Japan's Public Long-term Care Insurance and the Financial Condition of Insurers: Evidence from Municipality-Level Data

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1. Introduction

More than six years have passed since the public long-term care insurance scheme was introduced in Japan. During this period, the use of long-term care services through the long-term care insurance has grown considerably. In fiscal 2004, the value of long-term care services provided reached 6.2 trillion yen, about 1.5 times the amount registered in 2000, when the long-term care insurance scheme was introduced. Due to rapid population aging, this substantial increase is likely to continue and the Ministry of Health, Labour and Welfare (MHLW), in its estimate of social security expenditure published in May 2004,[1] estimates that long-term care expenses will rise to 19 trillion yen by 2025 (about 3.5 percent of national income).

Against the background of this rapid increase in the use of long-term care services, the public long-term care insurance system is constantly being reviewed. In fiscal 2003, the unit prices charged for the delivery of long-term care services and the contents of long-term care service provisions were revised. In fiscal 2005, the first large-scale overhaul of the system was undertaken: Since October 2005, so-called "hotel costs" (food, accommodation, etc.) have been excluded from insurance coverage and now need to be borne by users. And at the beginning of fiscal 2006, the "long-term care prevention allowance" (an allowance for services, such as muscle training, aimed at preventing that long-term care becomes necessary) was introduced to restrain the rapid growth in at-home care services. In addition, although not adopted in the end, one proposal discussed in the reform debate was to lower the age of insured persons, which at present is 40 years, to raise more funds to cover the growing long-term care expenditures.

However, looking at the rapid increase in the number of public long-term care insurance users and policy measures to address the financial situation, what has surprisingly been overlooked is the growing gap between the regions. A notable feature of Japan's public long-term care insurance system is that there are many aspects which are decided in a uniform manner by the central government, yet, at the same time other aspects are decentralized (Mitchell, Piggott and Shimizutani 2006; Shimizutani, 2006). Specifically, the age cohort covered by the insurance, the certification of long-term care, the assignment of care categories, the co-payment share and its upper limit, the types of care services covered by the insurance, the price of long-term care services (through the determination of the value of a "long-term care compensation unit") are all set uniformly across the country. In terms of these aspects, the public long-term care insurance scheme is centralized.

At the same time, however, insured persons' long-term care insurance premiums differ according to the municipality they live in. The insurance premium from fiscal 2003 to fiscal 2005 (per person for those aged 65 and over) was 3,293 yen per month (nationwide weighted average), representing an increase of 13.1 percent over fiscal 2000-2002. Moreover, both in FY2000-FY2002 and FY2003-FY2005, the majority of insurers charged insurance premiums between 2,500 and 3,000 yen; but while in FY2000-FY2002, there was only one insurer that charged premiums of more 4,000 yen, in FY2003-FY2005, there were insurers charging as much as 5,500 to 6,000 yen (Shimizutani and Noguchi, 2004). Moreover, for the period from fiscal 2006 to fiscal 2008, the insurance premium is 4,090 yen per month (average per insured person), representing an increase of 24 percent over fiscal 2003-2005. In addition, the highest insurance premium (6,100 yen per month, payable in Yonaguni Town, Okinawa Prefecture) is now 2.8 times the lowest monthly insurance premium (2,200 yen, payable in Hichiso Town, Gifu Prefecture).

Thus, while the certification and use of long-term care services originally were supposed to be centralized and unified across the country, they now appear to be decentralized and different for different users. The intention of the original system had been that the certification and use of long-term care services would be decided based on the circumstances of the insured and that there would not be any significant differences based on where the person was insured. However, today, regional characteristics, such as the size of the population of elderly and its composition, the income level, the availability of informal care such as through family members, and the availability and adequacy of formal long-term care services are important factors that determine the use of such care services. Obviously, these factors are closely intertwined, and differences across regions are quite large. Consequently, subsidies that municipalities receive from the central government to adjust for differences in the share of elderly people and income levels are quite high, accounting for 5 percent of overall public long-term care insurance expenses.

However, in practice, it is difficult to operate a unified long-term care insurance system based only on this adjustment mechanism. For this reason, in addition to the adjustment subsidies, "financial stabilization funds" have been created. The purpose of such funds, which have been set up in each of the prefectures (or administrative regions) of Japan, is to cover shortfalls in municipalities' long-term care insurance special accounts as a result of increases in disbursements and/or shortages of insurance premium receipts in order to avoid that these are paid for out of municipalities' general budgets (MHLW, 2004a). The central government, the prefectures, and municipalities (the insurers) each provide one-third of the capital of these stabilization funds. In principle, half of any shortfalls in insurance premium receipts are then paid for by the fund every three years, while any other shortfalls (i.e., shortfalls as a result of increases in expenditure and shortfalls in insurance premium receipts not already paid for) are covered in the form of loans. According to MHLW, at the end of fiscal 2000, 2.7 percent of all insurers received such loans. However, by the end of fiscal 2001, this share had risen to 13.8 percent and by the end of fiscal 2002 to 25.7 percent.[2] Thus, by the end of fiscal 2002, already a quarter of all insurers were registering shortfalls.

