Government Involvement in Sport Industry and the Economic Impact in South Korea: Application of Input-Output Analysis to Sport Industry Support Project

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Abstract: The purpose of this research was to examine the scope of the government's intervention into the sport industry and the economic impact caused by it. For this purpose, this research analyzed the budget of South Korean Government and confirmed the scale of the government's involvement in the sport industry through the sport industry support project by input-output relation analysis. First, the budget of the governmental sport industry budget is 95,173 thousand USD which is 8.03% of national sport finance and 0.022% of the government's budget. Second, 91,370 thousand USD was financed through the intervention of the sport industry market. The production inducement146,985 thousand USD, value-added inducement 79,107 thousand USD and employment inducement855 people has created economic impacts. The effect of the government depends on the characteristics of the industry and the method of spending.

INTRODUCTION

Since, the 2000s, with the economic and industrial functions of sport identified, the realm has continued to expand and the role of the government has been continuously emphasized for individuals to enjoy the rights[1, 2]. The reason for the government's involvement in the sport industry can be found in its economic and industrial effects. As identified in preceding studies, sport contribute to improving personal health, improving economic productivity, in large terms and reducing the nation's medical costs[3-5].

Recently, the economic value of sport has been confirmed, and the need for government-level policy support to foster the sport industry as a new growth engine for our economy is recognized. In other words, the sport industry is more likely to create higher added value and employment compared to other industries. Therefore, the government directly and indirectly intervenes in the sport market through sport industry support projects, a specific policy tool, in order to restore the inherent function of creating value-added and employment on the industrial side and use it as a growth engine for the national economy.

Meanwhile, if we look at the research of government involvement on sport market, research on the need for appropriateness, feasibility and orientation of government intervention was conducted as an alternative to market failure[6, 1, 7-9]. In the case of the US where professional sport were developed, a study was conducted on the government involvement through subsidies and the economic impact to attract professional teams, sporting events[10-12]. The study which analyzed the economic effects of sport for public participation and sporting

events was conducted according to Inter industry analysis (input-output analysis), referring to the Industrial Linkage Table released by the Bank of Korea[13-16].

Many of the studies conducted to date have provided the rationale and logic for the government involvement in the sport industry and have demonstrated its validity to produce a rational direction but no specific basis exists for whether the economic effects sought by the government have been created. Given the opinion that the institutional intervention of government could rather hamper the development of the sport industry[9], if analysis and interpretation of the government's intervention in the market through financial support are not carried out, it will leave room for other problems including government failure.

Therefore, this study aims to check the scale of government expenditure for intervention in the sport industry and measure the economic impacts of government activities on value added, employment and production.

MATERIALS AND METHODS

Research contents: This study aims to analyze the economic impact of government involvement in the sport industry. To that end, the government's involvement scale in the sport industry was verified by analyzing the current settlement of the budget for the sport industry support project. The related industries were classified according to the expenditure details of each expenditure item. And the production inducement, value added inducement and employment inducement coefficients were analyzed. The economic impact was analyzed by applying the expenditure for each expenditure item to the coefficient of inducement for the associated industry.

Research method: In this study, the economic impact of government involvement in the sport industry were analyzed using an inter industry analysis (input-output analysis) that demonstrated policy utilization and usefulness[17]. Inter industry analysis is conducted based on the Industrial Linkage Table. Various economic impact can be measured by quantifying them, the policy effects can be analyzed and the associations between industries can be systematically identified. In this study, the impact was assessed by identifying the industry-specific inducement coefficients associated with each expenditure in the process of the government's involvement in the sport industry market by spending its finances. In addition, the latest industry association table published in 2016 were applied. In calculating the economic impact, the standard for the KRW/USD exchange rate was set at 1,000 KRW.

Classification of industries: According to the Bank of Korea's 2014 Industrial Linkage Table[18], the entire industry is divided into 30 sectors, 82 divisions and 161 sections. In this study, the most detailed unit, section 161 was adopted and the related industries were defined reaching an agreement with a group of experts to identify itemized expenditure on sport industry support projects and the preference to the existing preceding study[19, 14, 15].

RESULTS AND DISCUSSION

Scope of government involvement in the field of sport industry: According to National Assembly Budget Office[20], Korean national finance is consisted of 1 general account budget, 19 special account budget and 67 fund. The national finance which stood at 468.7 million USD in 1970, surpassed 1 billion USD in 1974, increased about 10-fold to 10.2 billion USD in 1981. 17 years later, it expanded to 112.4 billion USD in 1998 and has been showing an upward growth since, surpassing 200 billion USD in 2006.

