to and supported the Projects, with very few from the general public. This explains the significant positive correlation between Input ("co-organizer/sponsor funds," "subventions," and "donations and contributions") and Outcome ("number of participants" and "economic impact"). The change in the correlation coefficient between "operating income" and "number of participants"/"economic impact" is most likely because consumption was mainly effectuated by those involved in the Projects and not much by external participants. The change in the correlation coefficient between "ACA subsidies"/"operating income"/"public funds" and "number of participants"/"economic impact" can also be attributed to participation by the smallest possible number of persons, very few of whom were from the general public. In other words, the organizations that offered subventions, donations, and contributions mobilized their members as participants, likely in proportion to the size of their assistance, while the ACA subsidies and the local governments' own funds were used to solicit minimum participation from external parties.

ii) Investment and economic impact

In the ACA Projects, the items that constitute investment (Input) in cultural and artistic projects in general include "local government own funds," "co-organizer/sponsor funds," "subventions," "donations and contributions," and "ACA subsidies," while "economic impact" constitutes Outcome. According to the regulations of "The Green Book" issued by the UK Department of Treasury (2022) , the term "object" connotes desires and wishes, whereas the term "outcome" refers to something intentional that should be achieved as policy. While output can be regulated by internal activity, outcome is generated under the influence of external factors and cannot be fully controlled. Accordingly, in the ACA Projects, both "number of participants" and "economic impact" constitute Outcome, the latter being calculated by the organizer local governments using their respective input-output tables, as mentioned above. The ACA Project Outcome is a product of an economic structure uncontrollable by the local governments, into which Input was injected. The Input variables ("local government own funds," "co-organizer/sponsor funds," "subventions," "donations and contributions," and "ACA

subsidies") were controllable, while consumption by participants as Project visitors/spectators could not be regulated by the local governments as event organizers. Likewise, "operational income" (proceeds from the sale of craft products and the like) associated with participants' consumption was also uncontrollable by any party. In reality, the ACA Projects suffered a drastic drop in the number of participants due to the unexpected breakout of COVID-19, which was, needless to say, beyond any party's control, let alone the project organizers. Outside the influence of the pandemic, consumer behavior among event participants is bound to change as the socioeconomic situation evolves, even when events are kept on without modification. For this reason, the economic impact brought by participants is also an outcome beyond project organizers' control.

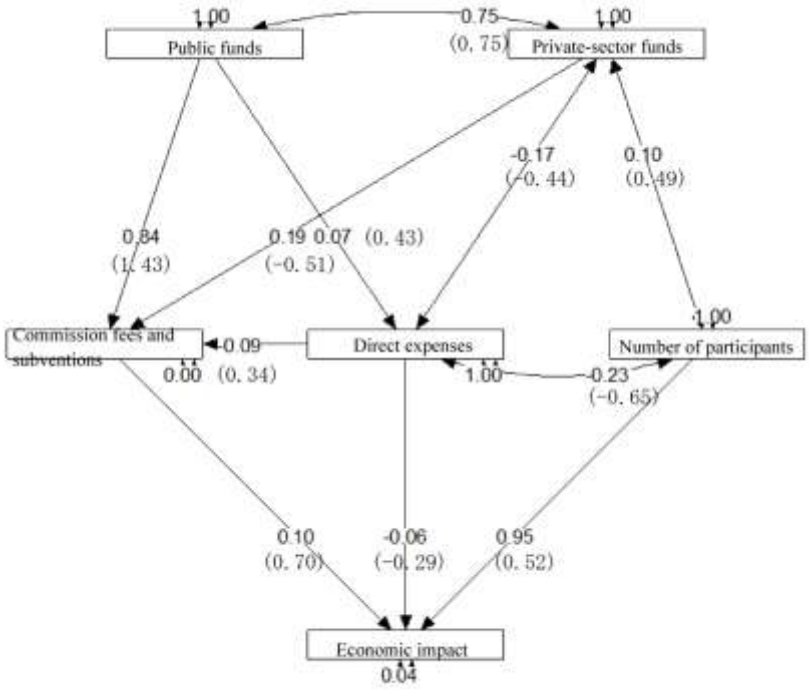
In the above input-output formation as applied to the ACA Projects, Object was the vitalization of the regional economy through increased tourists attracted to the cultural and artistic programs; Input included public funds ("ACA subsidies" plus "local government own funds"), funds from non-profit entities ("co-organizer/sponsor funds," "subventions," and "donations and contributions"), and "operational income"; and Outcome was "economic impact" (of the region concerned). In reality, Outcome should include elements that are difficult to quantify, such as raised levels of local residents' cultural awareness and ability to appreciate arts. In this study, however, only "economic impact" is adopted as Outcome. The item "operational income (sale of project-related goods to participants and admission fees)" constitutes an economic value that is obtained from consumption by visitors and spectators. In the ACA Projects, the sum under this item was estimated in advance and included in the sum of investment. Therefore, Input is only composed of public and private-sector funds (the latter comprising non-profit entity funds and "operational income"). The ratios of these two types of private-sector funds to public funds in the five-year total were rather low at 6.6% and 6.2%, respectively (Table 7). The two are collectively referred to as "private-sector funds" to match the term "public funds." As mentioned under "i) Overview of indicators," changes in consumer behavior are expected to influence the correlation between Input ("public funds" and "private-sector funds") and Outcome ("economic impact).

