divides (25) with $Var(\ln c^N_{tsi})$.

$$1 = b_1\,(\ln c^N_{htsi}, \ln c^D_{htsi}) + b_2\,(\ln c^N_{htsi}, \ln d^E_{htsi}) + b_3\,(\ln c^N_{htsi}, \ln e^N_{htsi}) \qquad (26)'$$

Figure 6-4 exhibits that $b_3\,(\ln c^N_{htsi}, \ln e^N_{htsi})$ is about unity both for the "General Hospitalization" and "Aged Hospitalization". This implies that $Var(\ln c^N_{tsi})$ is explained by $Cov(\ln c^N_{tsi}, \ln e^N_{tsi})$, and that effects of $Cov(\ln c^N_{tsi}, \ln c^D_{tsi})$ and $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$ are cancelled out.

The variance of the "General Outpatient" had first increased up to 1993, then it had decreased. The variance is explained both by $Cov(\ln c^N_{tsi}, \ln e^N_{tsi})$ and $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$. The variance of "Aged Outpatient" had been larger than the "General Outpatient" and it had decreased by mid-1990s. The variance is mostly associated with $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$. Another interesting feature is that the drop in $Var(\ln c^N_{tsi})$ in 1996-1997 is associated with the increase in $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$ and $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$ in absolute values.

Cost per capita for "Dental" services shows different patterns. The variance of cost per capita for the "Aged" had been much larger than the "General". $Cov(\ln c^N_{tsi}, \ln c^D_{tsi})$ had been positive but small in magnitude. $Cov(\ln c^N_{tsi}, \ln d^E_{tsi})$ had declined over the periods, and no correlation was found between $\ln c^N_{tsi}$ and $\ln d^E_{tsi}$ lately. Most of the variance had come to be explained by $Cov(\ln c^N_{tsi}, \ln e^N_{tsi})$ (Figure 6-6).

6. Econometric Analysis

Table 2 reports the preliminary estimations of equation (37) by OLS.

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + u_{htsi} \qquad (32)$$

where y_{htsi} is "Cost per Capita (C/N)" for each services. No convergence is found for C/N of "General Hospitalization", while annual 1-3 percent convergence speed is found for other services. In particular the "Aged Hospitalization" has 2.7 percent speed of convergence. As shown by the graphical presentation in Section 4, each region has its own pattern of the change. In order to capture the regional effects and specific effects, individual dummy variables (47 prefectures) and time dummy variables (year dummy variables 1983-2005) are added to equation (32).

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{htsi} \qquad (34)$$

Compared with Table 2, Table 3 indicates that inclusion of the regional dummy variables has significantly changed the estimate. In particular, speed of convergence for the "General Hospitalization" reached 15.5% and "Aged Hospitalization" 7.8%. Figures 1-3 exhibit the coefficients of time and regional dummy variables. Time effects seem to respond to the official medical price revisions before 1996. The relationship, however, has become weak since the late 1990s. Most of the estimates of the regional dummy variables are significant. For example, the coefficients of regional dummy variables for the hospitalization display are higher in western part of regions where C/N have higher values. Compared with the "Aged

Hospitalization", "General Hospitalization" has larger coefficients for regional dummy variables, which might be associated with higher "implied speed" of the convergence. Because geographical presentation and decomposition analysis of the variance did not show any convergence for the "General Hospitalization, " the estimation results could be over-estimate of the convergence due to specification error.

Table 4 summarizes the estimates the following equation for the "General Hospitalization" and "Aged Hospitalization".

$y_{ht} = \ln(z_{ht}) - \overline{\ln(z_{ht})}$, where d_{ht} is the difference between the original variables and their weighted means of the same period.

$z_{ht,T} = d_{ht} - d_{h,t-T}$, where z_{ht} is the difference between the period t and t-T.

$$y_{ht} = e^{-\delta_1} \cdot y_{ht-1} + \sum_{i}^{K} \beta_i X_{ht}^i + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{ht}$$

$$y_{ht} - y_{h,t-T} = e^{-\delta} \cdot (y_{ht-1} - y_{h,t-1-T}) + \sum_{i}^{K} \beta_i (X_{ht}^i - X_{h,t-1-T}) + \sum_{l=1}^{M} \tau_l T_l + (u_{ht} - u_{h,t-T})$$

$$\ln c_{htsi}^D = e^{-\delta_1^A} \cdot \ln c_{ht-1,si}^D + \beta_2^A \ln d_{htsi}^E + \beta_3^A \ln e_{htsi}^N + \sum_{k=4}^{K} \beta_k^A X_{htsi}^k + \sum_{j=1}^{H} \gamma_j^A D_j + \sum_{l=1}^{M} \tau_l^A T_l + u_{htsi}^A \quad (33\text{-}1)$$

$$\ln d_{itsi}^E = e^{-\delta_1^A} \cdot \ln d_{ht-1,si}^E + \beta_1^B \ln c_{htsi}^d + \beta_3^B \ln e_{htsi}^N + \sum_{k=4}^{K} \beta_k^B X_{htsi}^k + \sum_{j=1}^{H} \gamma_j^B D_j + \sum_{l=1}^{M} \tau_l^B T_l + u_{htsi}^B \quad (32\text{-}2)$$

$$\ln e_{htsi}^N = e^{-\delta_1^C} \cdot \ln e_{ht-1,si}^N + \beta_1^C \ln c_{htsi}^d + \beta_2^C \ln d_{htsi}^E + \sum_{k=4}^{K} \beta_k^C X_{htsi}^k + \sum_{j=1}^{H} \gamma_j^C D_j + \sum_{l=1}^{M} \tau_l^C T_l + u_{htsi}^C \quad (33\text{-}3)$$

$$\ln d_{htsi}^N = e^{-\delta_1^D} \cdot \ln d_{ht-1,si}^N + \beta_1^D \ln c_{htsi}^d + \sum_{k=4} \beta_k^D X_{htsi}^k + \sum_{j=1}^{H} \gamma_j^D D_j + \sum_{l=1}^{M} \tau_l^D T_l + u_{htsi}^D \quad (33\text{-}4)$$

