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医療財源の国際比較
—日本、ドイツ、オランダ、フランス、イギリス、スウェーデン、
デンマーク、ノルウェーを事例として—

佐藤一光、大津唯、倉地真太郎、島村玲雄、土橋康人

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【要旨】
本稿は医療支出と財政構造の関係についての国際比較である。医療政策財源について，社会保険方式と税方式による違いが認識されてきたが，医療政策における財源調達の容易さは財源方式だけでは説明できない。筆者らは 1990 年-2010 年の期間において，社会保険方式を採用する日本，ドイツ，オランダ，フランスと税方式を採用するイングランド，スウェーデン，デンマーク，ノルウェーの 8 か国について医療支出の動向と財政構造の比較分析を行った。財政構造の中でも保険料率の設定や税率の設定といった財源調達の権限が集権的である諸国において，人口の高齢化とは関係なく医療支出を伸ばしていることが分かった。

佐藤一光
慶應義塾大学経済学部
〒108-8345
東京都港区三田2-15-45
k.sato.0419@gmail.com

大津唯
国立社会保障・人口問題研究所
〒100-0011
東京都千代田区内幸町2-2-3　日比谷国際ビル6階
ootsu-yui@ipss.go.jp

倉地真太郎
慶應義塾大学大学院経済学研究科
〒108-8345
東京都港区三田2-15-45
shintarouvista@gmail.com

島村玲雄
慶應義塾大学経済学部
〒108-8345
東京都港区三田2-15-45
leosmmr@gmail.com

土橋康人
キングズ・カレッジ・ロンドン
King's College London, Strand, London WC2R 2LS, UK
yasuto.dobashi@gmail.com

King's College London, Strand, London WC2R 2LS, UK
yasuto.dobashi@gmail.com

An International Comparative Study of

Financing Healthcare[1]

The Case of Eight Developed Countries in 1990s – 2000s

Kazuaki SATO[2], Yui OHTSU[3], Shintaro KURACHI[4], Leo SHIMAMURA[5],

and Yasuto DOBASHI[6]

Abstract

This paper explores the relationship between healthcare expenditures and fiscal structures by conducting an international comparison. The difference between a social insurance scheme and a taxation scheme has long been recognized to be a major influence on fiscal resources for medical policies, but it cannot help fully explain the ease of finance. Authors present a comparative analysis of the trend of healthcare expenditures and fiscal structures in the period from 1990 to 2010 in eight countries, namely, Japan, the Netherlands, and France on the one hand (which adopted a social insurance scheme), the U.K., Sweden, Denmark, and Norway on the other (which adopted a taxation scheme). This paper found that healthcare expenditures has increased in centralized countries that have an authority to set insurance premiums or tax rates regardless of population aging.

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[2] Research Associate, Faculty of Economics, Keio University, k.sato.0419@gmail.com
[3] Researcher, National Institute of Population and Social Security Research, ootsu-yui@ipss.go.jp
[4] Graduate School of Economics, Keio University, mail@shintarokurachi.org
[5] Research Fellow, Faculty of Economics, Keio University, leo_1208shima@yahoo.co.jp
[6] Research Student, Institute of Contemporary British History, King's College London, yasuto.dobashi@gmail.com

Introduction

The main purpose of this paper is to explore the relationship between the variation in healthcare expenditures and fiscal structures through an international comparison of medical policies. From an international perspective, medical services account for a large share of social security expenditures and have grown increasingly important due to population aging. With respect to medical policies, there are two fiscal policy choices; financial resources can be secured or expenditure could be restrained. However, this paper focuses on securing revenues. There are two major schemes to secure financial resources: a social insurance scheme and a taxation scheme. Under such circumstances, international trends have recognized that more and more a social insurance scheme became a tax scheme (Tanaka and Niki eds. 2007, Mako 2013). Additional public healthcare expenditures financed by an increase in sales tax are being examined in Japan.

However, it is not enough to discuss only collection methods, whether it is for the social insurance scheme or the taxation scheme. Although these collection methods of social insurance premium and taxation have fundamentally different principles, the financial structure in each country also has a significant impact on healthcare expenditures. Therefore, this paper focuses on differences in the financial structure in each country when conducting a comparative analysis of variation in healthcare expenditures. The financial structure includes1) financial resources such as social insurance premium, taxation (the local and central government), and private insurance, 2) a budget flow structure in relation to public finance between the governments centered around insurers in the case of a social insurance scheme and medical suppliers in the case of taxation, and 3) an arrangement of authorities in relation to public finance between the governments such as setting rights of insurance premiums or tax rates, decision rights of medical treatment fees, and setting rights of a medical treatment supply and a self-pay ratio.

The structure of this paper is as follows. The first section reviews previous studies of an international comparative analysis of medical policies and the second section compares the trends of medical expenditures in each country by using OECD Health Data. The third section explains the financial structure in each country and discusses the relationship of medical expenditures with finance. In the fourth section, this paper makes an international comparison of medical expenditures and financial structures. The countries that are compared are Japan, Germany, the Netherlands, and France as social insurance scheme countries, and England, Sweden, Denmark, and

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Norway as taxation scheme countries. The period analyzed is the two decades from 1990 to 2010, and this paper studies the institutional relationships among the variation in medical expenditures, financial reforms, the budget flow structure in relation to public finance between the governments, and functions of insurers and medical suppliers, and considers the links among them.

1.   Review of previous studies

This section examines previous studies of international comparisons of medical policies. According to the OECD, there is a certain level of correlation between GDP growth rates and insurance medical expenditures, but there are several distinct patterns. First, there is a pattern of policy measures increasing medical expenditures in the UK. Second, the low economic growth rate contributes to the restraint of medical expenditures in Germany. Third, in Japan, there is a pattern of increasing insurance medical expenditures faster than its low economic growth (OECD2011, pp.32–33). The OECD also pointed out that the factors behind the rise in medical expenditures, other than economic growth, are the population aging, the price of supposed medicines, and innovations; in particular, the advancement of healthcare technologies has had a strong impact. Even though the rise of medical expenditures along with the progress of medical technologies contributes to the improvement of social welfare, it is necessary to consider appropriate medical expenditures and financing of resources, in particular to secure the sustainability of public finance. This is especially the case since medical expenditures are supplied through the public sectors such as governments or social security funds (OECD 2011, pp.41–42).

The OECD also referred to the budgetary control and the decentralized cost controls (OECD 2011, pp.70–71). The Japanese government has no budgetary control for medical expenditures and only has the right to set price. Expenditure targets have been set in Germany, France, the Netherlands, and Denmark, but there are not regarded as important due to the fact that they are not binding. Norway, the UK, and Sweden adopted a strict medical insurance budget, and Sweden and Denmark put a ceiling on the tax increase for the lower level of government. It is said that decentralized cost control can constrain medical expenditures by a reduction of subsidies, but it only produces a sort-term effect. This OECD comparative study addresses a broad range of issues of medical policies, but it is not enough to examine the relationship between

variation in healthcare expenditures and the fiscal scheme of resources, and the relationship between the role of budgetary control and the finance scheme.

Usui's report sorts out the fundamental difference between the insurance scheme and the taxation scheme from a juristic viewpoint. After dividing the taxation scheme into a general tax and a purpose tax, the report argues that finance by general taxes is liable to lead to the rise of expenditures, while finance by purpose taxes is more likely to achieve a balance between burdens and benefits. In other words, whereas finance by general taxes, or control of medical expenditures by general account incurs excessive expenditures due to moral hazard, finance by purpose taxes is likely to achieve an appropriate medical standard since the relationship between burdens and benefits is obvious. It is also pointed out that the social insurance scheme, which is a mixed form of the assistance principle and the insurance principle, can achieve more appropriate medical expenditures and burdens.

Mossialos et al. (2002) tries the comparison among European countries by focusing on the differences in medical expenditures. According to this previous study, it is difficult to explain medical expenditures by the finance scheme uniformly because medical expenditures among the taxation scheme countries has been increasing in the 1980s, but the expenditures among the social insurance scheme countries had been increasing in the 1990s, although there is a critical difference between the social insurance scheme and the taxation scheme. Nonetheless, Mossialos (2012) emphasizes the following three points. First, there is significant transparency between burdens and benefits in the social insurance scheme. Second, it is easier to increase insurance premiums in a stable fashion since it is hardly affected by political conditions. Third, insurers have a higher negotiation power to determine medical service fees in a centralized and unified system.

