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Japan's Incentive System in Medical Care: Preliminary Research on Psychiatric and General Hospitals

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Abstract

The aim of this study is to investigate the effect of incentives, which the Japanese government offers, on the behavior of each medical corporation or institution. This study will investigate what factors have an effect on the choices of each medical corporation or institution in official medical systems. First, the hierarchal system of incorporated hospitals is introduced, in terms of emergency medical care. To achieve "higher public interest" in medical care, the Japanese government has specified about 15 areas of medical care that would benefit from greater public interest. For example, it revised the Medical Care Act to establish the "Social Medical Corporation" system, while also putting in place the "Emergency-Designated Hospital" system, both of which include incentives. Researching behavior of each corporation, whether or not it changes its type of corporation, remains to be performed in the future.

Keywords: *incentive, social medical corporation, psychiatric hospital, general hospital, emergency, moral hazard*

INTRODUCTION

The neoclassical, theoretical approach to analyzing medical care is not strong (Hodgson, 2008). However, Hodgson argued that information asymmetry and supplier-induced demand are not unique to health care systems. Now, approaches other than neoclassical, theoretical ones are required to analyze and research medical or health care systems. The new approaches should derive from or be based on present data analyses. Therefore, the current article will begin with present data analyses of Japanese medical care.

Japan has a unique medical system, or "Medical Corporation (*Iryou Houjin* in Japanese)" system (Website 1). This system started in 1950 and continues today, although it has been revised. Most medical corporations own equity, though the 5th revised Medical Care Act (*Iryou Hou* in Japanese) states that newly-established medical corporations cannot own equity (Website 2). This means that non-profit entities are strengthened in medical corporations.

On the other hand, while the public interest is important in medical care, it cannot be defined economically and should be considered in various ways (Takaya, 2015). Therefore, when we hear the term "public interest" in medical care, it can be interpreted in various ways, which causes confusion.

Takaya (2016a) showed that the separation of ownership and management has no effect on activity (or the public interest) of incorporated psychiatric medical institutions. Moreover, Takaya (2016b)

indicated that an uneven distribution of incorporated psychiatric hospitals, whether or not they have a license to charge a psychiatric emergency hospitalization fee, exists perhaps because internal and external controls do not function effectively.

A license to charge a psychiatric emergency hospitalization fee is a strong incentive, because the fee is about 30,000 JPY/day, much higher than other sorts of fee in psychiatric medical care. On the other hand, being an emergency designated hospital, for incorporated general hospitals, is a strong incentive, because it is accompanied by subsidies. Moreover, the Social Medical Corporation (*Shakai Iryou Houjin* in Japanese) system began in April, 2007. The system offers advantages to authorized medical corporations, and the corporations are expected to take part in activities with high public interest, including emergency medical care, as stated by the Japanese Ministry of Health, Labour and Welfare (Website 3).

Previous studies by Takaya mainly investigated psychiatric hospitals, because psychiatric hospitals do not have as much complicated medical technology as general hospitals. Therefore, the "Psychiatric Hospital Model" can offer a research prototype for other hospitals (Takaya, 2016a).

The aim of this study is to investigate the effect of incentives, which the Japanese government offers, on the behavior of each medical corporation or institution. It will investigate what factors affect each medical corporation or institution's choices about official medical systems.

METHOD

First, "Medical Corporation" system in Japan is showed in Figure 1. Most private hospitals in Japan are run by medical coporations. Each medical corporation runs one or more hospitals, and often also medical clinic or nursing homes. The current study focuses only on hospitals (Figure 1).

Second, this study prepares the following Schema (Figure 2). In each step, ① to ④ in Figure 2, each hospital chooses whether or not to move to the next step. If the hospital wants to progress to the next step, it is obliged to perform high-public-interest activities, designated by the Japanese government.