Based on the above, path analysis was conducted to analyze two processes: the detour path comprising Input (public and private-sector funds) → expenses for the Projects ("commission fees and subventions" and "direct expenses" [arts and culture expenses directly covered by the local governments]) → the number of participants → economic impact; and the other path on which expenses for the Projects directly generated economic impact. The overall economic impact of a project is the sum of the economic impact of consumption involved in the production and implementation of the project and that of participants' consumption. Of the two,

the latter is usually larger than the former, but this can be reversed in cases of eventuality, such as the COVID-19 pandemic, which in fact largely modified people's presence and consumption behavior at and outside event venues.

Fig. 3 shows the path analysis model of how public funds invested in the Projects before and during the pandemic affected economic impact. Table 12 indicates the goodness-of-fit indices of the model. Standardized estimates of parameters, which were required to compare path coefficients, are provided here. The indices are high for the entire Project period, but not as high for the years before and during the pandemic, which is inevitable due to the small number of samples. Nevertheless, this model was used for its goodness of fit for the entire Project period to study the input-output relationship. In the path model, single-headed arrows describe effects between two variables, from predictor to response variables, while double-headed arrows describe covariance.

Fig. 3 Path graph of indicators before and during the COVID-19 pandemic



NB: The figures in ( ) are coefficients during the pandemic.

Table 12 Goodness-of-fit indices of the path model

	Entire Project period	Before pandemic	During pandemic
SRMR	0.029	0.060	0.220
CFI	1.000	0.995	0.878
RMSEA	0.000	0.111	0.456

Path coefficients are interpreted in the same way as regression coefficients. The "public funds" in the model is identical to the "public funds" in Table 7 (the sum of "ACA subsidies" and "local government own funds"), and "direct expenses" refer to the arts and culture expenses (the sum of "appearance, music, and literary art," "stage, venue, and installation," "wages, travel, and honorarium," and "miscellaneous services, consumables, etc." in Table 5) covered directly by the local governments without commissioning cultural/artistic groups. "Public funds," provided by public entities and controllable, constitute Input and are an exogenous variable, while "economic impact," uncontrollable by the organizers, is Outcome and a response variable. "Public funds" accounted for an overwhelmingly large part of the Project income (88.6%). As funds directly

spent on arts and culture by the local governments, the “direct expenses” may appear contributory to “economic impact,” but it only accounted for a 7% or so of the total. Moreover, as an accounting item, it is a project management cost, thus considered not directly linked with economic impact. “Private-sector funds” and “public funds” are independent variables in a complementary relationship, but together they accounted for a mere 5.5% of the total income, hardly contributing to economic impact. The key process that generated economic impact involved participants (“Number of participants” → “Economic impact”), meaning that “economic impact” was mostly generated by participants in the activities offered by commissioned cultural/artistic groups that received a large portion of “public funds,” as well as the participants’ consumption.