Under the social health insurance, there is a higher transparency between burdens and benefits as compared to that for the budgetary control by tax resources. Moreover, it is easier to finance revenue resources with increasing medical demands and to cause an increase in medical expenditures due to lower resistance to the rise of insurance premiums as compared to tax increases. Therefore, the insurance scheme countries in Europe have high medical expenditures. However, this scheme has some disadvantages, such as the regressive ceiling system of insurance premiums, the possibility of restricting medical access, the possibility of a negative influence on global economic competitiveness due to employer expenditures, and the inability to grasp other incomes except for wages due to the imposition base of wage (Mossialos et al. 2002, pp.23–28).

Mossialos et al. (2002) also shows that taxation scheme allows for stronger public control of medical spending, even in a short-term fiscal crisis or in a long-term policy change (Mossialos et al. 2002, p.64). In other words, this report argues that people in countries with social medical insurance show a high level of satisfaction because the social medical insurance is hardly affected by political interventions, is based on solidarity, and has a high transparency due to the independence of the collection of premiums and the management (Mossialos et al. 2002, pp.106–110). However, political intervention or budgetary controls on medical expenditures could trigger to control healthcare costs and also to grow them.

After dividing a method of securing revenues in medical policies into a public and private one, Noma (2013) points out that "a majority of nations are provided with medical care and financed publicly as seen in Europe. On the other hand, Japan adopts the hybrid-type method again here, which means the medical care is provided privately but financed publicly. Moreover, Japan is characterized by a mixture of tax sources and insurance premiums in terms of healthcare resources" (Noma 2013, p.7f), and Esping–Andersen's welfare classification cannot explain the types of the medical model well enough[7].

The following three points are of important as they summarize the conclusions of the abovementioned studies. To begin with, the literature establishes a relationship between finance schemes and the trends in healthcare expenditures. In other words, it discusses whether the scheme of taxation or insurance is easier to finance resources, whether these schemes cause an increase of medical expenditures from the increased pressure of medical demands due to economic growth, the aging population, and the advancement of medical technology. Usui (2009) and Mossialos et al. (2002) have a diametrically opposite views on this subject. Secondly, it is categorized according to size of the finance by private insurance, but the role of private insurance to influence the trend of medical expenditures is not sufficiently clear yet. Thirdly, it is insufficient to consider the impact of the structure of public finance such as the relationship between public finance between governments and the arrangement of the functions of insurers and healthcare providers on medical expenditures. OECD (2011) mentions the centralized budgetary control methods, the decentralized cost controls, and the central governments' subsidiary controls in relation to public finance among governments. However, the trend of medical expenditures is only partially explained since it is pointed

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[7] It is pointed out that the Netherlands is categorized as the social insurance scheme country in the Esping–Andersen welfare classification and the classification of public-private allotment, but this country has adopted the social insurance scheme with the largest share of private insurances (Tanaka and Niki eds. 2007, p.6).

out that the whole picture of the financial structure, including the financial resource schemes, is missing in extraction of a part of each country's institution in each analysis.

Accordingly, this paper will focus on and analyze the following three points. The first point is about medical demands. Although the population aging causes an increase in medical demands, this paper verifies all factors that increase medical expenditures in each country. The second point is about finance schemes with an increase in medical expenditures. This paper finds discusses whether the social insurance scheme countries handle the increase by raising insurance premium rates or not, and how the taxation scheme countries finance additional revenue sources. The third point is an association between medical expenditures and financial structures. Taking as the point of departure whether the basic financial scheme and healthcare supply system are the social insurance scheme or the taxation scheme, it is possible that controlling rights of revenue and expenditure, or similarities and differences of a budget flow structure specify the trends of medical expenditures. Even if a finance scheme is the same, it is possible for different financing sources to make a difference in medical expenditures by the arrangement of authority to secure revenues of medical policies. Moreover, by controlling medical service fees, which is the unit price of the medical supply, or the medical supply itself, there methods of coping with similar issues in medical policies are also possible. The insurer function consists of the authority to control public revenues, which is the setting right of insurance premium rates in the case of the social insurance scheme; in the case of the taxation scheme it is the budget compilation right or the right to decide tax rate of independent financial resources.

The decision rights of expenditures have a complex structure. The most important thing is whether the total budget is determined in advance or not. If the global budget based on per-capita payment system is introduced, total expenditures are strictly controlled. In the insurance scheme, the total budget system is used for payments from a central government to a sickness fund, and from a sickness fund to doctors or hospitals. On the other hand, the taxation scheme controls the budget from a central government to a local government and from a local government to doctors or hospitals. Differences on whether it is paid on a fee-for-service basis or a comprehension payment basis are substantial. Since medical expenditures are determined based on provided medical services in the comprehension payment system, medical expenditures increase automatically according to a rise in medical supply, but the fee-for-service reimbursement merely determines a ratio of budget allocation if the total budget is determined in advance. In the case of medical service fees based on comprehension payments for doctors or hospitals, the total amount of the payment for a disease can be

controlled. As has previously been discussed in fiscal science, this paper focuses attention on whether these determination rights are centralized or decentralized.

2. International comparison by OECD Health Data

This section conducts a quantitative comparative study using OECD data on health expenditure. This data organizes healthcare expenditures in each country, based on the System of Health Accounts (SHA), and medical expenditures are totaled by each financing agent, function, and provider. This data is useful as the comparable healthcare expenditure data, although there is substantial missing data depending on countries, periods, and classifications. Since the focus is on an international comparison, this paper focuses on the period from 1990 to 2010, for which comparable data can be arranged to some extent. However, it should be noted when using the same data that the range of medical benefits is not completely unified, and there is an international difference in long-term care. For example, elderly care insurance payments are only partially included in Japan. Thus, the absolute values cannot simply be compared. However, this paper determines the relationship between a long-term trend and a percentage of the elderly population quantitatively and analyzes the factors behind an increase in medical expenditures by each function or financing agent.

In Figure1, the horizontal axis shows the ratio of the labor force population (from 20 to 64 years old) to the elderly population (above 65 years old) and the vertical axis shows medical expenditures in relation to GDP. The scatter diagram from 1990 to 2011 in 8 comparison-targeted countries is linked by a chronological order. There is a tendency of an increase in social security expenses as the population ages. Kawase (2009) makes an international comparison of the relationship between the rate of population aging and healthcare expenditures in the period from 1970 to 2000 and points out "the ratio of medical expenditures to GDP has been increased with progress in aging in any developed country;" however, there is a loose correlation between the rate of increase in medical expenditures and the advancement of population aging in Japan (Kawase 2009, p.39). When limited to medical expenditures, the rise in medical expenditures does not necessarily correlate well with the population aging[8]. However the medical expenditure to GDP ratio is not easily comparable because the variability of GDP has an impact on

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[8] It is not easy and able to control a demographic factor or population aging, so this paper also regards it as an external parameter.

the ratio more than the trend of medical expenses does. For example, it may be the case that the growth of medical spending in Japan and France is overestimated due to its slow GDP growth, and the growth in Northern Europe countries is underestimated due to their high economic growth.

Consequently, in Figure 2 the vertical axis shows medical expenditures per capita using Purchasing Power Parity (PPP) exchange rates. Although the variability of PPP is unstable in many countries during the analysis period, it should be noted that it is likely that the Japanese Yen and the British Pound are over/underestimated since JPY is on a considerable rising trend as compared to the U.S. dollar exchange rate, and GBP[9] is on a falling trend. However, it is considered to be closer to the realization value than the ratio to GDP because it is on the basis of PPP. Moreover, this paper confirms differences of secular changes in medical expenditures with the mix by function and financing agent (Table 1), and the contribution of the growth of medical expenditures within the observation period (Table 2).

This paper confirms whether the growth in medical expenditures can be attributed to the rise in the ratio of aged population and discusses the reasons for the increase medical expenditures, if it is not due to the aging population. The significant countries that display an increase in the ratio of aged population are Japan and Germany, and the medical expenditures in these countries continue to increase in accordance with it. On the other hand, the Netherlands has significantly increased medical despite the fact that its ratio of aged population increased less than that of Japan and Germany. In particular, the rate of increase in the 2000s is high because of the rise in long-term care and healthcare spending. In France, which uses the social insurance scheme as well, the growth rate of medical expenditures is in a medium position in comparison-targeted countries, but the rise in medical expenditure occurs although the ratio of aged population increases slowly. In comparison with other countries, the rise in the health government and health administrative expenses has multiple effects, but it does not sufficiently explain the rise in medical expenditures.