New explanatory variables including $\ln c_{htsi}^d, \ln d_{htsi}^E, \ln e_{htsi}^N, X_{hsit}$ are included based on the assumption that a dependent variable of each region will converges to its level. In particular, inclusion of $\ln c_{htsi}^d, \ln d_{htsi}^E, \ln e_{htsi}^N$ allows interpretations of the relationship among these variables. Also inclusion of GDP and medical resource variables allows interpretations as to the effects of these variables on dependent variable.

For the "Aged Hospitalization", 1 percent increase in C/D has negative effects on D/E (-0.047 higher convergence speed), positive effects on E/N (0.044 lower convergence speed) . 1 percent increase in D/E has negative effects on C/D(-0.316 higher convergence), positive effects on E/N (0.154 lower convergence speed) . Also 1 per cent increase in E/N has negative effects on C/D (-0.046, higher convergence), positive effects on D/E (0.051, lower convergence speed). "General Hospitalization" has similar results except for E/N, for which C/D and D/E have no effects. GDP would increase C/D (0.07, lower convergence speed). Beds per population ratio has positive effects on E/N for the "General" (0.054), but has the negative effects on E/N (-0.047) for the "Aged." Bed use rate has negative effects on E/N for the "Aged Hospitalization". Both "Doctors per Population" and "Nurses per Population" have positive effects on C/D, which indicates the higher human resources would result in the higher medical cost with slower convergence. "Aged Home Capacity per Population" would induce E/N but reduce D/E. By adding explanatory variables, convergence of higher speed is found.

$$\ln c^{D}_{hts} = e^{-\delta_1^A} \cdot \ln c^{D}_{ht-1,s} + \beta_2^A \ln d^{E}_{hts} + \beta_3^A \ln e^{N}_{htsi} + \sum_{k=4}^{K} \beta_k^A X^k_{htsi} + \sum_{j=1}^{H} \gamma_j^A D_j + u^A_{htsi} \quad (33\text{-}1)$$

$$\ln d^{E}_{itsi} = e^{-\delta_1^A} \cdot \ln d^{E}_{ht-1,si} + \beta_1^B \ln c^{d}_{htsi} + \beta_3^B \ln e^{N}_{htsi} + \sum_{k=4}^{K} \beta_k^B X^k_{htsi} + \sum_{j=1}^{H} \gamma_j^B D_j + \sum_{l=1}^{M} \tau_l^B T_l + u^B_{htsi} \quad (32\text{-}2)$$

$$\ln e^{N}_{htsi} = e^{-\delta_1^C} \cdot \ln e^{N}_{ht-1,si} + \beta_1^C \ln c^{d}_{htsi} + \beta_2^C \ln d^{E}_{htsi} + \sum_{k=4}^{K} \beta_k^C X^k_{htsi} + \sum_{j=1}^{H} \gamma_j^C D_j + \sum_{l=1}^{M} \tau_l^C T_l + u^C_{htsi} \quad (33\text{-}3)$$

$$\ln d^{N}_{htsi} = e^{-\delta_1^D} \cdot \ln d^{N}_{ht-1,si} + \beta_1^D \ln c^{d}_{htsi} + \sum_{k=4} \beta_k^D X^k_{htsi} + \sum_{j=1}^{H} \gamma_j^D D_j + \sum_{l=1}^{M} \tau_l^D T_l + u^D_{htsi} \quad (33\text{-}4)$$

7. Conclusions and Limitations

This study investigates the variance of medical cost across regions and its convergence. Because regional specific effects persist over time and the speed of convergence is the issue, one needs to utilize pooled time-series and cross-section data instead. This study uses "Municipal Health Insurance" data of 47 prefectures in 1981-2005 to analyze "Hospitalization", "outpatient", and "dental" services of the "general" and "aged" population. Expressing the "cost per capita (C/N)" as the product of "cost per day (C/D)", "days per event (D/E)" and "events per population (E/N)", the degrees of the variance and convergence are examined. Large variances and quicker convergence are found both for the "Aged Hospitalization" and "Aged Outpatient". Convergence of the former is associated by the by E/N while the latter by D/E. Although the "cost per capita (C/N)" is negatively correlated to "Cost per Day (C/D)" in the early 1980s, its relationship became weaker lately.