In addition, compared with the beginning of fiscal 2003, the share of insurers receiving financial stabilization loans had increased to 6.2 percent at the end of fiscal 2003 and 12.9 percent at the end of fiscal 2004.[3]

Insurers respond to such shortfalls in funds by raising long-term care insurance premiums and in cases where insurers received loans from the financial stabilization fund, repayments drive up insurance premiums. As an exceptional measure, MHLW has therefore decided to extend the repayment period from the basic 3 years to six or nine years in cases where insurance premium increases are becoming large (Tajika, Yui and Kikuchi, 2005), although in practice, it is difficult to respond to the shortfall in funds only by raising

2) MHLW, "Todofukenbetsu zaisei anteika kikin kashitsuke, kofu no jokyo [Situation of loans and disbursements for financial stabilization by administrative division]." Online: <http://www.mhlw.go.jp/shingi/2004 2004/03/s0309-6o.html> (accessed Aug. 4, 2006).
3) Data for the end of fiscal 2003 are from WAM NET, "Dai-13-kai shakai hosho shingikai kaigohoken bukai shiryo [Documents of the 13th section meeting of the social security commission]."
Online:<http://www.wam.go.jp/wamappl/bb11GS20.nsf/vAdmPBigcategory10/49256FE9001B533F49256E980022C0A7?OpenDocument>
(accessed Aug. 4, 2006). Data for the end of fiscal 2004 are from MHLW, "Zaisei anteika kikin kashitsuke jokyo (Heisei 16-nendo) [The situation of financial stabilization loans (fiscal 2004)]." Online: <http://www.mhlw.go.jp/topics/2005/05/tp0523-1.html> (accessed Aug. 4, 2006).

long-term care insurance premiums. As mentioned above, the regional disparity in long-term care insurance premiums is growing, and for insurers which already charge relatively high insurance premiums, it will be difficult to raise premiums further.

The public long-term care insurance system bans municipalities from covering any shortfalls from their general budget (Kikuchi, Tajika and Yui, 2005). For this reason, insurers respond not only financially, but naturally also consider the option of curtailing long-term care benefits. As a result, although certification and the provision of long-term care services are supposed to be uniform across the country, it is quite possible that differences are emerging as a result of insurers' financial condition. As will be explained in detail in Section 2, because the long-term care certification procedure is tied to the value of care services that will be provided, the standards for certification are based on objective nationwide uniform criteria to avoid that insurers' financial condition influences the certification outcome (Shimizutani and Noguchi, 2004; MHLW, 2003). However, in practice, insurers in a difficult financial situation are stricter in the certification of long-term care than other municipalities, and in reality there are cases where certification outcomes differ for applicants with the same health status. Moreover, even if certification for long-term care is obtained, the type of care services and the frequency at which they are provided in practice depend on the care plans that care managers devise in consultation with the physician in charge. Here, too, the content of services often differs depending not only on applicants' health and family status, but also on insurers' financial situation.

The aim of this paper is to take a closer look at Japan's "centralized yet decentralized" public long-term care system and examine to what extent the certification and use of long-term care services depends on insurers' circumstances, in particular their financial condition, and whether this type of system is sustainable. As for the limit of this "centralized yet decentralized" approach, this has already been examined by Mitchell, Piggott and Shimizutani (2006) using prefecture-level data, but there has been little direct research on the impact of insurers' financial condition on the management of the public long-term care insurance.[4] Because insurers are the municipalities and their regional associations, if we want to examine the relationship between the management of the public long-term care insurance and insurers' finances, we need to use municipality-level data rather than prefecture-level data. In this paper, we therefore use municipality-level data and quantitatively examine what effect differences in insurers' finances have on the share of certified long-term care users in the total number of insured persons overall (we call this the "certification ratio"), the share of care users in the total number of certified care receivers ("utilization ratio"), the number of care users, and the per head long-term care service allowance.

The remainder of the paper is organized as follows. Section 2 provides an outline of the public long-term care insurance system, offering, in particular, a brief explanation of the certification of long-term care users and the use of long-term care services. Section 3 describes the data used for the empirical analysis, while Section 4, using simple regression analysis, investigates the impact of insurers' financial situation on the certification ratio, the utilization ratio, the number of users, and the per head allowance. Section 5, finally, provides a summary of the results and discusses policy options to deal with the widening regional disparity brought about by the "centralized yet decentralized" system.

2. Long-term care user certification and service use

Insured persons in the public long-term care system are divided into two categories according to age, with those aged 65 and over making up the first and those aged 40-64 making up the second category. Among these, those eligible for long-term care services are principally those aged 65 and over. It is important to note that when a person suffers from failing health and requires nursing care or support, he or she cannot simply make use of the long-term care insurance. Rather, in order to use care services through the long-term care insurance, it is necessary to obtain "long-term care certification." In order to do so, it is first necessary to apply

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4) One of the few studies on this issue, which, however, has only looked at a small number of prefectures, is Tajika, Yui and Kikuchi (2005).

to the municipality where the insurer is based. Eligibility for nursing care or support is then determined by a long-term care certification board (MHLW, 2003).