Next, this paper analyses countries that use taxation schemes. Even though Sweden and Denmark have different levels of the ratio of aged population and medical expenditures, the ratio of the aged population has not increased and medical expenditures have increased despite the control trend in 1990s, the medical expenditures have increased with the rise in the ratio of the aged population entering the 2000s. In the late 2000s, the medical expenditures were in control trend, and these countries have followed a C-shaped path as a result. Sweden has the lowest percentage of the rise in

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[9] Great Britain Pound (GBP) is the national currency in British Pound.

medical expenditures among these 8 countries in the observation period. In particular, the contribution of treatment and rehabilitation field is small. In Denmark, the growth of medical expenditures is in medium position and the rise in the ratio of aged population and medical expenditures constantly occurs from 2004 to 2008, and the contribution of long-term care is huge by function. In contrast to both countries, medical expenditures in the U.K. and Norway have grown almost consistently: medical expenditures per capita have increased by 2.6 times in the U.K and by 3 times in Norway in a span of 21 years. Expenditure data in the U.K by function is not available within the observation period, and therefore, it is not known fields in which expenditures have increased. In Norway, it long-term care has a large share in the rise of medical expenditures. The period of the rise in expenditures is limited to some extent, such as until 2006 in the U.K, and from 1996 to 2008 in Norway.

Next, this paper also confirms the contribution of the rise in medical spending by financing agents. In the four countries that use the social insurance scheme, finance through social security funds is the most common way of financing. In the Netherlands, almost all revenues are collected through social security funds; Japan has large contributions of household and the municipality; Germany has a high contribution of private insurance and households; France has a considerably large contribution of private insurance. High burdens on households are common among five countries that use the taxation scheme. There is a great difference among these countries. For example, the U.K. has a high contribution of private insurance and non-profit insurance, while it is financed by local governments in Norway and Denmark, and the central government and the social security funds also play a major role in Norway. In the next section, this paper discusses the reasons for these differences and whether the fiscal structure has an influence on the trend of medical expenditures.
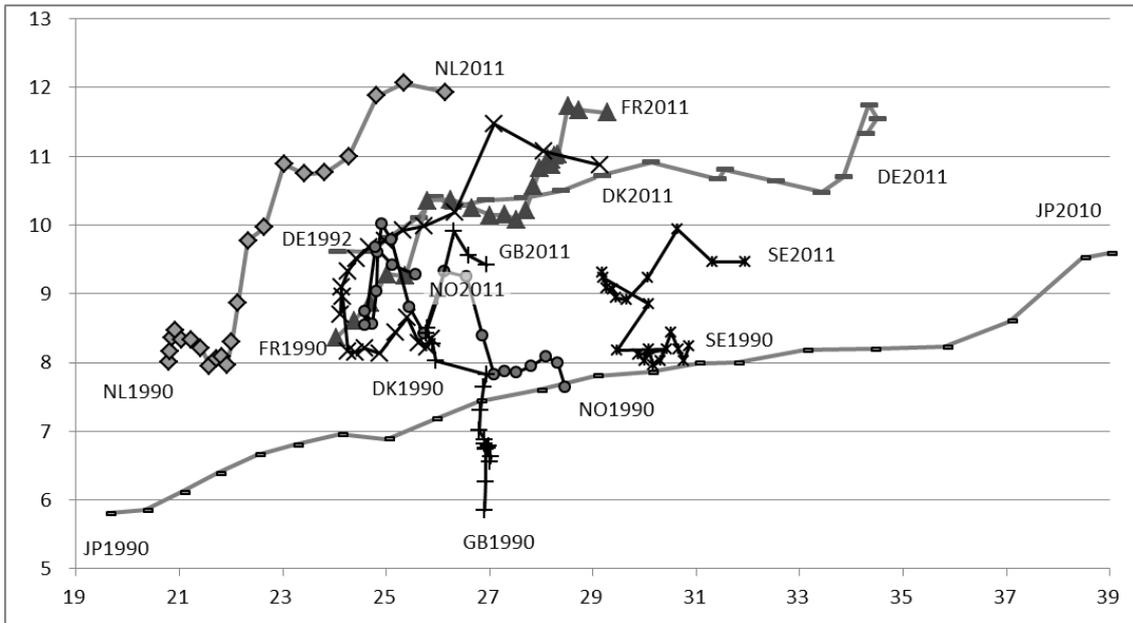
Figure1 Health Care expenditure (% of GDP) and old age/labour force (1990 -2011)

Unit: vertical axis: proportion of GDP, horizontal axis: proportion of elderly

Source: OECD Health Data

1) Old age per Labour force is the old dependency rate (OECD) which means that it is the ratio of people in over 65 age/20-64 age. 2) JP=Japan, DE=Germany, NL=Netherland, FR=France, SE=Sweden, DK=Denmark, GB=United Kingdom, NO=Norway 3) In Germany, the data is shown since 1992 due to lack of data and unification of East and West Germany.
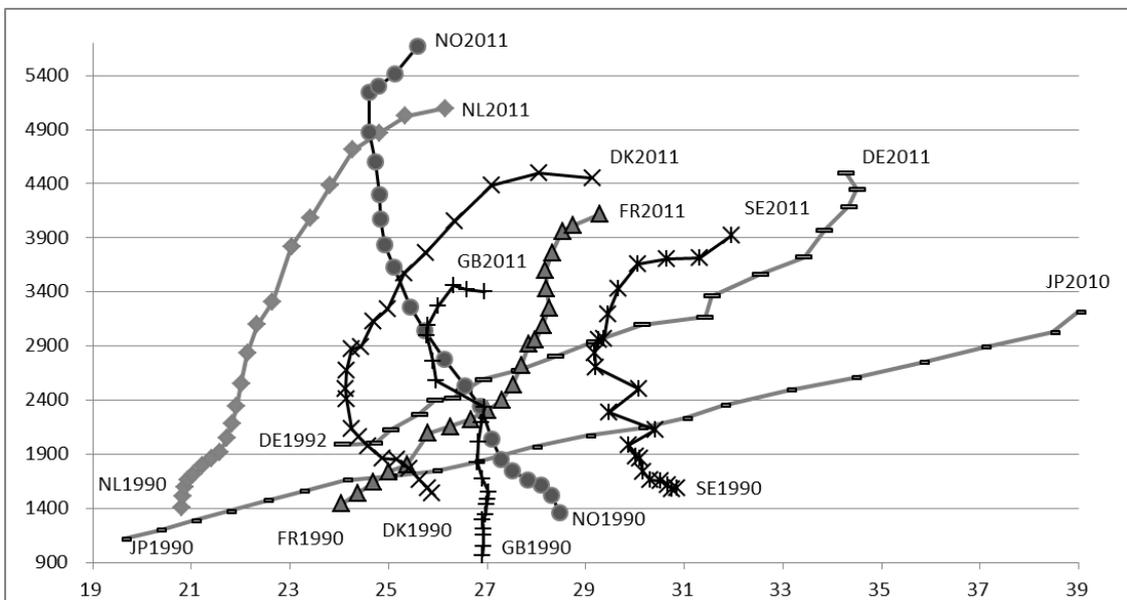

Figure2 Health Care expenditure per capita and old age/labour force (1990 -2011)

Unit: vertical axis: PPP per Capita, horizontal axis: proportion of elderly

Source: OECD Health Data

	Japan	Germany	Netherlands	France	United Kingdom	Sweden	Denmark	Norway
General Government	2,638	3,337	4,004	3,090	2,859	3,029	3,827	4,585
Central Government	215	380	379	67		67	42	2,166
State/provincial Government	24						2,448	41
Local/municipal Government	88			78		2,963	1,172	1,560
Social security funds	2,311	2,957	3,625	2,945			0	646
Private sector	575	1011	647	926	563	687	668	826
Private insurance	78	404	241	549	111	10	72	
Private households out-of-pocket	464	571	267	298	315	608	593	784
Non-profit institutions serving households	..	17	57	0	127	7	3	
Corporations	34	19	82	79		63	0	12
Total	3,213	4,349	5,028	4,016	3,422	3,717	4,495	5,413
Services of curative and rehabilitative care	2,035	2,254	2,350	2,075		2,325	2,410	2,578
Services of long-term nursing care	292	518	1,118	427		271	1,058	1,485
Ancillary services to health care	24	198	86	199		150	212	371
Medical goods	686	849	675	819		571	497	607
Prevention and public health services	97	145	192	79		129	100	134
Health administration and health insurance	50	233	183	274		53	52	35
Capital formation of health care providers	29	152	377	144	155	196	165	202