What is noteworthy is how the coefficients of “private-sector funds” directed to other indices changed considerably from the pre-pandemic to the pandemic sub-period. There was no reversal of signs due to the pandemic in the coefficients between “public funds” and other related indices. On the other hand, among the coefficients between “private-sector funds” and other indices, there was a reversal of signs from plus to minus in the coefficient with “commission fees and subventions.” This is due to shrinkage in “operational income” among the components of “private-sector funds” because, as already mentioned, the participants only “consumed” the cultural and artistic programs due to the pandemic-related restrictions. (The annual average of “non-profit entity funds” increased 2.4 times, whereas that of “operational income” dropped by more than half, to 45%.) “Private-sector funds” are allotted, along with “public funds,” as “commission fees and subventions” and “direct expenses,” but merely as a complementary extra because “public funds” constitute the majority of funds to be dispensed. “Operating income,” resulting from commercial endeavors within the Projects, is related to “commission fees and subventions,” the main source of funds for the Projects (correlation coefficient: 0.72 throughout the Project period). “Non-profit entity funds” are not strongly related to “commission fees and subventions” (correlation coefficient: 0.45 throughout the Project period). It is surmised that during the pandemic, the related restrictions decreased “operational income” while not affecting “non-profit entity funds” much, causing the percentage of “operational income” among “private-sector funds” to drop sharply, in turn causing a turn to the negative in the path coefficients that were less strongly related to “commission fees and subventions” and “direct expenses” in the pre-pandemic sub-period and could be interpreted as single-regression coefficients of “private-sector funds” and “commission fees and subventions.” “Number of participants” and “economic impact” were highly elastic before the pandemic and became less elastic during the pandemic, pointing to a drop in “economic impact” due to the pandemic-related restrictions on people’s activities.

iii) Relationship between public fund investment and economic impact

The average percentage of “public funds” in the total ACA Project expenses was 88.6% among the local governments whose respective percentages ranged from 79.1% of Ishikawa Prefecture to 99.7% of Gifu Prefecture. This means that “public funds” covered roughly all Project expense items. In view of this, and also based on the path analysis, it is deemed appropriate to classify “public funds” as Input of the Projects and “economic impact” as Outcome. “Economic impact” is generated by both “public funds” and “private-sector funds,” which were both invested in the Projects. Assuming that “economic impact” did not entirely come from “public funds,” yet equating this item as Input itself would mean expecting an excessively large impact from “public funds” alone. Therefore, to evaluate size, the coefficients, provided in the path model in Fig 3 as standardized estimates, were compared to the non-standardized coefficients from “public funds” and “private-sector funds” to “commission fees and subventions” and “direct expenses” were examined. As a result, it was noted that, throughout the Project period, the coefficient “public funds” or “private-sector funds” → “commission fees and subventions” was 1.015 vs (-0.129), and the coefficient “public funds” or “private-sector funds” → “direct expenses” was 0.017 vs 0.133. Considering that 81.9% of the ACA Project expenses are “commission fees and subventions” and that the relevant coefficients indicate that this item is more strongly influenced by “public funds” than “private-sector funds” (about eight times more), it is safe to say that “public funds” had far greater influence than the other type of funds. Also, in view of the large difference between “public funds” and “private-sector funds” in absolute value, it is possible to say that Input indeed roughly corresponds to “public funds,” generating “economic impact” practically alone. (Models of “public funds” and “economic impact” are provided further below to discuss their correlation.) In Japan, due to restrictions under the public budgetary system, financial assistance by entities like the ACA and local governments cannot cover expenses for an uninterrupted period of one year or longer, meaning that it cannot fund the development of relatively large-scale facilities, land, and other fixed properties. In the ACA Projects, public funds could not be spent on these expense items. The Projects did not engage in “production” as described by Adam Smith (1776/1982) , involving making something that can be stored in one way or the other and retained for later use; they engaged in the type of production that creates something to offer satisfaction to people right on the spot, as Alfred Marshall (1890/1997) said. Therefore, “public funds,” which cannot purchase durable production property, do not constitute investment in production property.

As illustrated in the path model, “public funds” and “economic impact” are not directly linked; rather, the former leads to the latter on a detour path. The “public funds” of the ACA Projects were used to pay for labor (artists and project personnel), facilities (stage and venue

construction), music (musical composition), copyrights, literary art (script authoring and the like), transportation, venue rent, advertising, and so forth. There were cases in which local governments directly covered expenses for their cultural and artistic programs, but in most cases, as indicated in Table 7, a large part of the funds (81.9% of the total expenses) was indirectly allotted to commissioned cultural/artistic groups. Given the restrictions of the subsidization system, it is safe to say that “public funds” were mainly spent as wages and to procure fixed inputs (buy services deriving from existing cultural facilities) for a period of up to one year at a time. Indeed, the ACA and the local governments spent “public funds” as wages for labor and to purchase capital services. This enables examination of the ACA Projects using a production function. Thus, the elasticity of “public funds” vis-à-vis “economic impact” was examined, using the Cobb-Douglas production function, which is applied in many studies on the service industry, so as to evaluate the efficacy of “public funds” (Hori, & Yoshida, 1996; Konishi & Nishiyama, 2009).

