

Report of Group Project: Performance of Japanese Health Care and Health Policy

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Overview of Group Project

1. Two year project

- ❖ What we did in FY2002
- ❖ What we add in FY2003

1. “Medical Spending and the Health Outcome of the Japanese Population”

2. “An Estimation of Earnings Losses Due to Health Deteriorations”

1. Medical Spending and the Health Outcome of the Japanese Population

- ❖ examines the relationship between the health outcome and medical care expenditure
- ❖ discusses how to improve the efficiency of medical care

2. An Estimation of Earnings Losses due to Health Deteriorations

- ❖ evaluates how social insurance covers the adverse effect of health shocks on earnings
- ❖ discusses how to cover earnings loss due to a health problem

Medical Spending and the Health Outcome of the Japanese Population

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What We Did in FY2002

- ❖ Cost-benefit analysis of overall medical spending
- ❖ Using the aggregate data, we calculated
 $\Delta(\text{monetary value of health outcome})$
 $\Delta(\text{medical spending})$
during 1990s

What We Did in FY2002

- ❖ The monetary value of the improvement in health (health capital) exceeds the growth of medical spending.
- ❖ In the 1990s, the health capital increased at least by 2 million yen,
- ❖ Medical spending increased by 0.4 to 0.6 million yen.
- ❖ If more than 30 percent of the improvement of health capital is the result of increases in medical spending, it could be justified.

Cost-Benefit Analysis of Overall Medical Care Expenditure

Cutler-Richardson (1997, 1999)

Δ (health capital) $>$ Δ (medical spending) ?

- ❖ Health capital: (value of life) x (quality adjusted life years)
 - ❖ QALY
 - ❖ Discounted sum of health state
 - ❖ Health state at age t : continuous between 0 and 1, perfect health=1, dead=0
 - ❖ Alternative of QALY
 - ❖ years of life: dichotomous, alive=1, dead=0

Data on Medical Spending

- ❖ Expected PDV of medical spending during remaining lifetime.
- ❖ Scope of spending
 - ❖ Medical spending paid by public health insurance
 - ❖ About 93 percent of National Medical Expenditure
- ❖ Age-spending profile is constructed from a sampling survey of the National Health Insurance (for farmers, self-employed and unemployed)
- ❖ We look at a change from 1990 to 1999. Why not 2000?
 - ❖ Due to the introduction of public long-term care insurance, medical spending declined in 2000. A part of long-term care cost had been paid by public health insurance.


Medical Expenditure During Remaining Lifetime

(million yen, discount rate = 3 %)


	Male		Female	
	Age 0	Age 65	Age 0	Age 65
1990	3.61	6.68	3.37	5.96
1999	4.19	8.09	3.82	7.07
1990-1999	0.58	1.41	0.45	1.11

Improvements of Remaining Life Lengths

Period	Male			Female		
	Age 0	Age 1	Age 65	Age 0	Age 1	Age 65
1960-1970	3.99	2.79	0.88	4.47	3.35	1.24
1970-1980	4.04	3.61	2.06	4.10	3.77	2.34
1980-1990	2.57	2.34	1.66	3.14	2.96	2.35
1990-2000	1.80	1.69	1.32	2.70	2.61	2.39



When this gap widens,
infant mortality rate
declines.



When this gap narrows,
life length of the elderly
improves.

Estimation of QOL (Quality of Life)

- ❖ Ordered probit model:

$$h = X\beta + \varepsilon$$

h : self-rated health state (5: very poor, 4: poor, 3: fair, 2: good, 1: excellent)

X : a vector of 42 or 44 disease dummies (1: a main disease of a respondent, 0: otherwise)

- ❖ QALY weight for a disease d :

$$QALY_d = 1 + \beta_d / (c_4 - c_1) ,$$

c_1 (c_4) cut-off value between excellent and good (very poor and poor)

- ❖ QALY is an imperfect measure:

QOL = 1 (excellent), = 0 (very poor)

QALY Weights of Selected Diseases

	1989	1995
Stenocardia and cardiac infarction	0.67	0.71
Acute upper respiratory inflammation	0.59	0.61
Decayed teeth	0.95	0.97
Mental diseases	0.51	0.53
Diabetes mellitus	0.72	0.75
Malignant neoplasm	0.64	0.65

What We Add in FY2003

❖ Analysis Using Regional Data

- ❖ The improvement of health state does not come solely from the increase in medical input.
- ❖ However, analysis of aggregate data cannot identify the contributions of medical treatments

Estimation Strategy

- ❖ Regression Using Regional data:

$\Delta(\text{health capital})_i$

$$= a + b \Delta(\text{medical spending})_i + cx_i + u_i,$$

i : prefecture x : other variables

- ❖ Collect 46 prefectural data in 1990 and 2000 (excluding Okinawa)
- ❖ Look at a percent change of variables

Preliminary Analysis: Simple Scatter Plot

- ❖ The growth of regional medical spending is *negatively* associated with the improvement of average life expectancy.