Table1 Health Care Expenditure per capita by Financing Agents and Functions (2010)

Unit: US$ purchasing power parity per capita

Source: OECD Health Data

	Japan	Germany	Netherlands	France	United Kingdom	Sweden	Denmark	Norway
General Government	159.1%	109.9%	217.0%	138.1%	214.6%	100.8%	166.2%	253.5%
Central Government	0.4%	10.4%	22.2%	2.3%		1.3%	0.6%	19.5%
State/provincial Government	1.3%						56.9%	0.3%
Local/municipal Government	5.1%			1.1%		38.7%	37.9%	15.7%
Social security funds	80.4%	99.5%	194.8%	130.3%				13.3%
Private sector	29.2%	32.6%	13.0%	40.9%	42.3%	33.1%	26.2%	43.4%
Private insurance	2.5%	15.3%	-4.6%	27.1%	8.3%	0.3%	3.4%	
Private households out-of-pocket	15.8%	20.7%	4.6%	9.3%	22.2%	7.7%	22.6%	42.9%
Non-profit institutions serving households		-4.5%	-3.9%	-0.1%	11.5%	0.1%	0.1%	
Corporations	0.9%	0.2%	-1.3%	3.1%		0.5%		
Total	188.3%	142.5%	256.7%	179.0%	256.9%	133.8%	192.4%	297.0%
Services of curative and rehabilitative care	70.0%	64.9%	110.1%	77.0%		29.4%	57.6%	58.7%
Services of long-term nursing care	14.0%	24.3%	62.5%	27.1%		10.2%	34.0%	42.5%
Ancillary services to health care	1.0%	10.3%	5.0%	10.1%		4.0%	4.4%	10.4%
Medical goods	21.2%	27.9%	35.9%	36.8%		21.4%	22.2%	33.5%
Prevention and public health services	3.3%	3.1%	10.8%	3.1%		1.8%	1.5%	1.7%
Health administration and health insurance	1.4%	6.7%	8.1%	17.4%		2.7%	2.6%	0.1%
Capital formation of health care providers	-0.8%	5.4%	20.9%	7.5%	9.5%	8.0%	8.8%	9.1%

Table2 Factor analysis of Increase of Health Care Expenditure (1990–2010)

1) The following data are analyzed practically due to some data problems. Except for general government, private sector, and capital formation in Japan is available for the period 1995–2010; similarly company data in Germany is available only for the period 1992–2010; private insurance, one's own expense, and non-profits insurance in Netherlands is only available for the period 1998–2010; company data in Netherlands is only available for the period 2003–2010; the municipality data in France is available for 2003–2010; for Sweden, non-profits insurance and company data expect for general government, and private sector data in Sweden is available for 1995–2010 and 2001–2010, respectively; care and rehabilitation, supplementary service, and prevention/ public health data is available for 2001–2010; long-term care, medicine, health administration, and insurance data is available for 1993–2010; central, regional, and municipality, non-profits insurance, care and rehabilitation, long-term care, supplementary service, prevention/ public health data in Denmark is available only for the period 1998–2010; central, regional, and municipality government data in Norway is available for 2003–2010, and social security fund data in Norway is available for 1997–2010. Contribution in each country is detailed appendix table.

Source: OECD Health Data

3. Financing Health Care in Countries

3.1 Japan

As is well known, all people in Japan are required to subscribe to a public medical insurance system. The public medical insurance system is separated into multiple systems. Workers employed in companies that have their own health insurance association become members of the Society-Managed Health Insurance (SMHI), workers employed in companies that do not have their own health insurance association become members of the Japan Health Insurance Association (JHIA), government workers join the Mutual Aid Association (MAA), and farmers, self-employed workers and unemployed people join the National Health Insurance (NHI), which is managed by municipalities[10]. Moreover, all people above the age of 75 years become a member of the Medical Care System for the latter-stage Elderly People introduced in 2008. The system used to determine a different burden on patients, but the unified self-pay ratio is currently established according to the patient's age, so the charge for people aged 70 or older is 10% [11] (30% for income earners on equal levels with active people), that for preschool children is 20%, that for others is 30%. The High-Cost Medical Care System is an established mechanism to minimize the burden of medical expenses on patients that puts a ceiling on patient's co-payment for one month, and various types of a medical expenses subsidy system for patient-charged fees.

The insurance premium setting and the financial structure vary by health insurance systems. In the SMHI and JHIA, insurance premiums are imposed in proportion to changes in index monthly earnings or index bonuses, and are shared equally by employer and employees. Most of its income is from the insurance premium income, and the insurance rate differs depending on insurers. On the other hand, the NHI imposes on each household its insurance premiums, which consist of a per capita basis (fixed amount) and ability to pay basis (based on incomes or assets). However, 50% of the benefit expenses are covered by the public burden. In the Medical Care System for the Latter-stage Elderly People, 50% of benefit expenses is paid from the public burden (the ratio of the state, prefectures and municipalities is 4:1:1 respectively), 10% of the benefits are paid from insurance premiums of the latter-stage elderly people themselves,

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[10] In this article, the details of sailors' insurance and national health insurance association are omitted. Because Social Assistance recipients do not have the qualifications to join the national public health insurance, they get medical assistance in social assistance, unless they do not join the other public health insurance.
[11] The legal ratio of one's own expense in 70–74 ages increased 20 %, though this ratio is unchanged due to special measures.

and the remaining 40% is paid by contributions from the generation under 75 years of age (the latter-stage elderly people support fund). The fiscal equalization system to share expenses with the former-stage elderly people was introduced as the same time as this system as a correction measure of the imbalance of medical expense burdens among people who are between 65 to 74 years old; it considers them as a member of this system according to the average rate of subscriptions regardless of the actual rate of subscriptions.

Under such a system, the rate of the burden on patients is limited to about 12.7% (the year of 2010[12]) of the whole national medical expenses[13]. The major revenue of the national medical expenses is insurance premiums, and about 48.5% is paid by insurance premiums (same as above). However, this rate has been declined by about 30% in 20 years. On the contrary, the rate of the public burden, in particular the rate of the burden on local governments, has increased greatly, and accounted for about 38.1% of the national medical expense in 2010 (the national treasury: 25.9%, the local governments: 12.2%), compared to about 31.4% in 1990 (the national treasury: 24.6%, the local governments: 6.8%).

The total spending on national medical expenses is growing along with the progression of ageing: it increased from 30.1 trillion yen in 2000 to about 37.4 trillion yen in 2010. The national medical expense per capita in Japan is on an upward trend, and increased from 237,000 yen to 292,000 yen during the same period. This upward trend of the national medical expense has worsened insurance finance and caused further deterioration of the central government finance and local government finances, which have huge fiscal deficit problems. Under such circumstances, the medical service fee to have an important impact on the total amount of medical expenses, which is revised by the Ministry of Health, Labor, and Welfare every two years based on discussions of the Central Social Insurance Medical Council (CSIMC), has often been revised negatively in recent years. In addition to the increasing self-pay ratio (note, however, that the rate of the burden on patients has not risen in overall national medical expenditures), Japan has promoted the moderation in healthcare cost, such as measures against lifestyle diseases and measures for the shortening the average number of hospitalization days, which is longer in Japan from an international perspective.