Hospitalization services have higher speed of convergence in C/D, D/E, and E/N, which indicates that the regions with higher C/D have higher convergence speed in D/E (i.e. lower D/E), while higher D/E has higher convergence speed in C/D (lower C/D) . Thus C/D and D/E have a negative trade off. The increase in GDP per capita has slowed the convergence speed in C/D and D/E (lower C/D and D/E) . The increase in physicians (doctors) per population and the nurses per population slowed the speed of convergence of C/D (higher C/D). The capacity of aged home per population increases the convergence speed of D/E (lower D/E) while decreases the speed of E/N (higher E/N). These results have important implications for the hospitalization services. Convergence speed depends on various regional profiles in a complicated manner. Though there are no simple policy recommendations for cost containment, we find followings suggestions. In addition to long-time trend, the regional variance of medical cost is important because each region has inherent path of convergence in some services.. By accounting for the regional difference, we estimate higher than expected speed of convergence. Convergence speed depends on various explanatory variables. Certain causal relationships are important. This study does not single out the clear-cut causal relationship of the convergence of variance. We need further investigation by employing different research method.

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Table1. Growth of Medical Cost and Contribution by Each Components

$$g(C_{ht}) = \sum_s \sum_i \left\{ \left(g(c^D_{htsi}) + g(d^E_{htsi}) + g(e^N_{htsi}) + g(N_{hts}) \right) \cdot w_{htsi} \right\}$$

$$= \sum_s \sum_i \left\{ g(c^D_{htsi}) w_{htsi} + g(d^E_{htsi}) w_{htsi} + g(e^N_{htsi}) w_{htsi} + g(N_{hts}) w_{htsi} \right\}$$

Table Growth of Medical Cost and Contribution of Each Components

		General Hospitalization	General Outpatient	General Dental	Aged Hospitalization	Aged Outpatient	Aged Dental	General Sum	Aged Sum	Total
Share of Cost by Services	1981-1985	26.4	29.0	7.7	20.8	15.3	1.0	67.1	32.9	100.0
	1986-1990	25.0	26.4	6.8	23.5	17.2	1.2	59.7	40.3	100.0
	1991-1995	22.7	25.1	5.7	24.6	20.4	1.6	55.4	44.6	100.0
	1996-2000	20.1	21.9	5.2	27.2	23.4	2.2	49.4	50.6	100.0
Total Medical Cost Growth Rate (per cent)	1981-1985	1.50	0.85	0.33	2.46	1.51	0.14	2.85	3.65	6.70
	1986-1990	0.38	0.95	-0.03	1.08	1.30	0.09	1.34	2.38	3.78
	1991-1995	0.53	0.61	0.15	1.59	1.71	0.20	1.34	3.34	4.81
	1996-2000	0.58	0.37	0.14	1.64	1.33	0.22	1.14	3.06	4.26
Cost per Day Growth Rate (per cent)	1981-1985	0.28	1.06	0.20	0.30	0.46	0.02	1.54	1.56	3.10
	1986-1990	-0.02	1.01	0.03	0.10	0.57	0.02	1.02	1.14	2.16
	1991-1995	0.79	0.72	0.18	0.95	0.50	0.05	1.69	1.85	3.54
	1996-2000	0.89	0.25	0.09	1.21	0.28	0.05	1.22	1.54	2.76
Days per Event Growth Rate (per cent)	1981-1985	0.21	-0.39	0.00	-0.05	-0.16	0.01	-0.17	-0.43	-0.61
	1986-1990	0.13	-0.23	-0.08	-0.14	-0.27	-0.01	-0.18	-0.45	-0.63
	1991-1995	-0.15	-0.29	-0.01	-0.33	-0.28	0.00	-0.45	-0.63	-1.08
	1996-2000	-0.26	-0.42	-0.05	-0.51	-0.83	-0.05	-0.74	-0.99	-1.73
Events per Population Growth Rate (per cent)	1981-1985	1.15	0.36	0.16	0.68	0.11	0.03	1.67	1.21	2.88
	1986-1990	0.95	0.89	0.20	0.19	0.31	0.04	2.05	1.29	3.33
	1991-1995	0.13	0.46	0.05	-0.31	0.39	0.06	0.63	0.19	0.82
	1996-2000	-0.33	0.23	0.03	-0.70	0.46	0.08	-0.07	-0.45	-0.52
Days per Population Growth Rate (per cent)	1981-1985	1.41	-0.03	0.18	0.55	-0.04	0.04	1.56	0.70	2.25
	1986-1990	1.13	0.65	0.13	0.05	0.03	0.02	1.92	0.84	2.76
	1991-1995	-0.02	0.16	0.04	-0.62	0.09	0.05	0.18	-0.42	-0.23
	1996-2000	-0.60	-0.21	-0.02	-1.14	-0.38	0.02	-0.84	-1.38	-2.22
Numbers of the Insured Growth Rate (per cent)	1981-1985	-0.16	-0.17	-0.05	1.46	1.07	0.07	-0.37	1.24	0.87
	1986-1990	-0.66	-0.69	-0.18	0.92	0.68	0.05	-1.53	0.05	-1.48
	1991-1995	-0.24	-0.26	-0.06	1.28	1.07	0.08	-0.56	0.96	0.41
	1996-2000	0.30	0.32	0.08	1.70	1.46	0.14	0.70	2.10	2.80

Source: Author's calculation which method and data sources are explained in text.

Note: Based on figures of national means. Growth of medical cost is not the sum of its components due to the method.