Figure 6(a): The Relation between Life Expectancy and Medical Spending per Capita (Females at Birth)

Percentage Change in Life Expectancy from 1990 to 2000

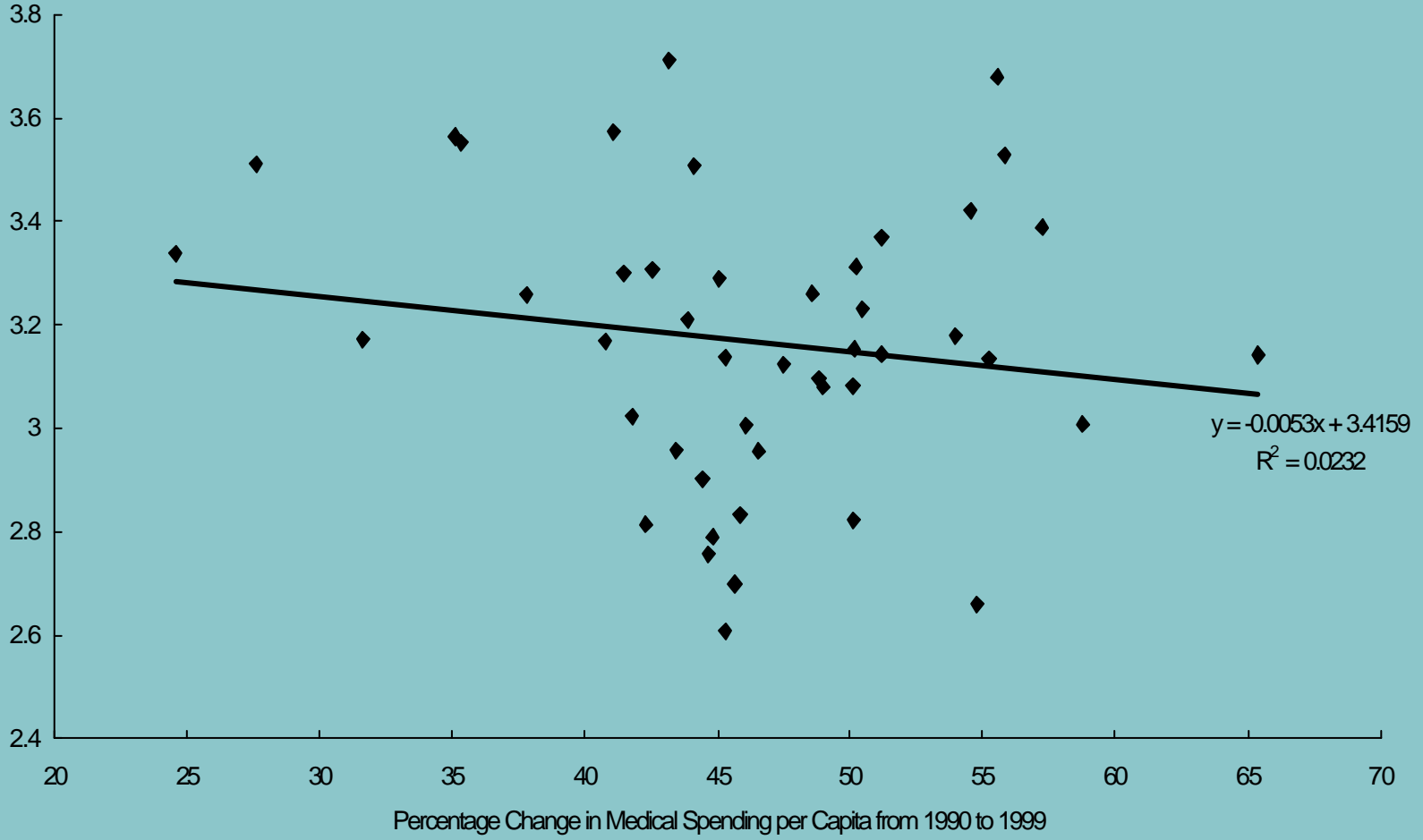


Figure 6(b): The Relationship between Life Expectancy and Medical Spending per Capita (Males at Birth)

Percentage Change in Life Expectancy from 1990 to 2000