For this examination, “economic impact” and “public funds” were set as an explained variable and a predictor variable, respectively, and the duration of the COVID-19 pandemic, a macroeconomic shock commonly given to the economic agents, was added to FY 2020 and FY 2021 as a time dummy (Kitamura, 2005). A fixed effects model was considered because the economic impact of public funds could vary from one local government to another due to their different socioeconomic and cultural situations. The intra-class correlation coefficient (ICC) of economic impact for each local government came to 0.506, pointing to the suitability of a multilevel model, while a test of fixed effects and pooling models showed that a fixed effects model was more appropriate. In comparison between random and fixed effects models, the fixed effects model was selected ($F(6,26)=25.80, p<8.88e\text{-}10$).

$$\underset{}{\text{Ln(economic impact)}} = \underset{(0.111)}{0.205}\text{Ln(public funds)} - \underset{(0.226)}{0.700}\text{Ln(pandemic - related dummy)} + \underset{(0.431)}{4.93} + \mu_j \cdots\cdots (1)$$

μ_j : fixed effects of each local government

Adjusted R squared R^2 : 0.823, ( ) : standard error

A Hausman test of correlation between individual effects and predictor variables indicated no correlation. A Goldfeld-Quandt test was conducted on the error term because of the small number of samples, and homoscedasticity was confirmed.

Fig. 4 indicates the calculated and actual values of “economic impact” for the respective local governments. The correlation coefficient was 0.785, lower than R calculated with R^2 in Formula (1) above. This is because estimates were calculated in Formula (1). In Formula (1), the elasticity of “public funds” to “economic impact” was 0.205, and calculation with the

pandemic-related dummy parameters showed that, during the pandemic, the same amount of "public funds" invested in the Projects would result in a quantity of "economic impact" approximately 50% lower. This decrease is understandable, considering that during the pandemic, the economic activities of the service industry involving live performances dropped to a level about one-third lower than the normal one, as indicated in Fig. 1, and that the local governments, as Project organizers, mobilized participants. For comparison, another fixed model was obtained in the same manner as in Formula (1) by adopting the sum of "public funds" and "private-sector funds" as Input (Table 13). This and Formula (1) models were examined in terms of the goodness of fit in a likelihood ratio test and were compared based on AIC and BIC. As a result, the "public funds" model was selected, but with little difference between the two (AIC: "public funds" model: 9:00 and "all funds" model: 9:00; BIC: -8;55 and 8.44; RSS: 10.988, 11.021). This is probably because "private-sector funds" affected "economic impact" very little, for its absolute value was far smaller than that of "public funds," with some local governments registering "zero" private-sector funds.