Table2. Absolute Convergence of Cost per Capita (C/N)

Table. Absolute Convergence of Cost per Capita (C/N)

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + u_{htsi}$$

	General Hospitalization		General Outpatients		General Dental		Aged Hospitalizaiton		Aged Outpatients		Aged Dental	
dependt variable	l_gen_h_c_n_d		l_gen_o_c_n_d		l_gen_d_c_n_d		l_age_h_c_n_d		l_age_o_c_n_d		l_age_d_c_n_d	
Lag 1												
Coefficient	1.000	***	0.989	***	0.965	***	0.974	***	0.972	***	0.977	***
Standard Error	0.002		0.003		0.004		0.003		0.004		0.0034585	
Implied Speed(δ)	0.000		0.011		0.036		0.027		0.028		0.023	

Table 3. Absolute Convergence with Regional Dummy Variables of Cost per Capita (C/N)

Table. Absolute Convergence with Regional Dummy Variables of Cost per Capita (C/N)

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{htsi}$$

	General Hospitalization		General Outpatients		General Dental		Aged Hospitalizaiton		Aged Outpatients		Aged Dental	
dependt variable	l_gen_h_c_n_d		l_gen_o_c_n_d		l_gen_d_c_n_d		l_age_h_c_n_d		l_age_o_c_n_d		l_age_d_c_n_d	
Lag 1												
Coefficient	0.857	***	0.916	***	0.876	***	0.925	***	0.917	***	0.890	***
Standard Error	0.013		0.012		0.010		0.010		0.011		0.010	
Year Dummy	suppressed		suppressed		suppressed		suppressed		suppressed		suppressed	
Regional Dummy	suppressed		suppressed		suppressed		suppressed		suppressed		suppressed	
Implied Speed(δ)	0.155		0.088		0.132		0.078		0.087		0.117	

Note: Implied speed is calculated by only a coefficient of a lagged variable.
For example, "l_gen_h_c_n_d" stands for natural log of "General Hospitalization Cost per capita in a form of diffrence from the national mean.
"Gen" is "General", "h" is "Hospitalization", "o" is "Outpatient", "d" is dental service, "n" is number of population, "d" is the difference of a variable from the natiional mean.

Table 4. Instrumental Variable Estimation

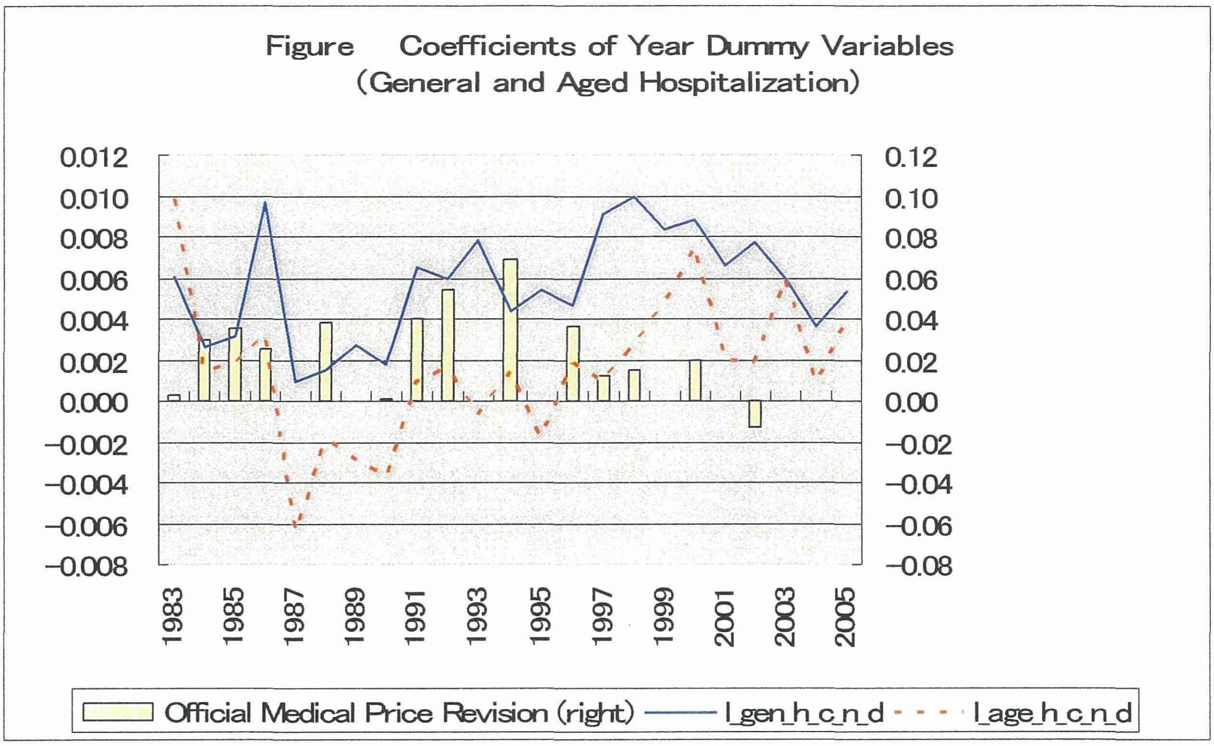
Table Instrumental Variable Estimation of C/D, D/E, E/N, D/N