As stated above, the public medical insurance system in Japan is separated into multiple systems. Around 40% of the national health expenditure is paid by the public,

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[12] Ministry of Health, Labor, and Welfare, *Heisei 22 Nendo Kominiryouhi no Gaikyo*.
[13] Ii (2011) is the detailed explanation of the definition of difference between national health expenditure and the health expenditure to use in the international comparison.

while the rate of the burden on patients is limited to the 10% level. Japan is characterized by its large-scale fiscal equalization system for medical expense burden on the later-stage elderly people. Compared to other social insurance scheme countries, there is no competition among insurers. Subscribers cannot choose insurers and the central government has a decision right on the medical service fee.
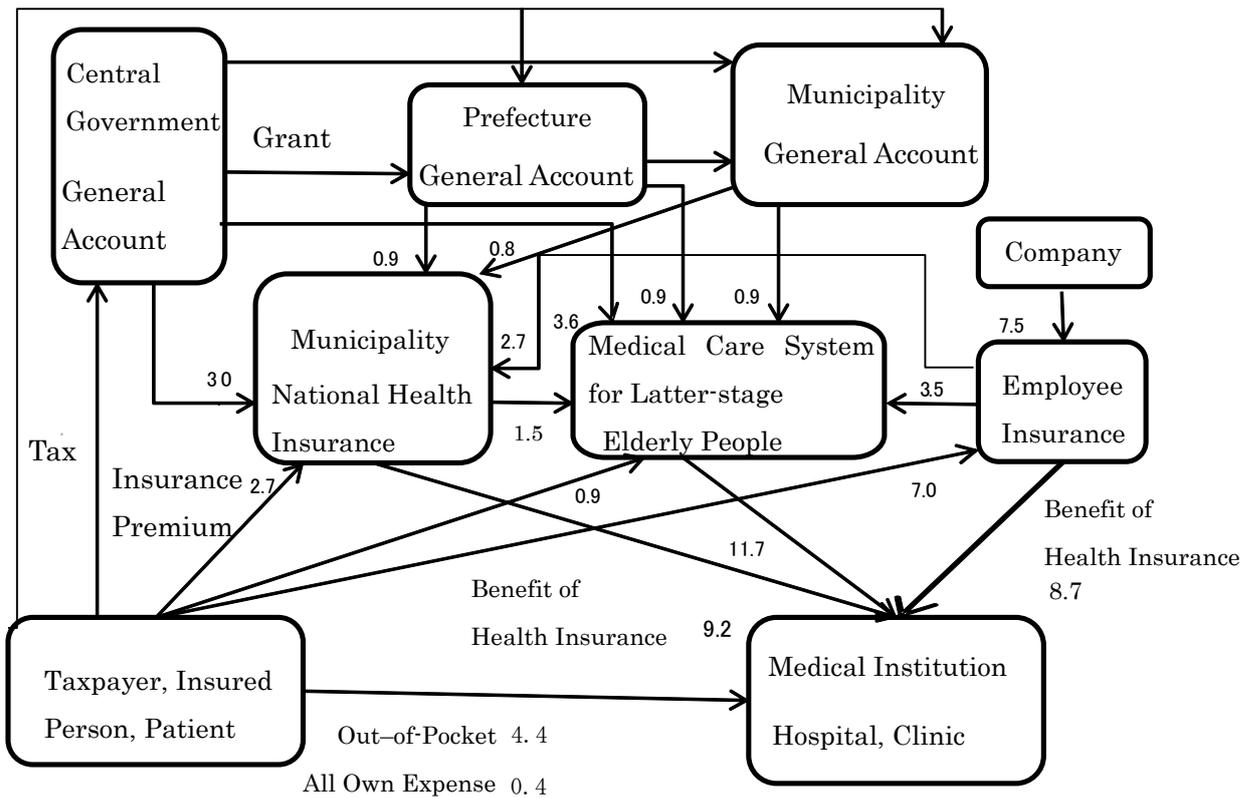
Figure3: Flow of intergovernmental fiscal relationships in the Japanese health care funds (2010 fiscal year) unit: trillion yen

Source: Ministry of Health, Labor, and Welfare, Heisei 22 Nendo Kokuminiryouhi no Gaikyo, Heisei 22 Nendo Koukikoureisyairyouhiseido (Kukikoureisyairyoukouikirenngo) no Zaiseizyoukyou nituite, Heisei 22 Nendo Kokuminkenkohoken (Shichoson) no Zaiseizyoukyou nituite

3.2 Germany

Germany is known for its typical social insurance scheme in its medical system[14].

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[14] The description of this section is based on Kenkohokenkumiairengo (2009). This report is detailed explanation of long-term trend and reforms of health policy in Germany.

The health insurance is the oldest social insurance in the world, and was introduced by Bismarck in 1883. It is characterized by the "Solidarity Principle", the "Self-Supporting Principle", and the principle of "Separated Insurers". The sickness fund has the authority to determine medical service fees as a function of the insurer, but the Federal Government became strongly involved with the determination by the Health Insurance Cost Containment Act (KVKG: Krankenversicherungs- Kostendämpfungsgesetz). This was aimed at restraining medical expenditures in 1977. The sickness fund at Federal level[15] and the Federal Association of Medical and Insurance concluded a list of medical treatment fees called the Uniform Value Scale (EBM: Einheitlicher Bewertungsmaßstab), and law has come to control by the growth rate. In this regard, continuous reforms for expenditure restraints such as benefit reductions and increasing burden on patients after the horizontal fiscal equalization among the sickness funds was introduced, but the effect was short-term.

There were multiple types of sickness funds such as the General Local Sickness Fund (AOK), the Guild-Based Sickness Fund (IKK), and the Company-Based Fund (BBK) in decreasing order of subscribers, and there was no right to choose among the sickness funds except for self-employed workers, government officers, and wealthy individuals who were not obliged to join the public healthcare insurance. The Health Care Structure Act in 1992 fully liberalized the choice of the sickness funds, and a new fiscal equalization system called Risk Structural Adjustment was introduced. Since then, the number of the sickness funds has declined rapidly due to mergers. This reform has promoted the broader integration of the sickness funds and achieved reduction in inequality in insurance premiums. In addition, this reform introduced budgetary control to put a ceiling on total medical service fees for health insurance doctors in each state[16].

As described above, this paper has outlined the healthcare supply system in Germany and the following three points summarize the relationship between the trend of medical expenditures and the fiscal structure. First, as was quantitatively confirmed, the largest revenues for supporting the growth of medical expenditures are social insurance premiums. In the context of the setting right of insurance premium rate in the sickness funds in Germany, revenues are financed by an increase in the insurance

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[15] Although each disease funds has formed each disease funds association in federation by 2008, federal disease funds association which is the association of disease funds association in the whole country has took over conclusion mission of EBM since 2009.
[16] The phenomenon of increasing total medical treatment points and the subsequent decrease in unit per point with the increased provision of health care is called Hamsterad Effect (Toda, 2008). Doctors rebel against this institution, and the controlling and loosening a regulation has repeated.

premium rate. The gap among insurance premium rates was considered a problem since each sickness fund is on an autonomous management basis. This gap was addressed by introducing the horizontal fiscal equalization among the sickness funds and its expansion, and also by enabling free choice of insurers to insured workers.

Second, the role of private insurances has increased. In Germany, where universal health insurance has not been introduced for a long time, people who have incomes more than the ceiling of social insurance premiums could choose their private insurance plans, and not the public medical insurance. Although the expansion of the horizontal fiscal equalization advanced a standardization of insurance premium rates, the sickness funds that maintained a low insurance premium rate ware in a disadvantageous position as compared to private insurances, causing the outflow of insured people to private insurances. Third, the federal government continued to adopt policies to control medical expenditures. Especially after 1977, the partial burdens on patients have increased due to a shift in focus to medicines. The Statutory Health Insurance System Modernization Act (GKV-Modernisierungsgesetz) in 2004 adopted a self-pay burden in outpatient practice. In the context of such reforms, the direct finance from households has been raised and has been one of the pillars that support its increasing medical expenditures as a result. The emergence of consultation restraints, mainly around the low-income groups, is considered a problem.