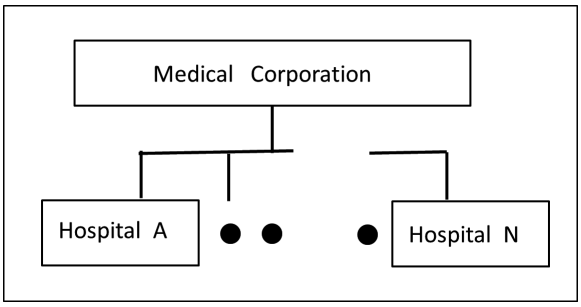

Figure 1: "Medical Corporation" System in Japan

Source: Author

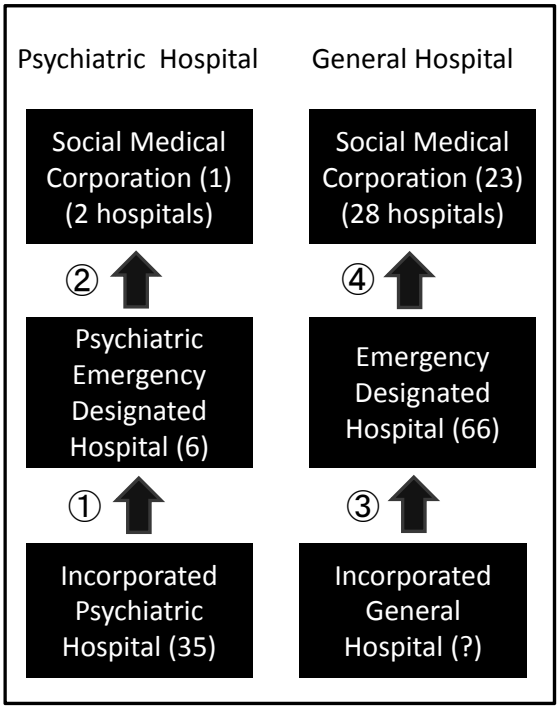

Figure 2: The Public-Interest Hierarchy in Medical Care: Medical Corporations in Osaka Prefecture

Source: Author; Numerical characters in parentheses indicate the numbers of the corresponding hospital types. "Psychiatric Emergency Designated Hospital" means a hospital that is allowed to charge a psychiatric emergency hospitalization fee. The definitions of "Psychiatric Hospital" and "General Hospital" in this study are described in the main text. The other terms are explained in the main text.

Third, this study will examine both incorporated psychiatric hospitals and incorporated emergency-designated hospitals in Osaka prefecture.

Table 1: Psychiatric Hospitals run by medical corporations in Osaka Prefecture

Number	Name of hospital (Abbreviation)	Medical Area	Social Medical Corporation	Governance Type	Regular Doctors	Irregular Doctors	Pychiatric Beds	Psychiatric Emergency Beds	Allowance of Psychiatric Emergency Hospitalization Fee
1	SAWA	A	1	N	22	17	455	114	1
2	AINOHA	A	0	Y	9	27	606	0	0
3	ESAKA	A	0	Y	8	14	360	0	0
4	MINO	A	0	Y	9	17	345	0	0
5	OZONE	A	0	Y	16	14	557	0	0
6	ORENJI	B	0	Y	3	22	240	0	0
7	KOAI	B	0	N	9	14	221	0	0
8	IBARAGI	B	0	Y	9	8	350	0	0
9	SHINABU	B	0	Y	8	8	273	0	0
10	NEYAGAWA	C	0	N	10	20	267	60	1
12	KOKUBU	D	0	Y	10	9	201	48	1
13	SAKAMOTO	D	0	Y	15	25	546	0	0
14	YAO	D	0	Y	14	12	468	0	0
15	YOSHIMURA	E	0	N	6	5	222	0	0
16	SAYAMA	E	0	N	8	15	279	0	0
17	TANPI	E	0	Y	13	14	310	0	0
18	KANAOKA	F	0	Y	10	13	486	0	0
19	MIKUNI	F	0	Y	5	9	144	0	0
20	HANNAN	F	0	Y	52	13	690	168	1
21	MIHARA	F	0	Y	6	30	562	0	0
22	MIZUMA	G	0	N	9	30	541	0	0
23	KIJIMA	G	0	Y	15	12	492	0	0
24	SAKANE	G	0	N	3	7	150	0	0
25	SHICHI	G	0	N	14	22	640	48	1
26	KAIZUKA	G	0	N	8	14	406	0	0
27	KUMEDA	G	0	N	8	20	494	0	0
28	SHINSEI	G	0	Y	3	11	148	0	0
29	KANSAI	G	0	Y	2	10	192	0	0
30	KOKOROA	G	0	Y	11	6	450	0	0
31	IZUMI	G	0	Y	6	13	206	0	0
32	KAEDE	G	0	Y	4	12	150	0	0
33	KISEN	G	0	Y	3	11	260	0	0
34	HAMADERA	G	0	Y	21	9	749	0	0
35	HOKUTO	H	1	N	6	15	50	50	1