Symbol	Variables									
C/D	l_gen_h_c_d_d	Coef.		Standard Err	t-statistics	l_age_h_c_d_d	Coef.		Standard Err	t-statistics
C/D(t-1)	l_gen_h_c_d_d(Lag)	0.800	***	0.014	55.190	l_age_h_c_d_d(Lag)	0.780	***	0.014	54.530
D/E	l_gen_h_d_e_d	-0.139	***	0.028	-4.940	l_age_h_d_e_d	-0.316	***	0.040	-7.940
E/N	l_gen_h_e_n_d	-0.065	***	0.014	-4.640	l_age_h_e_n_d	-0.046	***	0.012	-3.810
GDP	l_gdp_n_real_d	0.049	***	0.011	4.450	l_gdp_n_real_d	0.070	***	0.015	4.620
Beds	l_beds_pop_d	-0.017		0.012	-1.370	l_beds_pop_d	-0.009		0.018	-0.510
Doctors	l_doctor_pop_d	0.036	**	0.015	2.380	l_doctor_pop_d	0.074	***	0.020	3.620
Nurses	l_nurses_pop_d	0.040	***	0.014	2.940	l_nurses_pop_d	0.041	**	0.019	2.180
Bed_Use	l_bed_use_rate_d	-0.010		0.017	-0.600	l_bed_use_rate_d	0.024		0.028	0.850
Aged Home	l_aged_home_d	0.003		0.004	0.880	l_aged_home_d	-0.001		0.006	-0.220
	Time Dummy	suppressed							suppressed	
	Regional Dummy	suppressed							suppressed	
D/E	l_gen_h_d_e_d	Coef.		Stdard Error	t-statistics	l_age_h_d_e_d	Coef.		Stdard Error	t-statistics
D/E(t-1)	l_gen_h_e_d_d(Lag)	0.609	***	0.023	26.180	l_age_h_e_d_d(Lag)	0.670	***	0.021	31.690
C/D	l_gen_h_c_d_d	-0.078	***	0.013	-6.000	l_age_h_c_d_d	-0.047	***	0.008	-5.530
E/N	l_gen_h_e_n_d	0.022	*	0.012	1.790	l_age_h_e_n_d	0.051	***	0.006	8.000
GDP	l_gdp_n_real_d	0.019	**	0.009	2.020	l_gdp_n_real_d	0.015	*	0.008	1.790
Beds	l_beds_pop_d	0.011	*	0.011	1.060	l_beds_pop_d	0.008		0.010	0.800
Doctors	l_doctor_pop_d	0.043	***	0.013	3.380	l_doctor_pop_d	0.017		0.011	1.540
Nurses	l_nurses_pop_d	-0.024	**	0.012	-2.100	l_nurses_pop_d	-0.019	*	0.010	-1.880
Bed_Use	l_bed_use_rate_d	0.015		0.015	1.060	l_bed_use_rate_d	0.021		0.015	1.400
Aged Home	l_aged_home_d	-0.017	***	0.003	-4.720	l_aged_home_d	-0.022	***	0.003	-6.830
	Time Dummy	suppressed							suppressed	
	Regional Dummy	suppressed							suppressed	
E/N	l_gen_h_e_n_d	Coef.		Stdard Error	t-statistics	l_age_h_e_n_d	Coef.		Stdard Error	t-statistics
E/N(t-1)	l_gen_h_e_n_d(Lag)	0.875	***	0.012	70.670	l_age_h_e_n_d(Lag)	0.944	***	0.012	80.850
C/D	l_gen_h_c_d_d	-0.001		0.014	-0.040	l_age_h_c_d_d	0.044	***	0.015	2.930
D/E	l_gen_h_d_e_d	-0.038		0.026	-1.430	l_age_h_d_e_d	0.154	***	0.038	4.020
GDP	l_gdp_n_real_d	-0.005		0.010	-0.540	l_gdp_n_real_d	-0.020		0.015	-1.370
Beds	l_beds_pop_d	0.054	***	0.011	4.770	l_beds_pop_d	-0.047	***	0.017	-2.830
Doctors	l_doctor_pop_d	0.003		0.014	0.230	l_doctor_pop_d	-0.013		0.019	-0.650
Nurses	l_nurses_pop_d	0.007		0.012	0.580	l_nurses_pop_d	0.022		0.018	1.230
Bed_Use	l_bed_use_rate_d	-0.020		0.016	-1.290	l_bed_use_rate_d	-0.115	***	0.026	-4.360
Aged Home	l_aged_home_d	0.011	***	0.004	2.820	l_aged_home_d	0.016	***	0.006	2.800
	Time Dummy	suppressed							suppressed	
	Regional Dummy	suppressed							suppressed	
D/N	l_gen_h_d_n_d	Coef.		Stdard Error	t-statistics	l_age_h_d_n_d	Coef.		Stdard Error	t-statistics
D/N(t-1)	l_gen_h_d_n_d(Lag)	0.862	***	0.013	64.810	l_age_h_d_n_d(Lag)	0.982	***	0.014	71.480
C/D	l_gen_h_c_d_d	0.030		0.022	1.330	l_age_h_c_d_d	0.111	***	0.023	4.800
GDP	l_gdp_n_real_d	-0.005		0.014	-0.370	l_gdp_n_real_d	-0.033	*	0.020	-1.660
Beds	l_beds_pop_d	0.085	***	0.015	5.640	l_beds_pop_d	-0.010		0.023	-0.430
Doctors	l_doctor_pop_d	0.010		0.018	0.520	l_doctor_pop_d	-0.025		0.026	-0.960
Nurses	l_nurses_pop_d	-0.001		0.016	-0.050	l_nurses_pop_d	-0.003		0.024	-0.130
Bed_Use	l_bed_use_rate_d	-0.024		0.022	-1.090	l_bed_use_rate_d	-0.075	**	0.035	-2.130
Aged Home	l_aged_home_d	0.003		0.005	0.690	l_aged_home_d	0.002		0.007	0.260
	Time Dummy	suppressed							suppressed	
	Regional Dummy	suppressed							suppressed	