In order to address the gap in insurance premiums and the outflow of insured people to private insurers, the Statutory Health Insurance Competition Strengthening Act (Gesetz zur Stärkung des Wettbewerbs in der Gesetzlichen Krankenversicherung) was enacted in 2007. This act made it obligatory for people to either join the public medical insurance system or obtain private medical insurance to achieve universal healthcare, and fundamental reforms to integrate the insurance premium in the public medical insurance were implemented in 2009. In order to perform a distribution of resources by the unified premium rate, the Central Healthcare Fund (Gesundheitsfond) was established. The sickness fund has lost the majority of the determination right in terms of revenues due to setting up insurance premium rate, but still has the controlling right of revenues in the form of additional insurance premiums.
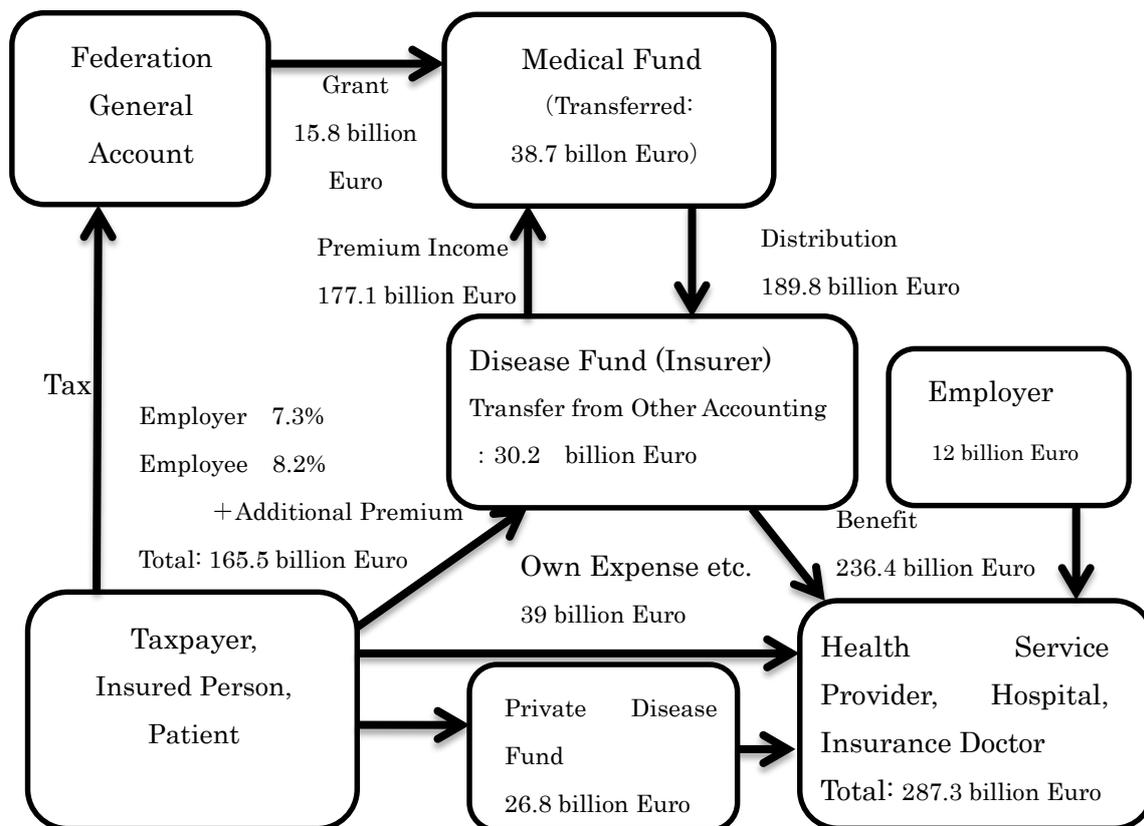
Figure4 Flow of intergovernmental fiscal relationships in the German heath care funds (2010)

Source: Sachverständigenrat zur Begutachtung der Gesamtwirtschaftlichen Entwicklung, Gesundheitsausgaben in Deutschland, Bundesversicherungsamt, Ein und Auszahlungen des Gesundheitsfonds nach Auszahlungsmonaten 2010.

3.3 The Netherlands

In the Netherlands, the Health Insurance Act (ZFW: Ziekenfondswet), which provides short-term insurance, was enacted in 1965 and the General Exceptional Medical Expenses Act (AWBZ: Algemene Wet Bijzondere Ziektekosten) was introduced in 1968. The healthcare system reform in 1986 required the self-employed and employees who earn less than a certain income level to subscribe to the ZFW medical insurance. Employees who earn more than that level are required to subscribe to private medical

insurance, as per the by the Health Insurance Access Act of 1986 (WTZ: Wet op de toegang tot Ziektekostenverzekeringen) (Omori 2012). In this regard, the fiscal equalization among insurers allowed people to purchase the same benefits as obligatory insurance at reasonable premiums without an obligation to join the WTZ insurance, and the mutual fund law to the sickness funds that have elderly people with a high disease risk as insured persons were introduced. The unification of the short-term insurance system was achieved by the Health Insurance Act (ZVW: Zorgverzekeringswet) in 2006.

The AWBZ insurance, which provides long-term healthcare, imposes income-related premiums on wages that are determined by the central government. This insurance program constitutes a rapidly growing component in the structure of medical expenditure. Beyond that, it is necessary for recipients of benefits to pay expenses among them on a capitation basis. Basically, the benefits are in kind, but it allows for the receipt of government's subsidies, capital benefits from the Care Office, and allows people to choose the pension fund for the Dutch printing industry (PGB: Persoonsgebonden Budget) to purchase a free service and receive informal care. Healthcare packages and service prices by the AWBZ are also determined by the centralized control, and the Central Administration Office (CAK: Centraal Administratie Kantoor) pays its medical expenses from the fund managed by the Healthcare Insurance Board (CVZ: College voor Zorgverzekeringen) according to the medical examination invoice.

The short-term medical insurance ZVW is characterized by a private commercial insurance company called Care Insurer. Despite being a private insurance company, it is not allowed to refuse anyone who applies for insurance, and is obligated to sell fundamental insurance determined by the government. The ZVW negotiates with service suppliers such as hospitals, medical experts, and doctors about the price of medical service, its quality, and medical service fees to the insured and concludes a contract. The price of medical service is regulated by the Health Care Charges Act (WTG: Wet Tarieven Gezondheidszorg) and it is negotiated up to a ceiling of the medical treatment fee mark determined by the Healthcare Tariff Board/ Healthcare Authority (CTG/ZAio: College Tarieven Gezondheidszorg/ ZorgAutoriteit). Care Insurer is allowed to differentiate its insurance products, but is prohibited from differentiating insurance premiums.

The ZVW insurance premiums are characterized by a two-tier system of a proportional income premium part and a fixed amount premium part. The proportional premium is determined by the centralized control. Children of people who are insured under the age of 18 are not required to pay insurance premiums, and the insurers are subsidized by the central government in order to compensate for this financially. The

proportional income premiums are pooled in a general fund and this fund is transferred on a distribution basis along with the budget set by the Ministry of Health, Welfare, and Sport. Proportional income premiums of the AWBZ and the ZVW are combined with other insurance premiums and integrally collected with income taxes. Deduction of tax exemptions from the insurance premium burden enables the reduction in burden on the low-income class, and the revenue is compensated by the central government accordingly. On the other hand, the fixed insurance premiums, which are paid for by the affiliated insurance company directly, account for about 40% of the total ZVW healthcare financing program, but this fixed insurance premium rate is different for each insurer and can be freely determined to some extent. There are 170,000 uninsured individuals that constitute 1% of the population, and 210,000 delinquents for more than 6 months (Willemijn Schafer et al. 2010).

The fiscal structure in the Netherlands can be summarized as follows. The medical insurance system is separated into the AWBZ for long-term healthcare and the ZVM for short-term healthcare, and each system has different features. The former consists of income related insurance premiums and has caused a rapid increase in medical expenditures with a concentrated insurance function structure. The latter consists of income related insurance premiums and fixed insurance premiums, and the rate of income related insurance premiums and benefit packages are determined by the central government, but Care Insurer finances its own revenues by its fixed insurance premiums since it cannot meet expenses only with revenues based on income related insurance premiums. The insurers decide medical service fees by negotiation, but the ceiling is set by the centralized control. As for the ZVW, the centralized control has effective control over only expenditure contents and the price ceiling and there is a safety valve for each Care Insurer to increase the fixed insurance premium rate in order to finance revenues and meet service contents regulated by the government. Delinquency in the context of a regressive burden created by fixed insurance premiums is a significant problem though.
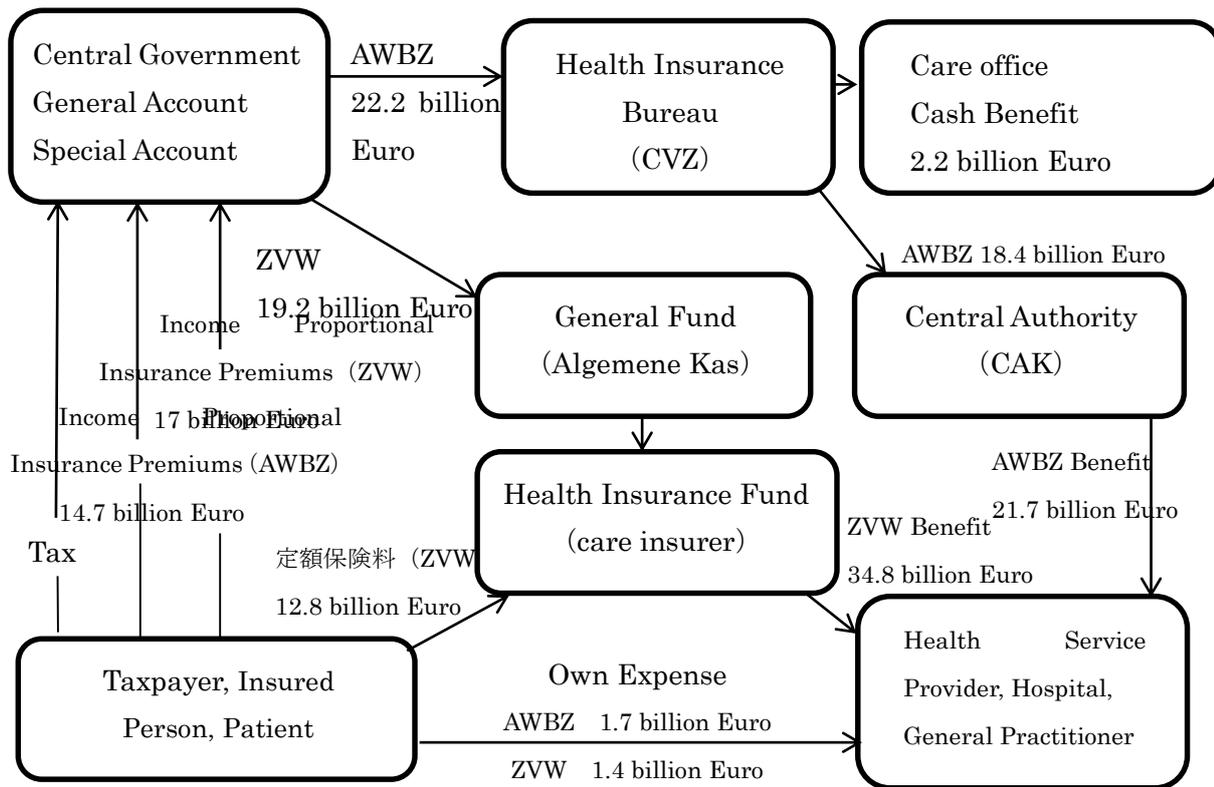
Figure5 Flow of intergovernmental fiscal relationships in the Dutch heath care funds (2010)