Fig. 4 Calculated and actual values of economic

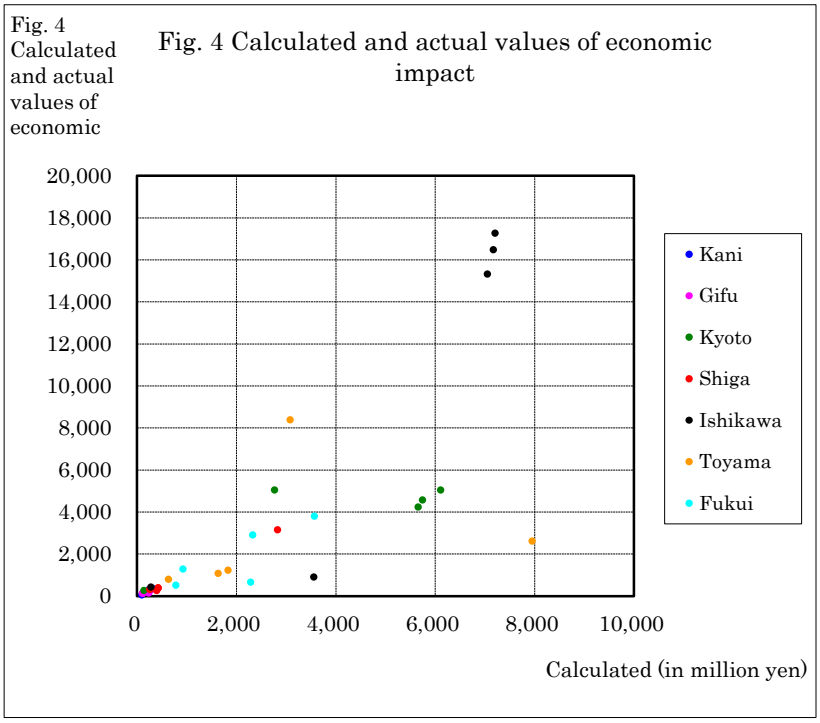


Table 13 "Public funds" and "all funds" models compared

Log (public funds)	0.205 0.111	Log (all funds)	0.198 0.106
Pandemic dummy	-0.700 0.226	Pandemic dummy	-0.706 0.225
Intercepts	4.938 0.431	Intercepts	4.953 0.433
Adjusted R-squared:	0.864	Adjusted R-squared:	0.863

NB: The figure below the coefficient in each box is the standard error.

A production function model of "economic impact" and "public funds" was formulated as below by entirely eliminating Ishikawa Prefecture's data from the set because they were considerably removed from the approximate linear line.

$$\text{Ln(economic impact)} = \underset{(0.087)}{0.493}\text{Ln(public funds)} - \underset{(0.153)}{0.199}\text{Ln(pandemic - related dummy)} + \underset{(0.312)}{3.97} + \mu_j \cdots\cdots (2)$$

μ_j : fixed effects of each local government

Adjusted R squared R^2 : 0.917 ( ) : standard error

Among the parameters, the pandemic-related dummy is not statistically valid. In Formula (2) as compared to Formula (1), the elasticity of "public funds" to "economic impact" is higher (1.63 as compared to 1.23), the impact of the pandemic is considerably smaller (0.819 from 0.497), and the constant term linked with total factor productivity dropped from 4.93 to 3.97. In both Formulas (1) and (2), the elasticity of "public funds" to "economic impact" tends to decrease with scale. In Formula (2), the correlation coefficient between estimated and measured values is 0.932, and the goodness of fit of the model increases because of the elimination of outliers.

iv) Interpretation of fixed effects

The economic impact of the ACA Projects varied for the respective organizer local governments, depending on their socioeconomic and cultural environments, as stated under section 'Project budget breakdown'. The fixed effects μ in Formula (1) is an indicator of local government characteristics in terms of how funds and economic impact are related. To clarify the fixed effects μ, they were compared with the socioeconomic and cultural indicators of the local governments and the modes of events held within the ACA Projects. The event modes were included because they and the particulars of the events could significantly change the number of participants. There is a clear difference in

Table 14 Correlation between fixed effects and local government socioeconomic and cultural indicators

Socioeconomic		Cultural		Event mode	
Population	-0.026	Arts and culture expenses	0.703	Live performances	0.353
Surface area	-0.282	Above, per resident	0.232	Exhibitions	0.133
Population density	0.072	Total settled expenses	0.542	Lectures	0.477
Average income	0.354			Sale of goods (anntenna shop)	0.926
Industrial structure: primary %	0.410			Seminars	0.486
secondary %	-0.636			Workshops	-0.647
tertiary %	0.471				
% of residents aged 65 and older	0.277				

(NB) Data of the seven local governments of the ACA Projects

visitor attraction potential between modes in which events can attract a large audience at once, such as film screening, lectures, large-scale concerts and other live performances and seminars and small-scale exhibitions. Table 14 indicates the Pearson correlation coefficients with socioeconomic and cultural indicators and event modes (qualitative variables) that could be related to the fixed effects μ.

They are based on the arts and culture expenses of the seven local governments (simple averages) taken from the 10-year period before the start of the ACA Projects so that the considerably large sum of the expenses as compared to the local governments' conventional expenses would not distort the presentation of the situation, and the average income of prefectural residents was substantiated using the GDP deflator (see Table 8).