Long-term care certification boards are composed of medical, hygiene, and welfare experts that examine the physical and mental health of applicants. Decisions are made within 30 days of application based on a computer-based evaluation of various criteria ("primary judgment") and the applicant's doctor's written opinion (MHLW, 2003). If an applicant is certified to be eligible for nursing care or support, the nursing care level and the necessity of support are then also decided. Because the determination of the nursing care level also determines the nursing service allowance applicants receive, nursing care levels are determined following objective criteria that are the same across the country. However, while municipality officials, which potentially may be primarily concerned with guarding municipal finances, are excluded from certification boards, board members are chosen by the insurers, giving rise to the possibility of informal pressure that may result in the strictness of certification depending on the insurer.

Once applicants are approved, it is then decided what kind of services they can use. Again, applicants cannot freely choose what services they receive or their frequency. Rather, the provision of long-term care services depends on a care plan that is worked out by a care manager in consultation with the applicant's doctor. As mentioned above, the contents of the services received in practice also vary depending not only on applicants' health condition and family circumstances, but also on the condition of insurers.[5] Finally, it should be noted that a recipient's eligibility for long-term care is reviewed every six months.

3. Data sources and variables

The data used in this paper can be divided into three categories: municipality-level long-term care insurance-related data, financial variables, and variables controlling for municipality-specific characteristics.

First, for municipality-level long-term care insurance-related data, data by insurer from the *Kaigo Hoken Jigyo Jokyo Hokoku [Report on the Condition of Long-Term Care Insurers]* published by the Ministry of Health, Labour and Welfare Database System are used.[6] Specifically, based on figures for each insurer on the number of insured aged 65 and over, the number of certified long-term care recipients (including recipients of at-home care),[7] the number of recipients of nursing care service allowances (including both recipients of at-home care (support) services and of institutional nursing services), and insurance benefits (allowances), the following three variables are constructed:

A: Certification ratio = Number of certified recipients of nursing care (including support)
/ Number of insured persons aged 65 and over
B1: Utilization ratio = (Number of at-home care service allowance recipients
+ Number of nursing care recipients in institutions) / Number of certified recipients
B2: Growth rate of the number of users
C: Per-head allowance = Amount of long-term care insurance allowance
/ (Number of at-home care services payment recipients
+ Number of nursing care recipients in institutions)

Second, as indicators of insurers' financial condition, the percentage of insurers receiving financial stabilization loans in the prefecture where an insurer is located is used. Obviously, it would be preferable to

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5) In this paper, our argument is limited to the public long-term care insurance system. However, in order to complement the long-term care insurance, some municipalities offer services for which there is a need but which are not covered by the long-term care insurance, such as meal delivery services and simple daily life support (such as help with shopping, futon airing, weeding). The municipalities provide these so-called "extra" services, which go beyond what national standards stipulate as part of the long-term care insurance, thus covering services which are not normally offered as part of the insurance (Shimizutani and Noguchi, 2004).
6) Available on the website of the Ministry of Health, Labour and Welfare: <http://wwwdbtk.mhlw.go.jp/toukei/kouhyo/>.
7) It should be noted that in cases where care recipients receive payments both for at-home care and institutional care, they are double-counted in our statistics. Unfortunately, the data available do not allow us to remedy this situation.

determine for each insurer whether it received a loan from the stabilization fund or not, but such information on a nationwide basis unfortunately is not available.

Moreover, although municipalities are not supposed to use general budget funds to cover any long-term care insurance deficits, a large number of insurers are facing such a deterioration in their financial situation that it seems possible that in the future gaps will have to be filled out of municipalities' general budgets. If municipalities expect this to happen, then although their general budget in principle is supposed to be unrelated to any long-term care insurance deficits, their budget situation may still have an effect on the operation of the long-term care insurance system.

In order to examine this possibility, we use the ratio of current expenditure to current income as an indicator of municipalities' general budget situation. The necessary data are taken from the *Shichosonbetsu Kessan Jokyo Shirabe [Report on the Condition of Municipalities' Balance Sheet]* published by the Ministry of Internal Affairs and Communications.[8] The current expenditure ratio is calculated as the share of general budget expenditure allocated to current expenditure. The lower this value, the greater is a municipality's financial freedom to pursue its own policies; conversely, the higher this value, the smaller is the municipality's financial room to maneuver.[9] In the estimation in the next section, it is necessary to take the possibility of simultaneity biases into account. For instance, not only is municipalities' financial status likely to have an impact on the variables that we wish to explain, such as the certification ratio, but causality potentially also goes the other way, i.e., municipalities' financial condition is also likely to be related to the number of certified long-term care users. In order to mitigate such simultaneity issues, lagged values of the financial variables are used.

Third, we used the following control variables that apart from municipalities' financial condition may also have an impact on the certification ratio, the utilization ratio, the number of care users and the per-head long-term care service allowance. To begin with, in order to control for differences in the supply of care services, we used variables representing the cost of providing care services and the supply of institutional care. Care services are labor intensive and regional differences in wages therefore have a substantial impact on production costs. For this reason, the conversion rate for "long-term care compensation units" (the "currency" used to "pay" for care services), which is generally set to ten yen for one point, exceeds ten yen in regions where wages are high. In order to take this into account, we distinguish five regional classifications and assign a dummy to each insurer depending on the type of region it belongs to. Grouping municipalities by wage level, we use the following classification: Group A (the 23 wards of Tokyo), Group B (Osaka City and 55 other cities), Group C (Fukuoka City and 13 other cities), Group D (Sapporo City and 69 other cities), and Group E (all other regions/municipalities). As for variables representing the supply of institutional care, we use the number of care receivers in long-term care facilities (measured by the number of beds) per 100,000 population aged 65 or older, which is published in the *Kaigo Service Shisetsu Jigyosho Chosa [Survey of Long-Term Care Services and Facilities]* conducted annually by MHLW in October. In addition, we use the number of hospital beds (the number of beds in hospitals and clinics, excluding hospitals and clinics with long-term care beds) per 100,000 population, obtained from the MHLW's *Iryo Shisetsu Chosa [Survey of Medical Facilities]*. Because such data on the supply of long-term care facilities are not available at the municipal level, prefectural data are used.