Source: Data are derived from the homepage of each hospital and the following URLs:
(a) Osaka Association of Psychiatric Hospitals: http://www.daiseikyo.or.jp/
(b) Kinki Regional Bureau of Health and Welfare: https://kouseikyoku.mhlw.go.jp/kinki/
(c) Japanese Association for Emergency Psychiatry: http://www.jaep.jp/
(d) Osaka Prefectural Government: http://www.pref.osaka.lg.jp/iryo/keikaku/keikaku2013to2017.html
(1) Numbers are assigned to each hospital randomly.
(2) "Name of Hospital (Abbreviation)" is defined at the author's discretion, relating to each hospital's full name.
(3) The letters A to H in "Medical Area" correspond to those in Takaya (2016b).
(4) The number 1 in "Social Medical Corporation" means that each hospital is run by a Social Medical Corporation. The number 0 means that it is not.
(5) The letters Y or N in "Governance Type" means that ownership and management are separate in each hospital, or not.
(6) Numbers assigned to each row named "Regular Doctors" and "Irregular Doctors" mean the number of "Regular Doctors" and "Irregular Doctors" hired by each hospital.
(7) Numbers assigned to each row named "Psychiatric Beds" and "Psychiatric Emergency Beds" mean numbers of "Psychiatric Beds" and "Psychiatric Emergency Beds" that each hospital either rents or owns.
(8) The letters 1 or 0 in "Allowance of Psychiatric Emergency Hospitalization Fee" means that each hospital is allowed to charge a psychiatric emergency hospitalization fee, or not.

Table 2: Emergency-Designated Hospitals in Osaka Prefecture

Number	Name of hospital (Abbreviation)	Medical Areas	Social Medical Corporation	Governance Type	Regular DR	Irregular DR	General Hospital Beds	Chronic Stage Beds
1	IKEDAKAISEI	A	0	N	6	35	97	0
2	UEDA	A	0	N	7	38	94	0
3	KANSAIME	A	1	N	24	36	225	0
4	SUITATOKU	A	0	Y	32	125	265	100
5	KOYUKAI	B	0	N	12	46	169	109
6	TAKATSUKI	B	1	Y	184	0	447	0
7	DAIICHITOWA	B	0	N	42	66	243	0
8	HOKUSETSU	B	1	N	58	67	217	0
9	MIDORI	B	1	Y	35	21	329	0
10	MORIGUCHIIKU	C	1	Y	34	98	199	0
11	MORIGUCHIKEI	C	0	N	47	21	185	0
12	KAYASHIMAIKU	C	1	Y	33	47	140	0
13	SETSUNANSOU	C	0	N	20	54	303	0
14	KAMIYAMA	C	1	Y	21	73	189	0
15	NEYAGAWAIKU	C	1	Y	19	15	103	0
16	FUJIMOTO	C	0	N	17	42	98	0
17	KYORITSU	C	0	Y	6	24	50	0
18	KORIGAOKA	C	0	Y	10	39	171	0
19	SATO	C	1	Y	23	70	120	0
20	HIGASHIKORI	C	0	Y	9	57	60	0
21	KATANO	C	1	Y	26	81	173	0
22	NAWASHO	C	1	Y	24	73	228	0
23	DAITO	C	0	Y	20	62	117	0
24	NOZAKITOKU	C	0	Y	44	64	218	0
25	IKEDA	D	0	Y	14	24	139	60
26	ISHIKIRI	D	0	Y	96	63	331	0
27	WAKAKUSA	D	1	Y	50	91	230	0
28	YAOSOU	D	1	N	24	20	301	0
29	YAOTOKU	D	0	Y	75	103	415	0
30	SHIROYAMA	E	0	N	54	71	299	0
31	TAKAMURA	E	0	Y	9	49	120	55
32	FUJIMOTO	E	0	N	7	22	117	60
33	MATSUBARATOKU	E	0	Y	26	127	189	0
34	MEIJI	E	1	Y	24	27	120	276
35	TERAMOTO	E	0	N	21	29	160	0
36	SEIKEI	F	1	Y	56	38	286	50
37	BABA	F	1	N	54	114	300	0
38	BERU	F	1	Y	129	3	477	0
39	HOWA	F	0	N	5	5	60	59