Note: *** significant at 1% level
** significant at 5% level
* significant at 10% level

Figure1. Time Dummy Effects and Regional Dummy Effects (Hospitalization)

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{htsi}$$



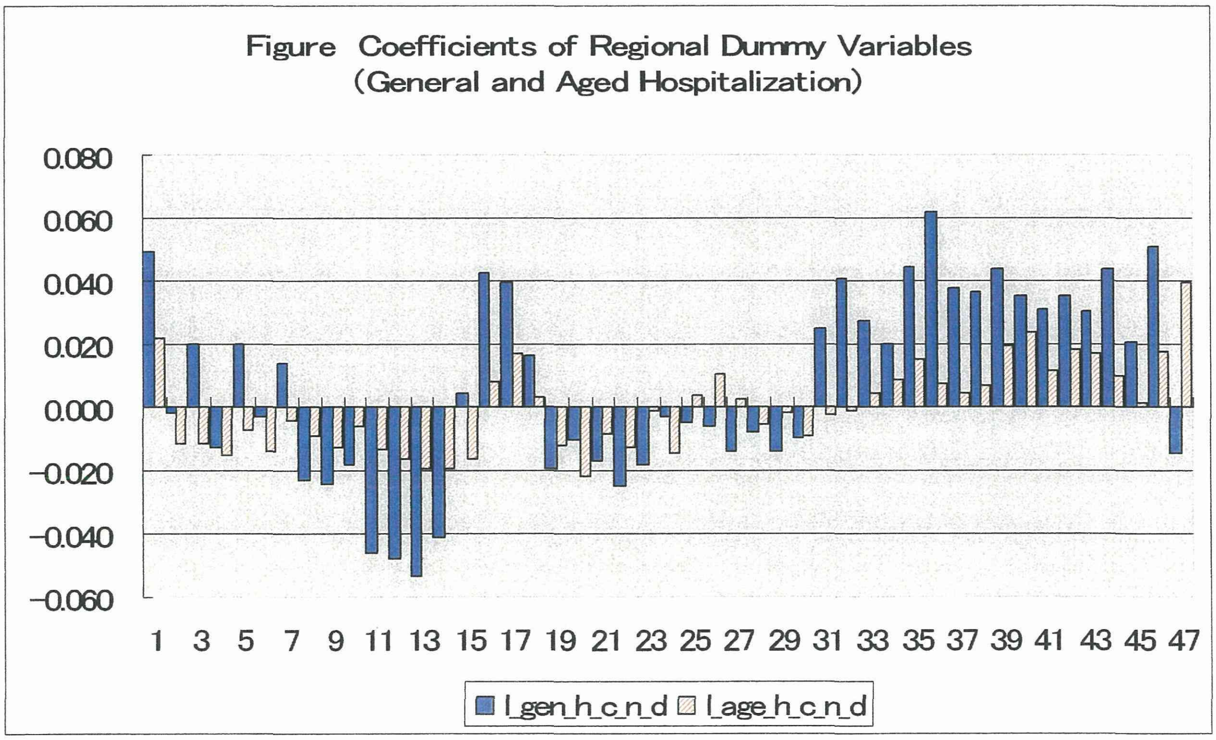
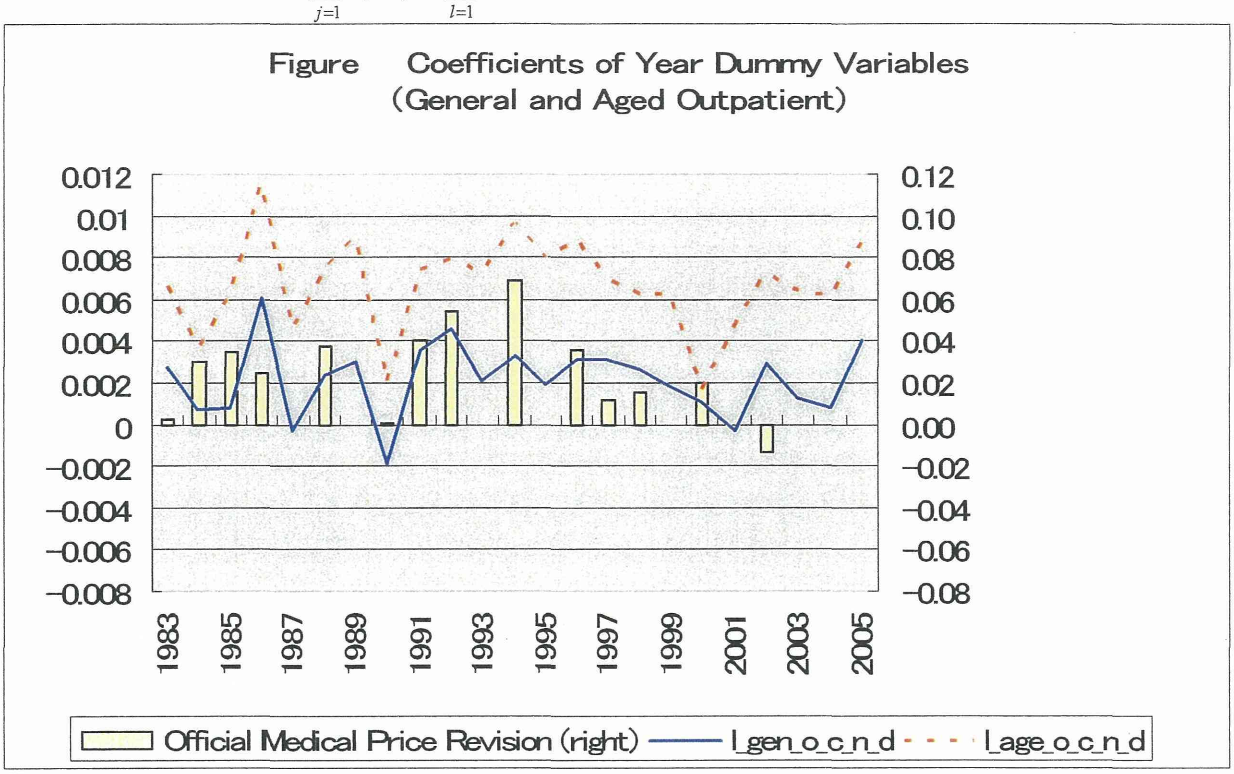