Furthermore, in order to take regional characteristics into account, we include in our regression the proportion of elderly people (those aged 65 and over) and the degree of urbanization, measured by population density.[10] Needless to say, the higher the share of elderly in the population, the greater is the demand for long-term care services.[11] In addition, it is likely that family structures, and as a result the availability of

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8) See Chiho Zaisei no Jokyo (The State of Regions' Finances), Ministry of Internal Affairs and Communications,
online: <http://www.soumu.go.jp/iken/zaisei.html>. However, data for before fiscal 2002 are not available online. As for the use of the current expenditure ratio as a financial indicator, I am grateful to Takero Doi for his suggestion.
9) In the analysis below, alternative indicators of financial strength other than the current expenditure ratio were tried. However, the results were largely the same and have been omitted for brevity.
10) We use the municipality-level data provided in the Minryoku [National Manpower] CD-ROM published by Asahi Shimbun Company.
11) In this paper, our definition of the population share of the elderly is limited to those aged 65 and over. Ideally, however, if such data at the municipality-level were available, we should further distinguish the population share of those aged 75 and older, among whom the demand for long-term care services is particularly high.

informal care, differ between urban and rural areas. Consequently, it can be expected that in urban areas, where the nuclear family is more prevalent, the demand for care services through the long-term care insurance is higher than in non-urban areas. Finally, in order to take regional variations in income levels into account, we use the shares of primary, secondary, and tertiary sector employment from the 2000 *National Census*.

       The unit of analysis in this study are the insurers. In most cases, insurers are municipalities, but there are also several cases where municipalities have got together and formed regional associations. In such cases, we assumed that the certification ratio and use of long-term care services was the same for all municipalities belonging to the same regional association. Moreover, in order to take prefectural characteristics into account, we included prefectural dummy variables in the explanatory variables.

Table 1: Basic statistics

	Mean	Median	Std. Dev.	Min.	Max.	No. of obs.
FY2001- FY2002						
Long-term care certification ratio (%)	13.21	12.85	2.94	5.69	29.27	4941
Long-term care user ratio (%)	75.86	75.92	7.15	6.40	99.68	4930
No. of long-term care users	22794.58	4431.50	66271.47	59.00	625547.00	4930
Per head allowance (thousand yen)	1790.11	1835.10	1046.79	0.00	28110.39	4930
Current expenditure/current income ratio (%)	82.27	82.30	7.00	38.90	129.00	4920
Proportion of those aged 65 and over in total population	22.88	22.60	6.82	7.40	50.10	4890
Population density (persons per km^2	842.94	225.75	1930.22	1.30	18898.40	4890
No. of institutionalized care receivers per 100,000 persons aged 65 and over	3149.45	3153.00	721.33	2018.00	5188.00	4930
No. of hospital beds per 100,000 persons	1376.92	1329.50	327.70	835.03	2038.20	4930
Wage level group						
Group A	0.01	0	0.10	0	1	4930
Group B	0.02	0	0.15	0	1	4930
Group C	0.01	0	0.07	0	1	4930
Group D	0.03	0	0.17	0	1	4930
Group E	0.93	1	0.25	0	1	4930
Employment share by industry						
Primary industry	13.68	11.20	11.02	0	77.20	4910
Secondary industry	31.80	31.90	8.92	0	60.70	4910
Tertiary industry	54.44	53.40	11.16	0	92.60	4910
Dummy for regional associations	0.13	0	0.34	0	1	4930
Share of insurers receiving financial stabilization loans	7.98	3.85	11.71	0	75.47	4930
FY2003- FY2004						
Long-term care certification ratio (%)	15.22	14.94	2.94	7.89	30.24	4947
Long-term care user ratio (%)	77.86	77.84	6.33	6.58	99.90	4942
No. of long-term care users	31004.04	6030.50	83592.53	49.00	849219.00	4942
Per head allowance (thousand yen)	1800.25	1782.77	305.34	920.09	18345.51	4942
Current expenditure/current income ratio (%)	86.15	86.30	7.04	42.60	142.50	4915
Proportion of those aged 65 and over in total population	24.16	23.80	6.99	8.10	52.30	4902
Population density (persons per km^2	845.17	223.40	1946.14	1.30	19053.20	4902
No. of institutionalized care receivers per 100,000 persons aged 65 and over	3278.58	3287.00	632.35	2231.00	5107.00	4942
No. of hospital beds per 100,000 persons	1294.31	1281.27	303.34	743.25	1867.67	4942
Dummy for regional associations	0.16	0	0.37	0	1	4942
Share of insurers receiving financial stabilization loans	19.53	13.95	18.27	0	86.54	4942

* It should be noted that the data used for the wage level group and the employment share by industry are the same for all years.