40	MINAMISA	F	0	N	12	20	153	0
41	FUCHU	G	1	Y	125	25	380	0
42	KISHIWADATOKU	G	0	Y	108	103	341	0
43	FUJII	G	0	Y	8	14	95	0
44	KAWASAKI	G	1	Y	11	39	47	82
45	KANO	H	1	N	26	30	243	53
46	YUKIOKA	H	1	N	20	68	235	112
47	MEISEI	H	1	Y	9	40	195	0
48	KITAOSAKA	H	1	Y	5	44	77	0
49	FUKUSHIMA	H	0	N	4	36	97	0
50	FUJITATE	H	0	Y	5	15	52	45
51	MATSUMOTO	H	0	Y	13	17	199	0
52	ONOKINEN	H	1	Y	27	83	250	0
53	TANE	H	1	Y	89	55	304	0
54	HIGASHINARI	H	0	N	6	24	55	0
55	IKUNOCHUO	H	0	N	6	10	60	88
56	JOTO	H	0	Y	20	93	233	0
57	MORINOMIYA	H	1	N	45	60	355	0
58	ABIKO	H	0	Y	10	73	135	0
59	NANKO	H	1	N	6	45	64	0
60	MINAMIOSAKA	H	1	Y	57	24	400	0
61	MORIMOTO	H	0	Y	64	11	329	0
62	NAGAYOSHI	H	0	Y	23	53	192	0
63	KYORIN	H	0	Y	4	14	99	0
64	SHION	H	0	Y	7	43	60	0
65	DAIWA	H	0	Y	10	0	143	0
66	DAISAN	H	0	N	15	32	266	0

Source: Data are derived from the homepage of each hospital and the following URLs:
(a) Osaka Medical Facilities Information System: https://www.mfis.pref.osaka.jp/qq27scripts/qq/fm27qrinsm_in.asp
(b) Kinki Regional Bureau of Health and Welfare: https://kouseikyoku.mhlw.go.jp/kinki/
(1), (2), (3), (4), (5), and (6) are the same as those described in Table 1.
(7) Numbers assigned to each row named "General Hospital Beds" and "Chronic Stage Beds" mean numbers of "General Hospital Beds" and "Chronic Stage Beds" that each hospital either rents or owns.

Subjects

Osaka prefecture has eight secondary medical areas, as referred to in Takaya (2016b). 49 private psychiatric hospitals in Osaka are listed on the homepage of the Osaka association of psychiatric hospitals. This study deals with hospitals with psychiatric beds only. According to this criterion, 35 psychiatric hospitals are selected (Table 1). The letter assigned to each hospital in Table 1 corresponds to the letter representing each medical area described in Takaya (2016b). Table 1 is a modified version of the corresponding Table in Takaya (2016b) and comprises incorporated psychiatric hospitals in Osaka.

Osaka prefecture designates 256 hospitals as emergency-designated hospitals. Of the 256 hospitals in Osaka, the 66 emergency-designated hospitals that can accept patients for both general internal medicine and general surgery, 24 hours per day all year round, are shown in Figure 2 and Table 2. The list of incorporated general hospitals is not available, because general hospital cannot be defined precisely. They are now usually considered providing internal, surgical, and other medicine. On the other hand, "General Hospital" in Japan used to be hospitals that provide internal medicine, surgery, obstetrics and gynecology, ophthalmology, otolaryngology, and possibly other forms of medicine. However, the Medical Care Act in 1996 abolished "General hospital" system in the Japanese legal system. Now, many hospitals show "general hospital" in their English names. This is very confusing. For clarification, this study considers all emergency-designated hospitals that provide at least both internal medicine and surgery, 24 hours per day all year round, as "general hospital".

Statistical Analysis

Statistical analysis in this study was performed using the software jmp 10 (SAS Institute Inc., Cary, NC, USA).