The correlation coefficients are not statistically significant due to the small number of samples used but can serve as pointers to correlation. The coefficients were relatively high with, among the socioeconomic indicators, "Industrial structure: tertiary %" (the percentage of tertiary industry), indicating a somewhat positive correlation; among the cultural indicators, "arts and culture expenses"; and among the event modes, "sale of goods." On the other hand, the fixed effects had very little or no correlation with the indicators "population," "population density," "percentage of residents aged 65 and older," "arts and culture expenses per resident," and "exhibitions." A negative correlation was found between the fixed effects and "Industrial structure: secondary %," "surface area," and "workshops." Among the "arts and culture" indicators expected to be most closely related, the correlation was high with the absolute value of arts and culture expenses, but not so high with the expenses per resident. This seems to indicate that economies of scale function in the area of cultural and artistic activities, the concentration of related human resources and facilities enhancing economic efficiency. In terms of industrial structure, the presence of the service industry seems more relevant than that of the manufacturing/processing industry. This indicates that the economic efficiency of the Projects depends more on their service aspects than the manufacturing/processing aspects because cultural and artistic activities come under the category of service industry. In cultural and artistic projects, shops selling art works and craft products often attract more visitors than do main artistic/cultural events. The negative correlation with fixed effects and well-intentioned, genuine cultural/artistic events, such as drama workshops for students and persons with disabilities, indicates that they are not sufficiently effective in promoting arts and culture, although they may appear attractive to tourists, in line with project objectives.

Total factor productivity as the fixed effect that generates different quantities of "economic impact" even with the same amount of "public funds" as Input to the ACA Projects was greatly affected by the sum of past investment in cultural and artistic projects by the local

governments, not their factors of urbanity, such as population and population density. Economic impact was larger in consumer areas with a service industry than in producer areas with a manufacturing/processing industry due to different structural traits.

FINDINGS AND APPLICATION

In this study, the economic impact of cultural and artistic projects was analyzed using the seven Projects for the Formation of Centers for Advanced Cultural and Artistic Creation and Application, selected by the ACA and implemented by seven local governments for five years. The analysis of the limited panel data samples led to three important conclusions. Firstly, the economic impact of cultural and artistic projects can largely vary, depending on the socioeconomic and cultural environments in which the projects are held. Considering a cultural/artistic project as a production apparatus, the study found that the total factor productivity of its production function was high in proportion to the sum of previous public investment in arts and culture and the degree of local development of the service industry. Population and population density were almost totally unrelated. The higher the degree of the local government's interest in arts and culture as reflected in policy making, the greater the economic impact.

Secondly, economic impact became smaller as the sum of public funds invested became larger. The author previously published a paper on the principle of economics of scale that was identified in the operation of theaters (Edagawa, 2020). In the cases of theaters and other large-scale facilities, if their size becomes larger, it means reduced facility/performance costs per visitor, hence an increase in income per seat. In the case of the ACA Projects, economies of scale did not emerge presumably because each of the Projects was an assembly of various artistic/cultural programs, involving more than the use of cultural facilities. Therefore, the invested funds were dispersed, preventing efficient utilization. The total scale of the ACA Projects combined was some 1.54 billion yen for the five-year period, and this sum was distributed among 50 to 70 component programs. As a result, scale did not enhance, but tended to reduce, economic impact

Thirdly, the actual impact of the COVID-19 pandemic on cultural and artistic projects was measured objectively. Conventional surveys on the impact of the pandemic on cultural/artistic and other events and related industrial sectors mostly comprised somewhat subjective observations based on interviews with related parties. These surveys were combined with some others on sales from business activities and event organization to arrive at overall estimates of the impact. In the study, the numbers of event participants before and during the pandemic were rigorously measured, constituting panel data on the Projects covering a period of five years.

This enabled cross-section time series analysis, resulting in relatively high-precision calculation of economic impact reduced by the pandemic. Moreover, the dataset also made it possible to clarify that the economic impact of arts and culture through the investment of public funds in artistic/cultural projects is also affected by the characteristic environment of locales hosting the projects.

The ACA Projects of this study were conducted in an autonomous manner by the local governments with public funds provided by the ACA for five years. Since public funds were only issued strictly in response to applications, it can be said that the recipient local governments were active with cultural/artistic promotion through policy measures. Therefore, it is not clear how public funds would generate economic impact when invested in other local governments' projects. Still, the economic impact models of public funds for the ACA Projects from this study should enable predicting economic impact with a measure of certainty. This predictability can be applied to improving the mechanism in which the ACA provides public funds to local governments and contributes to optimizing the sums of subsidies and the selection of recipients.

WAY FORWARD

Following the author's study on production function and productivity of theaters and concert halls, this study analyzed the economic impact and efficacy of public funds invested in cultural and artistic projects using a Cobb-Douglas production function. Since the study concerned only seven cultural/artistic projects due to limits on survey subjects, the author wishes to examine the universality of the analysis results in the future. In the field of tourism studies, the economic impact of the Olympic Games has already been calculated, as one example of sports events capable of drawing large numbers of spectators at once (Sasakawa Sports Foundation, 2022). Japan has designated tourism as a pillar of national growth, with the Act on the Promotion of Culture and Tourism promulgated in 2020. Consequently, public funds have been actively expended for cultural and artistic projects. However, few demonstrative studies have been conducted to evaluate economic impact.