Table 1 summarizes the last 6 years national finance. In the last 6 years, the national finance has increased 83.7 billion USD (24.0%) from 349.0 billion USD in 2013 to 432.7 billion USD as of 2018, amid a modest 4.4% annual increase and the growth rate of the fund is somewhat higher (2.1%p) compared to the budget.

Of the total, as shown in Table 2, the finance of the M.C.S.T. (Ministry of Culture, Sports and Tourism) which is in charge of national sport policy increased by 1,152.9 (28.1%) million USD to 5,257.8 million USD from 4,104.9 million USD. More specifically, we can see that the M.C.S.T. has expanded its finances in all areas and reduced its financial size as of 2017 when support for the 2018 Pyeong Chang Winter Olympics was completed. As of 2018, it can be seen that the culture and arts sector is the largest with 2,352.7 million USD (44.7%), followed by 1,402.1 million USD (22.5%) in tourism, 1,185.0 million USD (22.5%) in sport and 318.0 million USD (6.0%) in general administration.

As can be seen in Table 3 and 4, the government budget for the sport industry was 95,173 thousand USD as of 2018, accounting for 8.0% of the total sport sector budget. Sport Industry Loan (S.I.L.) which is the largest among governmental sport industry budget, accounted for 54.6% (52,000 thousand USD) of the total (95,173 thousand USD), followed by Sport Industry Activation Support (S.I.A.S., 35,423 thousand USD, 37.2%), Sport Industry Technology Infrastructure Composition (S.I.T.I.C., 5,594 thousand USD, 5.9%) and Sport Service Commercialization Support (SSCS., 2,156 thousand USD, 2.3%).

Table 1: 2013-2018 national finance (total expenditure)

Finance	2013	2014	2015	2016	2017	2018	Annual increase (%)
Budget	247.6	250.8	263.6	271.2	280.3	298.0	3.8
Fund	101.4	105.0	121.1	127.3	129.8	134.7	5.9
Total	349.0	355.0	384.7	398.5	410.1	432.7	4.4

National Assembly Budget Office (NABO)

Table 2: 2013-2018 financial scope of Ministry of Culture, Sport, Tourism (MCST total expenditure)

| Sector | RS (%) | | | | | | 2018-2013 | Annual increase |
	2013 (a)	2014	2015	2016	2017	2018(b)	(b-a)	(%)
Culture and arts	1,679.3	1,878.2	1,933.2	2,281.6	2,369.5	2,352.7	673.4	7.1
	40.9	42.5	39.9	40.1	40.7	44.7	58.4	-
Sports	1,074.4	1,046.3	1,354.1	1,541.4	1, 525.1	1,185.0	110.6	3.5
	26.2	23.7	27.1	27.1	26.2	22.5	9.6	-
Tourism	1,096.4	1,231.6	1,371.9	1,576.5	1,624.0	1,402.1	305.7	5.6
	26.7	27.8	27.5	27.7	27.9	26.7	26.5	-
General administration	254.8	266.3	276.8	290.8	298.1	318.0	63.2	4.5
	6.2	6.0	5.5	5.1	5.1	6.0	5.5	-
Total	4,104.9	4,422.4	4,995.9	5,690.3	5,816.7	5,257.8	1,152.9	5.4
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-

MCST work plan and annual budget and fund management plan

Table 3: 2018 government spending on sport industry

Project	'18 Budget (%)	'18 Set (%)	ER (%)
SITIC (R&D): Sport Industry Technology Infrastructure Composition	5,594	5,5.1	98.3
	(5.9)	(6.0)	
SSCS (R&D): Sport Service Commercialization Support	2,156	2,113	98.0
	(2.3)	(2.3)	
SIL: Sport Industry Loan	52,000	51,576	99.2
	(54.6)	(54.6)	
SIAS: Sport Industry Activation Support	35,423	32,180	90.8
	(37.2)	(35.2)	
Total	95,173	91,370	96.0
	(100.0)	(100.0)	

Set: Settlement; ER: Execution Rate

The scope of governmental involvement in the sport industry totaled 91,370 thousand USD in criteria of settlement and 96.0% of the total budget was executed. SIL spent 51,576 thousand USD 56.4% of the total execution, followed by S.I.A.S. (32,180 thousand USD, 35.2%), S.I.T.I.C. (5,501 thousand USD, 6.0%) and S.S.C.S. (2,113 thousand USD, 2.3%).