Figure2. Time Dummy Effects and Regional Dummy Effects (Outpatient)

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{htsi}$$



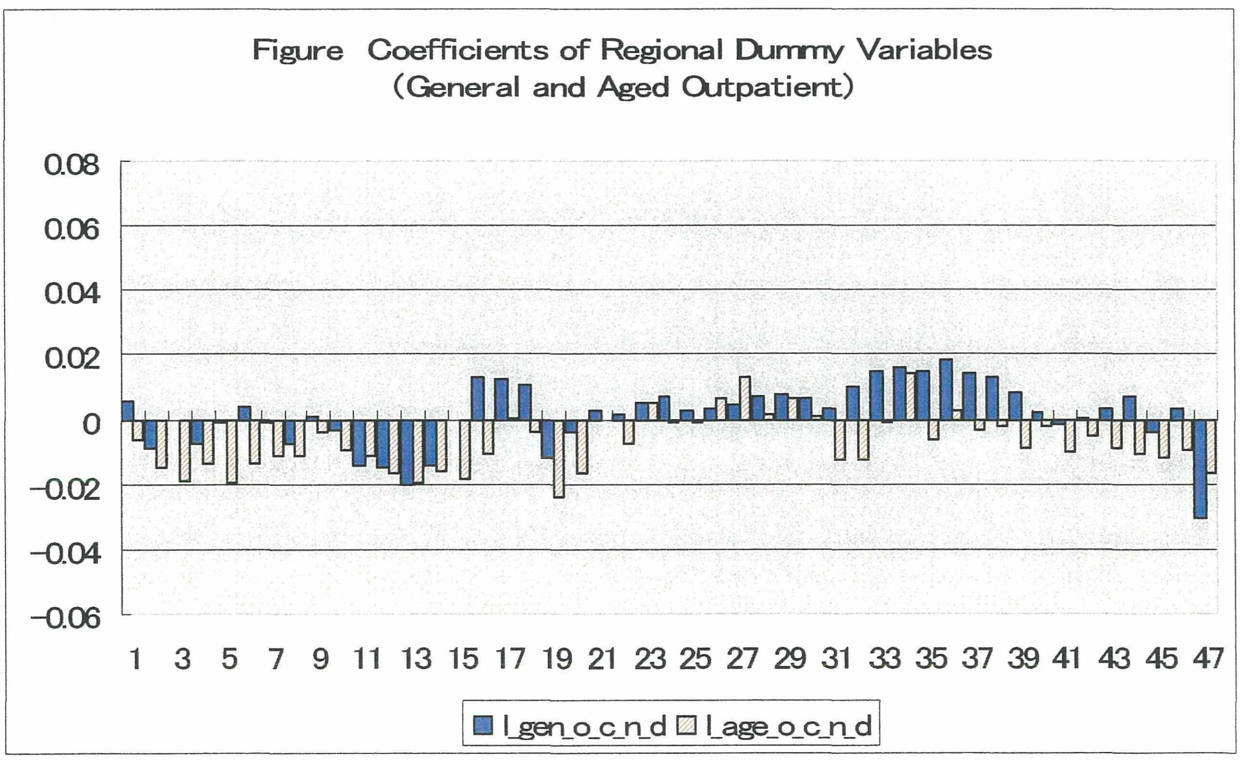
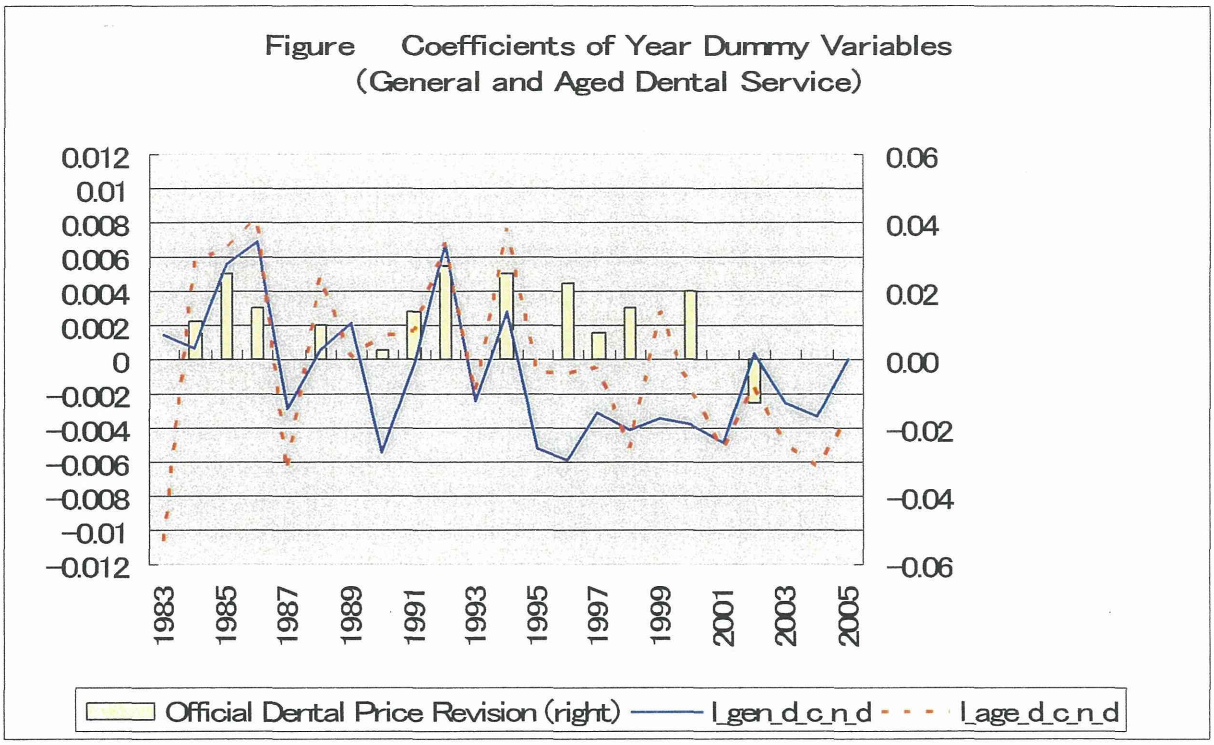
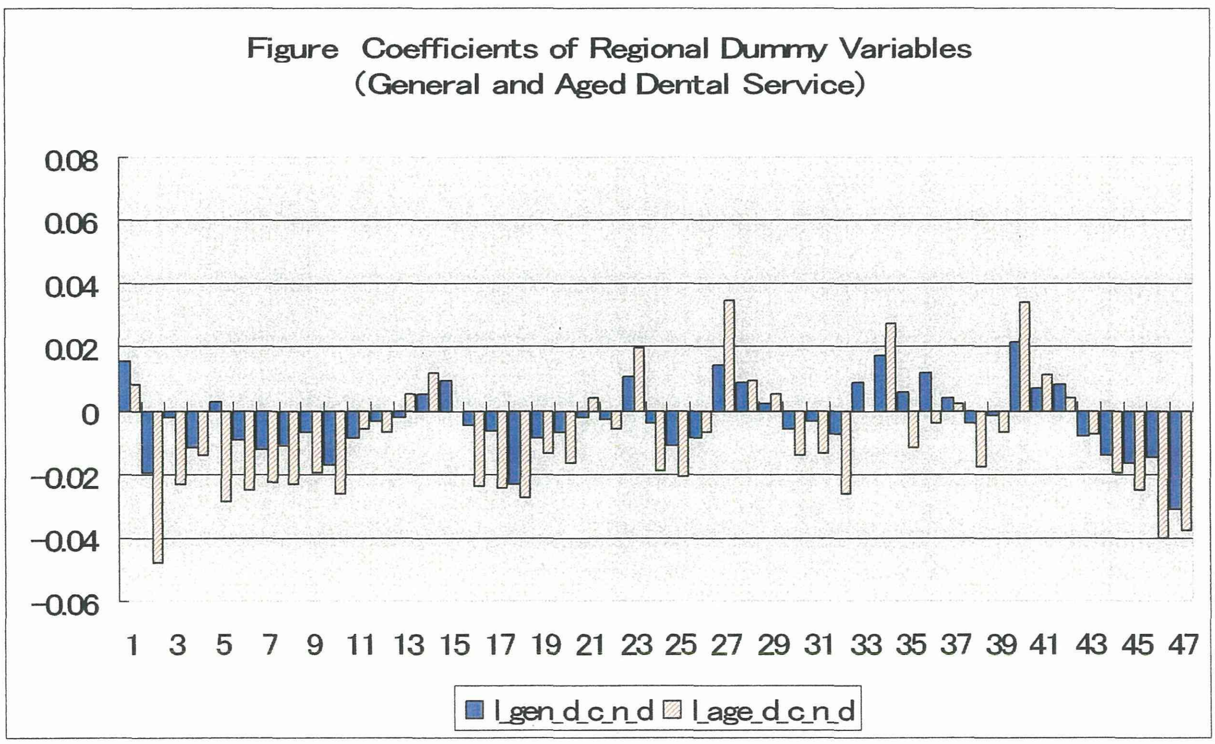


Figure3. Time Dummy Effects and Regional Dummy Effects (Dental Service)

$$\ln y_{htsi} = e^{-\delta} \cdot \ln y_{ht-1,si} + \sum_{j=1}^{H} \gamma_j D_j + \sum_{l=1}^{M} \tau_l T_l + u_{htsi}$$





研究成果の刊行に関する一覧表レイアウト（参考）

書籍

著者氏名	論文タイトル名	書籍全体の 編集者名	書　籍　名	出版社名	出版地	出版年	ページ

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年