RESULTS

A) Incorporated Psychiatric Hospitals

Japanese Ministry of Health, Labour and Welfare states that psychiatric emergency medical activity is one of the medical activities with high public interest (Website 3). Therefore, hospitals which are allowed to charge a psychiatric emergency hospitalization fee, or have psychiatric emergency beds, can be considered to be contributable to the world. Now, I examine what factors have an effect on "Psychiatric Emergency Beds" in Table 1.

About ① in Figure 2

(1) The statistical analysis was performed using Table1, in the following way.

- **Method:**
  least squares method
- Dependent variable:
  Psychiatric Emergency Beds
- Independent variables:
  Governance Type, Regular Doctors, Irregular Doc-

Table 3: Verification of Multicollinearity for (1): Parameter Estimates (p-value) (r)

	Governance Type	Regular Doctors	Irregular doctors	Psychiatric Beds
Governance Type		–0.0248 p (0.6242) r (0.0825)	0.0570 p (0.3146) r (0.1546)	–0.0014 p (0.5071) r (0.1025)
Regular Doctors			0.0274 p (0.9095) r (0.0202)	0.0308 p (<.0001) r (0.6295)
Irregular doctors				0.0153 p (0.0128) r (0.4225)
Psychiatric Beds				

Note: The left row indicates dependent variables, while the top column independent variables.

Table 4: Least Squares Method for (1): r = 0.8940

	Estimate	p-value
Governance Type	7.206	0.0410
Regular Doctors	4.802	<.0001
Irregular doctors	1.390	0.0222
Psychiatric Beds	–0.121	<.0001

tors, Psychiatric beds

In the current article, criteria for multicollinearity is as follows: multiple correlation coefficient is more than 0.8 ($r > 0.8$).

(2) The statistical analysis in Table 1 was performed as follows:

- **Method:**
  Logistic regression analysis
- Dependent variable:
  Allowance of Psychiatric Emergency Hospitalization Fee
- Independent variables:
  Governance Type, Regular Doctors, Irregular Doctors, Psychiatric beds

Table 5: Wald Test for (2): r=0.7629

	Estimate	p-value
Governance Type	–1.5275	0.1494
Regular Doctors	–0.7820	0.0868
Irregular doctors	–0.1473	0.3479
Psychiatric Beds	0.0163	0.0490

Table 6: Likelihood Ratio Test for (2): r=0.7629

	Chi-square	p-value
Governance Type	2.9578	0.0855
Regular Doctors	14.5099	0.0001
Irregular doctors	0.9359	0.3333
Psychiatric Beds	6.3597	0.0117

About ② in Figure 2
Hospitals number 1 and 35 in Table 1 are run by the same social medical corporation. The others are run by medical corporations. Therefore, the statistical analysis for ② in Figure 2 might be useless.

The results (mean ± s.d.) of statistical analysis only are shown as follows:

	Regular Doctors	Irregular Doctors	Psychiatric Beds	Psychiatric Emergency Beds
SMC (＋)	14.0±11.3	16.0±1.4	252.5±286.4	82.0±45.3
SMC (－)	21.5±20.4	16.0±6.1	449.5±251.1	81.0±58.3

SMC (＋) and (－) mean hospitals which are certified social medical corporation, and not, respectively.

B) Incorporated General Hospitals

The Japanese Ministry of Health, Labor and Welfare states that emergency medical care is one of the medical activities with a high public interest (Website 3).

About ③ in Figure 2
As mentioned above, general hospitals have various departments and too difficult to analyze statistically. This study reserves statistical analysis for future studies, when a better data set is available.

About ④ in Figure 2
It is possible to analyze the data in Table2 statistically, unlike in case ②. Multicollinearity can be observed between the number of regular doctors and general hospital beds (Table 7). Therefore, "General Hospital Beds" is excluded from the following analysis.

- **Method:**
  Logistic regression analysis
- Dependent variable:
  Social Medical Corporation
- Independent variables:
  Governance Type, Regular Doctors, Irregular Doctors, Chronic Stage Beds

The results of this analysis is shown in Table 8 and Table 9.