Economic impact through the government involvement of sport industry: The P.I.C. generated by the government involvement in the sport industry was found to be 1.761 which means that if government spending in the sport industry invested 1,000 thousand USD in the final demand sector, 1,761 thousand USD is injected directly and indirectly into the entire industry, resulting in the production-inducing effect which is slightly lower than the overall industry average P.I.C. 1.977. Among the support projects, P.I.C. of S.I.A.S. was the highest at 1.778, followed by S.S.C.S. (R&D, 1.761), S.I.T.I.C. (R&D, 1.712), S.I.L. (1.651). The effect of government involvement in inducing production was a total of 146,985 thousand USD. S.I.L. was the highest at 75,979 thousand USD, followed by S.I.A.S. (57,135 thousand USD), S.I.T.I.C. (R&D, 10,007 thousand USD), S.S.C.S. (R&D, 3,864 thousand USD).

V-A.I.C. stands for the amount of added value generated by the entire industry when the finaldem and for certain industrial products increases by one unit. The average V-A.I.C. of sport industry support projects was 0.727, higher than the overall industry average of 0.679. This means that if the government creates a supply of 1,000 thousand USD through the sport industry support project, the added value of 727 thousand USD will be newly created and 7.1% (48 thousand USD) more added value can be derived than other industries. In particular, it was found that S.I.L. was 0.875 and induced 28.9% more value added compared to the overall industry average (0.679) which is attributed to the nature of the project to provide loans to businesses in the sport industry that operate in manufacturing and service industries through commercial banks. SSCS (R&D. 0.828), SITIC (R&D, 0.725) and S.I.A.S (0.704), all of which were higher than the overall industry average. The effect of the government's involvement in inducing added value was a total of 79,107 thousand USD which triggered production at the highest level of S.I.L. (46,895 thousand USD), followed by S.I.A.S. (26,126 thousand USD), S.I.T.I.C. (R&D, 4,400 thousand).

Table 4: Inducement Coefficients (IC) and effect by project

Project	Expenditure item	Industry classification	'18 Srt	Coefficients			Effect		
				PIC	V-A, IC	EIC	PIE	V-A, IC	EIE
SITIC	Contact use salary	Public administration	131	1.426	0.903	10.141	187	118	1
(R&D)	Daily job salary	and national defense	17	1.426	0.903	10.141	24	15	0
	Employment levy		15	1.426	0.903	10.141	21	14	0
	Public utility charges and taxes		0	1.426	0.903	10.141	0	0	0
	General maintenance fee	Other business support service	91	1.689	0.859	17.632	154	78	2
	Domestic travel expenses	Road transport business	5	1.705	0.682	11.193	9	3	0
	Foreign travel expenses	Air transportation	0	1.460	0.349	2.686	0	0	0
	Business operating expenses	Restaurants and pubs	7	2.155	0.759	13.058	15	5	0
	Private current subsides	Sport and entertainment service	5,235	1.833	0.796	9.135	9,597	4,167	48
	Subtotal		**5,501**	**1.712**	**0.725**	**10.641**	**10,007**	**4,400**	**51**
SSCS	General maintenance fee	Other business support service	63	1.689	0.859	17.632	106	54	1
(R&D)	Private current subsides	Sport and entertainment service	2,050	1.833	0.796	9.135	3,758	1,632	19
	Subtotal		**2,113**	**1.761**	**0.828**	**13.383**	**3,864**	**1,686**	**20**
SIL	Other private loans	Central banks and depository institution	41,576	1.361	0.931	8.052	56,572	38,701	335
	General investment	Other financial institution	10,000	1.941	0.819	8.501	19,407	8,194	85
	Subtotal		**51,576**	**1.651**	**0.875**	**8.277**	**75,979**	**46,895**	**420**
SIAS	Daily job salary	Public administration	25	1.426	0.903	10.141	36	23	0
	Public utility charges and taxes	and national defense	25	1.426	0.903	10.141	36	23	0
	Employment levy		6	1.426	0.903	10.141	9	5	0
	General maintenance fee	Other business support service	7,052	1.689	0.859	17.632	11,913	6,060	124
	Clothing expenses	Clothing product manufacturing	3	1.990	0.558	8.083	6	2	0
	Rent	Real estate leasing and supply business	257	1.627	0.883	5.167	418	227	1
	Vehicle and vessel fee	Petroleum products manufacturing	3	1.1321	0.162	1.364	4	0	0
	Facility equipment maintenance fee	Repairing service	77	2.084	0.770	13.883	160	59	1
	Materials costs	Research and development	21	1.658	0.803	11.257	35	17	0
	Asset acquisition cost		533	1.658	0.803	11.257	884	428	6
	General service cost	Advertising industry	196	2.543	0.817	17.103	498	160	3
	Management service cost	Sport and entertainment service	197	1.833	0.796	9.135	361	157	2
	Other operating expenses		0	1.833	0.796	9.135	0	0	0
	Private current subsides		10,694	1.833	0.796	9.135	19,604	8,513	98
	Local gov. current subsides		9,204	1.833	0.796	9.135	16,873	7,327	84
	Domestic travel expenses	Road transport business	16	1.705	0.682	11.193	27	11	0
	Foreign travel expenses	Air transportation	46	1.460	0.349	2.686	67	16	0
	Business operating expenses	Restaurants and pubs	25	2.155	0.759	13.058	54	19	0
	Local gov. capital subsides	Architecture and civil engineering service	3,800	1.618	0.810	11.809	6,150	33,079	45
	Subtotal		**32,180**	**1.778**	**0.704**	**10193**	**57,135**	**26,126**	**364**
	Total		91,370	-	-	-	146,985	79,107	855
	Sport industry project avg.			1.761	0.727	9.938			
	Korean total industry avg.			1.977	0.679	8.686	-	-	-