This study has indicated how public funds invested in cultural and artistic projects are related to the economic impact of such investment, clarifying, albeit partially, its legitimacy. From the perspective of arts and culture policy evaluation, it is important to demonstrate the universality of the study's findings in the future. To do so, the author envisages including a more diverse set of projects in future demonstrative research into the quantitative relationship between input and output or between outcome and output. Research subjects may be diverse Japanese cultural and artistic projects of varying sizes and similar Western projects, on which panel data will be collected, so as to expand data-based research.

REFERENCES

Agency for Cultural Affairs of Japan (ACA, 2020). *Questionnaire for people involved in cultural and artistic activities* (in Japanese). Retrieved from https://www.bunka.go.jp/koho_hodo_oshirase/hodohappyo/92738101.html

Barney, J. (2002). *Gaining and Sustaining Competitive Advantage*. Hoboken. NJ: Prentice Hall.

Chandler, Alfred D., Jr. (1962*). Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. Cambridge, MA: The MIT Press.

Edagawa, A. (2001). *A Study of Area Cultural Activities* (in Japanese), Tokyo: Shogakukan-square.

Edagawa, A. (2006). A Study Culutural Activities Revitalzing Communties in View Point Sourses of Revenue. *Studies in Regional Science* (in Japanese), 36(3).

Edagawa, A. (2016). *Theory and Current Status of Support for Art and Culture* (in Japanese), Tokyo: Tokyo Geidai Press.

Edagawa, A. (2020). Situations of key theaters and music halls in Japan and their evaluation using production functions. *International Journal of Economics, Commerce and Management*, 8(4). Retrieved from http://ijecm.co.uk/volume-viii-issue-4/

Hori, K., & Yoshida, A. (1996). Cost Efficiency in Japanese Banking Industry. *Japanese Journal of Financial Economics* (in Japanese), 1(2).

Kitamura, Y. (2005). *Analysis of Panel Data*, Tokyo: Iwanami-Shoten.

Konishi, Y. & Nishiyama, Y. (2009). Measuring Productivity of Service Industry Using Segment Data, *The Economic Review* (in Japanese), 185(2).

Marshall, A. (1997). *Principles of Economics*. Amherst: Prometheus Books. (Original work published 1890 London: Macmillan Publishers)

Ministry of Economy, Trade and Industry of Japan (METI, 2020). *Economic Structure Survey* (in Japanese). Retrieved from https://www.stat.go.jp/data/kkj/index.html

Ministry of Finance of Japan. (MOF, 2022*). Impact of COVID-19 on corporate activities and response* (in Japanese) . Retrieved from https://www.mof.go.jp/about_mof/zaimu/kannai/202002/singatakoronavirus098.pdf

Nakamura, T. (2007). *Showa economic history of Japan* (in Japanese). Tokyo: Iwanami-shoten.

Penrose, E. (1959). *The Theory of the Growth of the Firm* (3rd ed.). Oxford: Oxford Univ. Press.

Peteraf, M. (1993). The Cornerstones of Competitive Advantage: A Resource-based View. *Strategic Management Journal*, 14(3).

Sakaiya, T. (2003). *Thinking about Japanese civilization-University of Tokyo lecture notes* (in Japanese). Tokyo: Kodansya.

Sasakawa Sports Foundation. (2022). *Based on the reality of the Tokyo 2020 Games, can we expect economic effects from the Olympics in the future?* (in Japanese). Retrieved from https://www. ssf.or.jp/ssf_eyes/history/olympic_legacy/44.html

Smith, A. (1982). *An Inquiry into the Nature and Causes of the Wealth of Nations*. 2, Carmel: Liberty Fund. (Original work published 1776, London: W. Strahan)

Wernerfelt, B. (1984). A Resource Based View of the Firm. *Strategic Management Journal*, 5(2).

UK Department of Treasury (2022). *The green book central government guidance on appraisal and evaluation*. Retrieved from https://assets.publishing.service.gov.uk /government/uploads/system/uploads/attachment_data/file/1063330/Green_Book_2022.pdf