Table 1 presents the basic statistics of the variables described above. The upper panel shows the statistics for the pooled data for fiscal 2001 and 2002, while the lower panel shows the statistics for the pooled data for fiscal 2003 and 2004. Comparing the two panels, we find that the certification ratio, the utilization ratio, the number of users, and the care allowance per head all increased: The certification ratio rose from an average of 13.2 percent to 15.2 percent, while the utilization ratio grew from an average of 75.9 percent to 77.9 percent. Meanwhile, the average number of users (the accumulated number of users over a one-year period) per insurer increased from less than 23,000 persons to more than 31,000. Finally, the per-head allowance rose slightly from 1.79 million yen to 1.80 million yen.

Next, turning to the share of insurers that have received financial stabilization loans, this number, as mentioned above, stood at 25.7 percent at the end of fiscal 2002. The current expenditure ratio, which serves as an indicator of municipalities' financial health, grew from 82.3 percent to 86.2 percent, suggesting that on average, the financial situation of insurers deteriorated in the period from fiscal 2001 to fiscal 2004. Looking at the other variables, we find that the population share of those aged 65 and over stood at a little more than 20 percent and increased slightly; the average population density was around 840 persons per square kilometer; and while the number of care receivers in long-term care facilities per 100,000 population aged 65 and over (measured by the number of beds), rose from around 3,100 beds to about 3,300 beds, the number of beds in hospitals and clinics fell from a little less than 1,400 to a little less than 1,300 per 100,000 population.

4. The determinants of certification and utilization ratios, user numbers, and per-head allowances

In this section, we empirically examine how certification and utilization ratios, user numbers, and per-head allowances are affected by the financial condition of insurers. We use the following specification for our estimation:

$$\Delta Y_{i,j} = \alpha + \beta \Delta X_j + \gamma Z_j + \varepsilon_{i,j}$$

where $Y_{i,j}$ is the dependent variable, with subscript i indicating the variable used, i.e., the certification ratio, the utilization ratio, the number of users, or the per-head allowance, and subscript j referring to the insurer ($\Delta Y_{i,j}$ indicates the change in these variables). α is a constant, while X_j is a matrix of explanatory variables, including the prefecture-level share of insurers that have received financial stabilization loans and insurers' current expenditure ratio (ΔX_j indicates the change in these variables). Z_j is a matrix of the control variables mentioned above, and $\varepsilon_{i,j}$ is the error term. For the estimation, we use a weighted least squares approach that takes the population of the area covered by an insurer into account. Because only a few years have passed since the introduction of the public long-term care insurance and the system is still evolving, the variables and financial indicators related to the long-term care insurance are on an upward trend. For this reason, we use the change over the previous year. In order to examine changes in the coefficients over time, we conducted two separate estimates: one using changes in the variables from FY2001 to FY2002 and one using changes from FY2003 to FY2004. We removed from our sample observations where municipalities merged, changed names, or the like. Of course, should there be a pattern whereby municipalities that saw a deterioration in their finances merged with other municipalities, then dropping these observations carries the danger of introducing a bias.[12]

Furthermore, as mentioned above, in order to avoid any simultaneity biases, we use a one-year lag. However, for the share of insurers that have received financial stabilization loans, we use the change from FY2000 to the end of FY2001 when examining the change in the dependent variable from FY2001 to FY2002,

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12) The number of municipalities that do not belong to a regional association of long-term care insurers is on the decrease, shrinking from 2,813 in FY2001 to 2,800 in FY2002, 2,665 in FY2003 and 2,197 in FY2004. Municipalities that were in the process of joining a regional association were not excluded from the analysis here.

and we use the change from FY2001 to the end of FY2002 in the share of insurers that have received loans when examining the change in the dependent variable from FY2003 to FY2004.[13]

The estimation results are presented in Tables 2 to 4. In our discussion of the results, we will concentrate on our estimates for the variables on insurers' financial health.

Let us begin by looking at Table 2, which shows the estimation results for the case where the certification ratio is the dependent variable. In Table 2(a), we can see that already in FY2001-FY2002, the coefficient on the variable for the share of insurers that have received financial stabilization loans is negative and significant. In other words, insurers that suffered from such a deterioration in their financial health that they had to receive financial stabilization loans were becoming stricter in their certification of long-term care than insurers that did not require any loans. What is interesting is that in the estimation for FY2003-FY2004, the negative coefficient becomes even greater. This shows that it is becoming more likely that certification standards diverge as a result of the financial state of insurers. Furthermore, looking at the coefficient on the current expenditure ratio in Table 2(b), we find that in the estimation for FY2001-FY2002, this is not statistically significant, but in the estimation for FY2003-FY2004, the coefficient becomes negative and significant. This suggests that municipalities' general budget situation, to which long-term care certification in principle is supposed to be unrelated, has in fact begun to affect certification.[14]