PIC: Production Inducement Coefficient; V-A, IC: Value Added, Inducement Coefficient; EIC: Employment Inducement Coefficient (person/ ₩10bill.); PIE: Production Inductive Effect (KRW); V-A, IE: Value Added Inductive Effect (KRW); EIE: Employment Inductive Effect (person/ ₩10bill.)

Finally, EIC stands for direct and indirect employment to meet the final demand 1 unit of a particular industry[21]. The sport industry is labor intensive and thus has relatively high employment-inducing effects. The average E.I.C. for sport industry support projects was 9.938 which is about 1.3 more employees than the overall industry average of 8.686. Among the support projects, S.S.C.S. (R&D) was the highest at 13.383, followed by S.I.T.I.C. (R&D, 10.641), S.I.A.S. (10.193) and S.I.L. (8.277).

In particular, the inducement coefficients of S.S.C.S. (R&D, 13.383), S.I.T.I.C. (R&D, 10.641) and S.I.A.S. (10.193) should be examined. This is 1.5 (17.4%) to 4.7 people (54.1%) higher than the overall industry average

(8.686) which means that the 1,000 thousand USD investment could create about 10.1-13.4 employees. The effect of government involvement in inducing employment was a total of 855 people which triggered employment at the highest level of S.I.L. (420 people), followed by S.I.A.S. (364 people), S.I.T.I.C. (R&D, 51 people), S.S.C.S. (R&D, 20 people).

CONCLUSION

The purpose of this study is to analyze the economic impacts derived from the government involvement in the sport industry through the Inter Industry Analysis. The conclusions identified in this study are as follows:

First, as of 2018, the budget for the sport sector (1,185.0 million USD) is about 0.27% of the nation;s total budget and is shrinking as the 2018 Pyeong Chang Olympic Games completed. Of the total, the budget of government for the sport industry stood at 95,173 thousand USD which is 0.022% of the government's budget and 8.03% of the sport budget.

Second, 91,370 thousand USD of the government involvement in the sport industry resulted in 146,985 thousand USD in production inducement, 79,107 thousand USD in value-added inducement and 855 people in employment inducement. The value-added inducement coefficient and the employment inducement coefficient were found to be higher than the overall industry average while the production inducement coefficient was lower than the overall industry average.

To sum up, it has been confirmed through this study that the possibility of inducing employment and the added value generated by the government involvement in the sport industry exceeded the average of the entire industry. And the effect of the governmental fiscal expenditure could depend on the nature of the industry involved and the way it is spent, so, it is necessary to take into account the policy objective and maximize the impact of the related industries in the process.

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