Table 7: Verification of Multicollinearity Parameter Estimates (p-value) (r)

	GT	RD	ID	GB	CB
GT		–0.0182 p (0.0961) r (0.2686)	–0.0103 p (0.2460) r (0.4050)	–0.0020 p (0.4098) r (0.2846)	0.0020 p (0.7134) r (0.3873)
RD			0.0790 p (0.5737) r (0.0703)	0.2576 p<0.0001 r (0.8055)	–0.1258 p (0.1984) r (0.5071)
ID				0.0556 p (0.1171) r (0.4784)	–0.0601 r (0.4929) p (0.0074)
GB					–0.4643 p (0.1278) r (0.1894)
CD					

Note: The left row indicates dependent variables, while the top column indicates independent variables.
Governance Type: GT, Regular Doctors: RD, Irregular Doctors: ID, General Hospital Beds: GB, Chronic Stage Beds: CB

Table 8: Wald Test: r = 0.2902

	Estimate	p-value
Governance Type	0.1698	0.5454
Regular Doctors	–0.0206	0.0360
Irregular doctors	–0.0022	0.7998
Chronic Stage Beds	–0.00569	0.3643

Table 9: Likelihood Ratio Test: r = 0.2902

	Chi-square	p-value
Governance Type	0.3679	0.5441
Regular Doctors	5.8012	0.0160
Irregular doctors	0.0642	0.8000
Chronic Stage Beds	0.8933	0.3446

C) Summary of results

First, the number of beds used to charge a psychiatric emergency hospitalization fee is significantly related to the number of doctors regularly hired in incorporated psychiatric hospitals. Although the causal relationship is not clear, the larger number of doctors regularly hired in a hospital suggests that the hospital has high potential and activity. Moreover, it shows that the hospital is attractive for psychiatrists, perhaps because of employment condition and carrier formation.

Second, whether or not a medical corpotration that runs an emergency-designated hospital is legally a social medical corporation is not significantly related with any available factors.

DISCUSSION

A psychiatric emergency hospitalization fee is about 30,000 JPY/day, while acute psychiatric and chronic psychiatric hospitalization fees are about 20,000 JPY/day and about 10,000 JPY/day, respectively. Therefore, an allowance to charge psychiatric emergency hospitalization fees is a strong incentive for psychiatric hospitals. On the other hand, requirements for the allowance are very steep. For example, (1) the ratio of nurses in a ward to the number of beds cannot be less than 1/10, (2) the number of regularly hired psychiatric social workers in a ward cannot be less than two, (3) the number of mental health-designated doctors regularly hired for a ward and for the hospital is cannot be less than 1 and 5, respectively. (5) Isolation rooms must occupy more than half of all the beds in a ward (Website 4). This means that running a ward imposes large fixed costs. The application for an allowance may depend on the following:

$$(\text{Expected revenue}) - (\text{Fixed and variable costs}) \geqq 0$$

This is very simple model, at a glance. Expected revenue depends on the number of patients meeting the criteria, which can be estimated from the number of patients live in and around the secondary medical area where each hospital is located.

Variable costs can also be estimated, according to the number of patients. However, the total number of patients in a secondary medical area is constant at least in the short run. Therefore, getting an allowance in the medical field is competitive.

Designation of emergency hospitals by the Osaka prefectural government depends on the following criteria: (1) not less than two designated beds for each advocating department, (2) 24-hour-a-day emergency care all year round, (3) not less than two regularly-hired doctors for each department participating the system, and (4) a certain level of acceptance records. (Website 5). Emergency-designated hospitals are provided with subsidies. For example, the Osaka prefectural government has announced that the lower of either 30,000 JPY/case ×number of cases, or the labor cost for maintaining an emergency system in each institution will be provided to the institution (Website 6). Therefore, subsidies no lower than a fixed labor cost are provided. This designation of an emergency hospital system (for general hospitals) is not the same as psychiatric emergency-designated hospital systems. While the former has a subsidy system, the latter does not. This indicates an asymmetry in Japanese medical emergency system. Moral hazard might be caused in the designation of emergency hospital system, which accompany subsidies.