Table 2(a) Determinants of the certification ratio (share of insurers receiving financial stabilization loans)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the share of insurers receiving loans from the financial stabilization fund	-0.0094	0.0022	**	-0.0117	0.0023	**
Proportion of those aged 65 and over in total population	0.0261	0.0060	**	0.0039	0.0084	
Population density	0.0000	0.0000		0.0000	0.0000	
Wage level group						
Group B	-0.1055	0.1581		-0.3834	0.2234	
Group C	0.1113	0.1983		-0.0370	0.2253	
Group D	-0.1665	0.1881		-0.3486	0.2748	
Group E	-0.2179	0.2092		-0.3887	0.3149	
Employment share by industry						
Primary industry	-0.0146	0.0031	**	-0.0024	0.0029	
Tertiary industry	0.0052	0.0022	*	0.0012	0.0025	
Intercept	0.9124	0.3774	*	1.0663	0.5684	
	No. of obs.=2443			No. of obs.=2445		
	R^2=0.4073			R^2=0.1877		

Notes: (1)   **, * indicate that the variable is statistically significant at the 1% and the 5% level, respectively.
     (2)   Estimated using the municipal population as a weight.
     (3)   Group A was used as the reference value for the wage level dummy.
     (4)   In order to take into consideration the special characteristics of each prefecture, 47 prefecture dummies were included in the regression. However, the results have been omitted to conserve space.

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13) When the dependent variable is the change from FY2003 to FY2004, for the change in the share of insurers that have received loans, we should ideally use the change between FY2001 and FY2002. However, because the financial stabilization fund operates on a 3-year cycle, consistent data for FY2002 and FY2003 are not available. Therefore, we use the change from FY2001 to FY2002 as an explanatory variable.
14) Because in municipalities with a high elderly population share an increase in the demand for long-term care has a negative effect on the general budget, the two are likely to be correlated. Unfortunately, we cannot examine this correlation directly, since our data on the share of insurers receiving financial stabilization loans are at the prefecture level. However, because in our estimation only the current expenditure ratio is statistically significant, and this only in the case of the regression using the certification ratio, there seems to be little evidence of this type of correlation.

Table 2(b) Determinants of the certification ratio (current expenditure ratio)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the current expenditure ratio	0.0035	0.0068		-0.0151	0.0076	*
Proportion of those aged 65 and over in total population	0.0259	0.0060	**	0.0043	0.0083	
Population density	0.0000	0.0000		0.0000	0.0000	
Wage level group						
Group B	-0.1118	0.1592		-0.3755	0.2210	
Group C	0.1070	0.1991		-0.0242	0.2234	
Group D	-0.1718	0.1889		-0.3281	0.2705	
Group E	-0.2226	0.2096		-0.3911	0.3130	
Employment share by industry						
Primary industry	-0.0146	0.0031	**	-0.0029	0.0028	
Tertiary industry	0.0053	0.0022	*	0.0009	0.0024	
Intercept	0.8451	0.3804	*	0.9277	0.5723	
	No. of obs.=2441			No. of obs.=2445		
	R^2=0.4075			R^2=0.1920		

Notes: See Table 2(a).

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Next, we consider the estimations when the utilization ratio and the number of users are employed as dependent variables. The results are presented in Table 3. Table 3(a) indicates that insurers' financial situation has no effect on the utilization ratio. In fact, we find that in FY2003-FY2004, the higher the share of insurers that have received financial stabilization loans, the higher is the utilization ratio. At first glance, this result may seem contradictory; however, because the utilization ratio is defined as the number of users divided by the number of certified persons, a possible explanation is that at insurers experiencing a deterioration in their finances, the number of certified users declines and the utilization ratio therefore increases. We therefore also conducted a regression using not the utilization ratio but the number of users as the dependent variable. The results are presented in Table 3(c) and show a similar pattern as those for the certification ratio: In FY2001-FY2002, the rate of increase in the number of users was small for insurers experiencing a deterioration in their finances and this tendency became even more pronounced in FY2003-FY2004. However, when the current expenditure ratio is used, the coefficients are statistically insignificant (Tables 3(b) and 3(d)).

Table 3(a): Determinants of the utilization ratio (share of insurers receiving financial stabilization loans)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the share of insurers receiving loans from the financial stabilization fund	0.030	0.025		0.0463	0.0162	**
Proportion of those aged 65 and over in total population	0.003	0.028		0.0029	0.0165	
Population density	0.000	0.000		0.0000	0.0000	
Wage level group						
Group B	-0.945	0.804		0.2425	0.4659	
Group C	-1.748	0.999		-0.2673	0.6739	
Group D	-2.680	0.997	**	-0.8672	0.6104	
Group E	-2.386	0.986	*	-0.6761	0.6125	
Employment share by industry						
Primary industry	0.020	0.016		-0.0087	0.0127	
Tertiary industry	0.006	0.012		-0.0030	0.0093	
No. of institutionalized care receivers	0.000	0.001		-0.0001	0.0006	
No. of hospital beds	-0.001	0.002		-0.0010	0.0012	
Intercept	3.920	1.780	*	3.8239	1.6794	*
	No. of obs.=2013			No. of obs.=2197		
	R^2=0.1809			R^2=0.1623		

Notes:(1) **, * indicate that the variable is statistically significant at the 1% and the 5% level, respectively.
(2) Estimated using the municipal population as a weight.
(3) Group A was used as the reference value for the wage level dummy.
(4) In order to take into consideration the special characteristics of each prefecture, 47 prefecture dummies were included in the regression. However, the results have been omitted to conserve space.
(5) Both 5% tails of the data for the dependent variable were omitted for the estimation.