Source: Omori (2011); Leyden Academy on vitality and ageing (2013)

3.4 France

The medical insurance in France was established around its employee's income indemnity due to sick leave. Thereafter, is separated into multiple insurers in a demographic group, except for the employees and the general scheme (régimes général) that is intended for industrial and commerce employees that constitute 80% of the population. In the sickness fund in the general scheme, there is the National Health Insurance Fund for Salaried Workers (CNAMTS ：Caisse nationale de l'assurance maladie des travailleurs salaries), the Regional Sickness Insurance Funds, and the terminal insurers in the Sickness Insurance Primary Fund. These are self-managed by the council consisting of representatives from employees and employers.

The out-of-pocket expense in medical expenditures based on redemption payment is high and the self-pay ratio was about 20% in 1990, but it has increased to

about 30% in 2010. The majority of self-pay is paid by the quasi-public insurance called supplementary insurance, so the final household burden share of medical expenditures is no different. The insurance premium rate, the self-pay burden level, and the indication of total medical expenditure are controlled by the centralized mechanism. A series of reforms called the Juppé Plan, aimed at healthcare cost control, were implemented in 1995–1996, and expenses have been controlled using the National Goal of Health Insurance Spending (ONDAM), which is determined by the central government council as guides. Moreover, the Regional Health Agencies (ARS: Agence régionale de santé) that integrate the authority of government and the authority of sickness fund regionally was established, and the insurer function was centralized. Since 2004, the National Union of Health Insurance Funds has been organized as a union of all sickness funds and the centralized control has been enhanced even further.

What attracts attention as revenues of social security spending is fiscalization of social insurance. At the same time as the General Social Contribution (CSG: Contribution sociale généralisée) was raised in 1997, the medical insurance rate of employee's burden was lowered. Personal object of contribution and benefit do not coincide due to wage-basis assessment insurance premium, which makes it difficult to universalize its healthcare system.

In order to achieve universal care, the Universal Health Insurance Coverage (CMU: couverture maladie universelle) was introduced in 1999. This system is a two-tier program of the basic Universal Health Insurance Coverage (CMU) program to promote generation of medical insurance in connection with obligatory system and the supplementary CMU program to guarantee medical benefits for lower income groups.

The increase in medical expenditure in the universal healthcare system can be attributed to securing medical supply for lower income groups and the demand of long-term care of the aging population. In the context of a relatively huge amount of medical expenditure, various containment policies ware implemented in Europe. On the contrary, the expansion of coverage in medical insurance brought about an increase in the medical spending. The features of financing revenues for this can be summarized as follows.

First, the expansion of coverage of social insurance expanded the role of the CSG (Contribution sociale généralisée). Since the introduction of the CSG and the reduction of employee's burden in medical insurance, taxes have been increased and the imposition base of the CSG has been expanded under the structure where insurance premiums and the CSG are mainly paid by employers and employees respectively.

Second, the role of supplementary insurance has been expanded. While the rate of the CSG has been increased in public sector financing, the rate in public sector has

been expanded every year in the composition rate of the public sector and the private sector. The control of the insurance premium rate, the CSG and other revenues, and the target setting of total expenditure are centralized, but the self-pay rate increases in the event of revenue shortages. An increase in the self-pay rate causes an increase in the redemption amount by the supplementary insurance. Furthermore, in its early days, 80% of revenues in the supplementary CMU were injected by tax resources by the national treasury. Namely, while fiscalization of public finance, there was a drastic conversion from the taxation scheme to the insurance scheme in the revenues of the supplementary CMU, which substantially support generalization of medical insurance based on the high self-pay rate.

Third, the public finance of medical insurance funds hold deficits for a long time. This ended with a deficit of 11.6 billion euro in 2010, and the debt that was transferred to the Social Debt Repayment Fund will be eventually paid by the Social Debt Repayment Contribution (CRDS: Contribution au remboursement de la dette social). The insurance premium rate, price of the CSG, and injection of taxes are controlled by the centralized mechanism, and spending is also controlled by Council. Nonetheless, there is an aspect that a safety valve such as increase in the self-pay rate, the supplementary insurance, the deficit of insurance finance, and the CRDS, has supported the increase in new revenues in increasing medical expenditures.
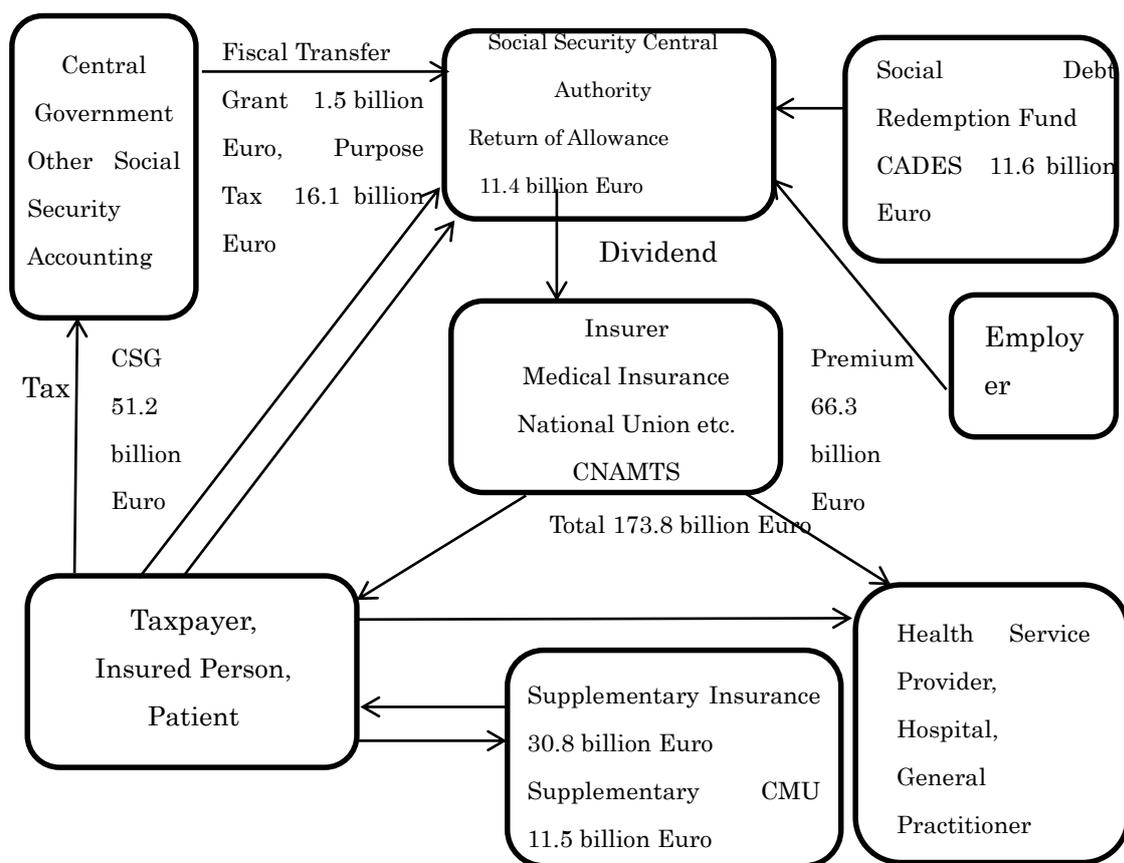
Figure 6 Flow of intergovernmental fiscal relationships in the French heath care funds (2010)