The Social Medical Corporation system in Japan was enforced in April, 2007, based on a revision in 2006 of the Medical Care Act (Website 7). The Social Medical Corporation is classified as one particular type of medical corporations. The aim of the Social Medical Corporation system is to offer higher public-interest facilities, while keeping a non-profit system in medicine. However, some profit is allowed, which provides large incentive. At the same time, a social medical corporation is not allowed to own equity. This may be a barrier to the convergence of a medical corporation with a social medical corporation. Most medical corporations running so-called emergency-designated psychiatric hospitals and emergency-designated hospitals have decided not to merge with social medical corporations (or institutions), as shown in Figure 2. There are 283 social medical corporations (as of July, 1, 2017) in Japan, 37 in Hokkaido prefecture and 36 in Osaka prefecture (Website 8). Twenty-eight general hospitals (28/66=42.4%) (Table 2) are run by 23 social medical corporations (Website 8). Tokyo has only 15 social medical corporations, which is relatively few considering its population. Aomori, Iwate, Miyagi, Akita, Yamagata, Ibaragi, Ishikawa, Yamaguchi, Tokushima, Kochi, and Saga prefectures each have only two social medical corporations (Website 8). Each of Gunma, Yamanashi, and Shiga prefectures has only one (Website 8). This shows the uneven distribution of social medical corporations in Japan, suggesting an uneven distribution of public interest. However, when considering the public interest in medical care, it is important to pay attention to the number of public hospitals and specific function hospitals, as well as social medical corporations.

A social medical corporation system is based on the ideal that private hospitals, instead of public hospitals, are responsible for high public-interest medical fields. This approach attains efficiency of management. In other words, incentive systems that accompany social medical corporation systems derive from the notion of "equal fitting." This is perhaps very clear to everyone. Theoretical approaches using economical models, suggest that the profits of rural public hospitals are lower than those of urban hospitals (Aiura & Sanjo, 2010). The article suggests that social medical hospitals are more necessary in rural areas than in urban areas. However, as described above, this is not the case.

Emergent medical care has little common with the latest medical technologies or with very expensive drugs. Rather, it is characterized by hard-working employees, who use the usual, modern "high technologies." This fact was not considered in previous studies, such as that by Ikegami & Cambell, 1999, who discussed fee-revision processes and stated that Japanese balancing principles inhibit rapid change, such as recommending low introductory fees for new, high-tech procedures. They treated health care reform in Japan in terms of its political economy. However, nowadays their methods are not sufficient for investigating the dynamic incentive systems that involve organizational changes of medical corporations.

The driving force to change the organization of medical corporations cannot be examined easily. Instead, simple models may be useful for prelimi-

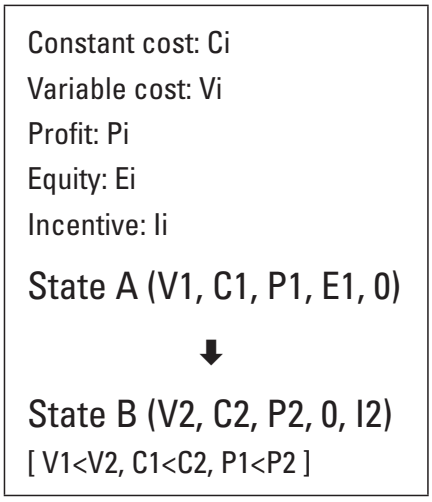

Figure 3: The Model of Shifting to Social Medical Corporation

Source: Author. In this model, "State A" and "State B" indicate "Medical corporation running Emergency-Designated Hospital" and "Social Emergency Corporation," respectively.

nary research. Now, the convergence of medical corporations running emergency designated-hospitals with social medical corporations can be modeled in a simple way. Symplified factors that could influence a decision to merge with social medical corporations are described below.

Figure 3 shows that if a medical corporation prefers "State B" to "State A," it may convert to a social medical one. However, the conditions for this conversion are not revealed. The preference of each emergency designated hospital needs to be investigated, to facilitate the social medical corporation system.

The relationship between ownership and productivity of hospitals is introduced in the literature (Blank & Eggink, 2014), as follows. For-profit hospitals are more productive, while their quality is the reverse (Eggleston & Shen, 2011). Other studies found that there is no difference in cost efficiency between private and publicly-owned hospitals, but private hospitals shows higher profit efficiency tha publicly owned ones (Herr, Schmitz, & Augurzky). This current article deals with non-profit but private hospitals and investigates the effect of for-profit factors built into the new "Social Medical Corporation" system, to benefit the public interest. Though Japan's medical-care system is perhaps unique in the world, it has not been carefully investigated. The research of decision-making of each corporation, whether or not it decides to choose another style of corporation, remains to be performed in the future, both in theoretical and empirical ways.

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