Table 3(b): Determinants of the utilization ratio (current expenditure ratio)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the current expenditure ratio	-0.0425	0.0334		0.028	0.026	
Proportion of those aged 65 and over in total population	0.0060	0.0281		0.002	0.017	
Population density	-0.0001	0.0001		0.000	0.000	
Wage level group						
Group B	-0.8643	0.8147		0.234	0.465	
Group C	-1.6889	1.0007		-0.285	0.669	
Group D	-2.6040	0.9877	**	-0.899	0.604	
Group E	-2.3253	0.9811	*	-0.664	0.611	
Employment share by industry						
Primary industry	0.0196	0.0159		-0.008	0.013	
Tertiary industry	0.0061	0.0123		-0.002	0.009	
No. of institutionalized care receivers	0.0009	0.0003	**	-0.001	0.001	
No. of hospital beds	-0.0023	0.0007	**	0.000	0.001	
Intercept	2.8557	1.6525		4.848	1.768	**
	No. of obs.=2013			No. of obs.=2197		
	R^2=0.1825			R^2=0.1633		

Notes: See Table 3(a).

Table 3(c): Determinants of the number of users (share of insurers receiving financial stabilization loans)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the share of insurers receiving loans from the financial stabilization fund	-0.0638	0.0262	*	-0.1187	0.0322	**
Proportion of those aged 65 and over in total population	-0.1017	0.0319	**	-0.1202	0.0280	**
Population density	-0.0001	0.0001		0.0001	0.0001	*
Wage level group						
Group B	-1.9628	0.9435	*	1.4580	0.6170	*
Group C	-0.8028	1.2873		2.5025	1.0179	*
Group D	-2.2779	1.1502	*	1.5395	0.7861	
Group E	-3.9381	1.1519	**	1.9821	0.8931	*
Employment share by industry						
Primary industry	-0.1202	0.0215	**	-0.0940	0.0225	**
Tertiary industry	0.0083	0.0156		0.0283	0.0148	
No. of institutionalized care receivers	-0.0001	0.0008		0.0020	0.0014	
No. of hospital beds	-0.0023	0.0019		-0.0055	0.0033	
Intercept	25.5499	2.6668	**	11.9693	2.4191	**
	No. of obs.=2233			No. of obs.=2202		
	R^2=0.4311			R^2=0.4048		

Notes: (1)   **, * indicate that the variable is statistically significant at the 1% and the 5% level, respectively.
       (2)   Estimated using the municipal population as a weight.
       (3)   Group A was used as the reference value for the wage level dummy.
       (4)   In order to take into consideration the special characteristics of each prefecture, 47 prefecture dummies were included in the regression. However, the results have been omitted to conserve space.
       (5)   Both 1% tails of the data for the dependent variable were omitted for the estimation.

Table 3(d): Determinants of the number of users (current expenditure ratio)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the current expenditure ratio	0.0323	0.0532		-0.0478	0.0419	
Proportion of those aged 65 and over in total population	-0.1033	0.0322	**	-0.1195	0.0280	**
Population density	-0.0001	0.0001		0.0001	0.0001	*
Wage level group						
Group B	-2.0254	0.9478	*	1.4802	0.6175	*
Group C	-0.8468	1.2900		2.5420	1.0183	*
Group D	-2.3278	1.1539	*	1.6068	0.7834	*
Group E	-3.9790	1.1515	**	1.9810	0.8885	*
Employment share by industry						
Primary industry	-0.1199	0.0216	**	-0.0942	0.0225	**
Tertiary industry	0.0085	0.0155		0.0283	0.0148	
No. of institutionalized care receivers	-0.0025	0.0004	**	0.0016	0.0014	
No. of hospital beds	0.0016	0.0013		-0.0051	0.0032	
Intercept	27.6652	2.7811	**	10.9973	2.4912	**
	No. of obs.=2232			No. of obs.=2201		
	R^2=0.4312			R^2=0.4060		

Notes: See Table 3(c)..

Finally, the results for the regression using the per-head allowance as the dependent variable are shown in Table 4. They indicate that neither the share of insurers receiving financial stabilization loans nor the current expenditure ratio have a statistically significant effect on per-capita allowances.

Table 4(a): Determinants of the per-head allowance (share of insurers receiving financial stabilization loans)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the share of insurers receiving loans from the financial stabilization fund	0.0066	0.0363		0.0232	0.0148	
Proportion of those aged 65 and over in total population	0.0185	0.0309		-0.0011	0.0206	
Population density	0.0000	0.0001		-0.0001	0.0001	*
Wage level group						
Group B	1.3265	1.1744		-0.5721	0.5305	
Group C	1.6391	1.2711		-1.5491	0.7637	*
Group D	2.7576	1.2704	*	-0.5442	0.6938	
Group E	2.8025	1.1895	*	-0.9428	0.6779	
Employment share by industry						
Primary industry	0.0770	0.0227	**	0.0364	0.0159	*
Tertiary industry	-0.0263	0.0176		-0.0203	0.0116	
No. of institutionalized care receivers	-0.0011	0.0014		0.0001	0.0005	
No. of hospital beds	-0.0025	0.0019		-0.0035	0.0011	**
Intercept	2.6559	3.0541		4.9656	1.6926	**
	No. of obs.=1971			No. of obs.=2394		
	R^2=0.2765			R^2=0.2208		

Notes: See Table 3(a).

Table 4(b): Determinants of the per-head allowance (current expenditure ratio)

	FY2001 - FY2002			FY2003 - FY2004		
	Coeff.	Std. Dev.		Coeff.	Std. Dev.	
Change in the current expenditure ratio	0.0275	0.0546		-0.0361	0.0293	
Proportion of those aged 65 and over in total population	0.0160	0.0306		-0.0002	0.0205	
Population density	0.0000	0.0001		-0.0001	0.0001	**
Wage level group						
Group B	1.2797	1.1993		-0.5563	0.5276	
Group C	1.6083	1.2756		-1.5223	0.7616	**
Group D	2.7136	1.2731	*	-0.4966	0.6897	
Group E	2.7679	1.1935	*	-0.9519	0.6762	
Employment share by industry						
Primary industry	0.0776	0.0227	**	0.0354	0.0159	**
Tertiary industry	-0.0262	0.0176		-0.0210	0.0116	
No. of institutionalized care receivers	-0.0009	0.0004	*	-0.0002	0.0004	
No. of hospital beds	-0.0030	0.0013	*	-0.0028	0.0011	**
Intercept	2.5094	2.6290		5.4977	1.8033	**
	No. of obs.=1969			No. of obs.=2394		
	R^2=0.2766			R^2=0.2217		

Notes: See Table 3(c).

In sum, the empirical results suggest the following: (1) The long-term care certification ratio was already significantly lower at insurers in a dire financial situation in FY2001-FY2002 and this tendency became even more pronounced in FY2003-FY2004. In addition, the state of municipalities' general budget, to which certification is supposed to be unrelated, had a statistically significant effect on certification ratios in FY2003-FY2004. (2) While insurers' financial situation has no significant effect on utilization ratios, insurers in financial difficulties did show a significantly slower rate of growth in the number of users and, similar to the certification ratio, this tendency became more pronounced in FY2003-FY2004. (3) Insurers' financial situation has no significant effect on per-head allowances.

5. Concluding remarks

A central feature of Japan's public long-term insurance scheme is its "centralized yet decentralized" approach. Using municipality-level data, the purpose of this paper was to examine empirically to what extent long-term care certification and the use of long-term care services, which are in principle supposed to be uniform across the country, are affected by insurers' circumstances, in particular their financial situation. The results suggest that since the introduction of the long-term care insurance scheme, insurers' financial situation has led to changes in certification and utilization ratios and insurers facing deterioration in their financial situation have become stricter in their long-term care certification and have tried to restrain user numbers.

Long-term care certification, so to speak, is the "gateway" to the use of care services through the long-term care insurance, and the evidence suggests that compared with insurers that are not in any financial difficulties, those that are more carefully guarding this "gateway" in order to restrain the use of care services. Thus, in a system where long-term care certification is supposed to be uniform across the country, access to long-term care services depends not only on applicants' circumstances, but also on insurers' finances. Furthermore, according to the results obtained in this study, insurers' financial situation so far has not had any impact on per-head care allowances; however, as insurers' finances continue to deteriorate in the future, it seems possible that differences in insurers' finances may begin to affect the actual use of care services.

These results suggest that the issues addressed here go to the heart of Japan's public long-term insurance system. One possible response to ensure that the financial situation of individual insurers does not have a large effect on insured persons' use of the long-term care insurance is the introduction of stronger measures to reduce regional differences through interregional redistribution. However, such measures are often accompanied by moral hazard problems: Without the imposition of fiscal discipline, insurers face few incentives to keep a tap on demand, resulting in huge additional long-term care costs.

A different response would be to pursue a more decentralized approach. Making municipalities the insurer, as under the current system, may be a good approach if the public long-term care scheme is supplemented by local support (such as from neighbours or the community), as is in fact implicitly assumed under the current system. However, in practice, this approach does not seem to be working well in Japan due to the drastic change in demography and family structures taking place and the large disparity between urban and rural areas.

Under these circumstances, an insurance scheme along the lines of the public pension scheme, which focuses on the individual, may be more effective. Each individual would have his or her own long-term care "account," which could be taken anywhere in Japan, entitling the holder to long-term care services and providing the opportunity to escape from regional disparities, including fiscal conditions. The government's role would be to set up the individual accounts and provide a "menu" of care services and ensure a sufficient supply of such services. Furthermore, such individual account scheme could be based on a "funding" system rather than the current "pay-as-you-go" system.

Another important role for the government is to develop a private long-term care insurance market, which so far is very small in Japan (Mitchell, Piggott and Shimizutani; 2006). Similar to the public pension scheme, this would allow people to combine benefits from public and private insurances, depending on their needs and economic status. This more "market-oriented" approach would also change the role of the public insurance, which would be responsible for meeting basic needs, while the private program provides additional services.

In order to determine the best approach, more research is necessary. However, what this paper has shown is that in the few years that have passed since the introduction of the long-term care insurance, substantial regional disparities have already arisen. Of course, in order to substantiate the estimation results obtained in this study, it would be desirable to obtain more detailed municipality-level data to conduct a more thorough analysis. In addition, to ensure the sustainability of the current "centralized yet decentralized" approach and implement appropriate reforms, a dispassionate debate based on empirical evidence is indispensable.

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