Source : Cour des comptes（2012 CERTIFICATION DES COMPTES DU RÉGIME GÉNÉRAL DE SÉCURITÉ SOCIALE - EXERCICE 2011 -, Direction de la recherche, des etudes, de l'evalution et des statistiques, Comptes ntionaux de la santé en 2011

3.5 England

The U.K, which is considered to be "Social Security Homeland", is known for its adoption of a universal healthcare system by the taxation method. The prototype of this healthcare system can be found in National Health Service Act of 1947 that was established after the Beveridge Report in 1942. One of its basic principles is to overcome poverty, sickness, ignorance, dirtiness, and idleness that hobbled the postwar reconstruction (Mouri, 1999). This universal medical care provision system has had problems since its inception. The rising medical cost since the 1970s, and the response to patients awaiting hospitalization (Waiting Lists) destabilized its medical system and

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required several reforms. Therefore, the private insurance sector has been developed so that it is possible to get medical attention beyond the framework of the NHS, in the event of an extremely long waiting time.

The reform in the period of the Thatcher and Major administration gave rise to much controversy. As a result of the rapid increase in medical expenditures since the 1970s, the Tories tried to suppress medical expenses and maintain the level of services by the introduction of a competition principle to the healthcare system (the "internal market"). This was done by the enactment of the National Health Service and Community Care Act 1990. By this reform, however, the disparity in accessibility of medical service was becoming increasingly apparent and it developed into a social problem. Under such circumstances, the healthcare system reform intended by the Blair and Brown administration, which took the reins of government from the Tories, was to supply medical services to the people universally while emphasizing efficiency for cost containment. Therefore, this administration brought a concept of partnership into the healthcare system, setting back the competition principle introduced by the Tories administration. Improvements such as the trend toward shorter hours of waiting time have been observed thanks to increasing supply of medical services with increasing of medical expenditures, such as an aggressive increase in budget by the central government, and the introduction of fee-for-service system from the control by gross budget to the Primary Care Trust (PCT) with a policy intention (National Federation of Health Insurance Societies, 2012).

About 80–90% of financing has been subsidized by the general account in the long term, and the remaining portion has been subsidized by the NHS and the patient's own payment. The transfer from the NHS paid by employer and employee started in 1950, and the rate of the NHS revenue has recently remained at about 15%. Furthermore, the burden on patients such as the cost for prescriptions hovers around 2% today, recording the highest value at 4% in 1990. In the budgets from 2011 to 2012, 101.3 billion GBP was allocated to the Department of Health, 96.5 billion GBP was distributed to the PCT, after which it came to the Primary Care treated by the GP (General Practitioner) and the Secondary Care provided by Hospital within the NHS Trust. Thus, the payment system of medical service fees was that the PCT paid them to each surgery or hospitals called the NHS Trust.

However, the UK's economy was not independent from the financial crisis triggered by the Lehman Shock. Interest on government bonds increase to more than 44 billion GBP due to repeated public spending, which strained the financial situation. Therefore, the Conservative Party administration headed by Cameron got its sights on

fiscal consolidation and started to reform the healthcare system. What was proposed in the process was the White Paper in 2010. It can be said that this paper is characterized by indicating the free choice of patient's consultations and it aims at decentralization and optimization of the healthcare system, and significant reduction of the management cost. By the reform, the PCT was abolished in April 2013 and integrated into 212 proposed Clinical Commissioning Groups (CCGs). The Strategic Health Authorities were replaced by the NHS Development Authority.

The healthcare supply system described above has been reformed since April 2013. The PCT has been abolished and the CCG including the GP was established. The aim was to reduce the management cost by simplifying the PCT process to close a contract with each surgery or GT. Moreover, the proportion of the NHS budget in CCDs is expected to be about 60%, although 80% of the NHS budget was managed by the PCT before this reform. Moreover, traditionally, the GP has funded itself from each PCT, but is now integrated into the CCG.

Finally, this paper discusses the reimbursement system in the UK. Medical service fees in the UK are mainly determined by the comprehensive reward according to the number of registrants and the special bonus or result reward. Basically, the former was classified only by age group, but it has been reinvented to a more accurate system due to the subsequent reform. On the other hand, the special bonus or result reward is generally a fee-for-service reimbursement that is paid to the GP when it provides medical care after office hours such as overtime work or high quality medical service.
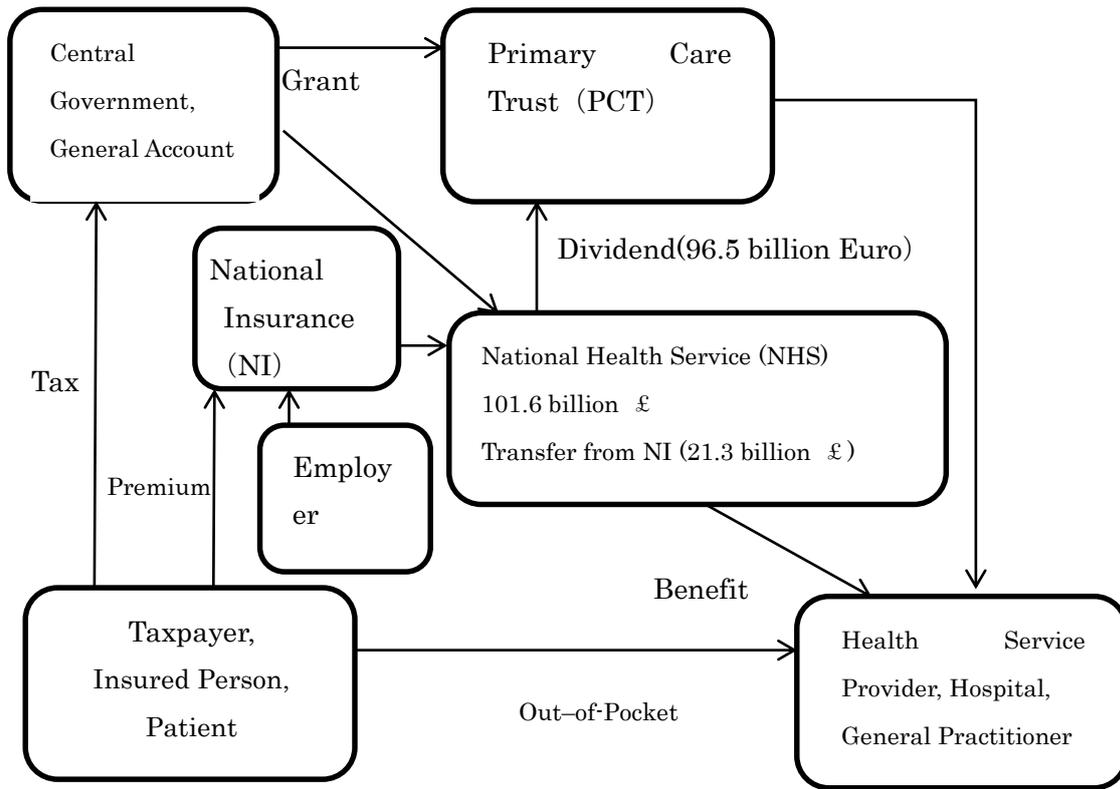
Figure7 Flow of intergovernmental fiscal relationships in the England heath care funds (2010)

Source : Department of Health (2011) "Annual Report and Accounts 2010-11", HM Revenue and Customs (2012)"Annual Report and Accounts 2011-12"

3.6 Sweden

There are two characteristics of the universal service supply and finance through taxation in the health care system of the Nordic countries. The common characteristics of fund composition are 1) an extremely high level of public medical expenditures of the general government, 2) a low proportion of the private sector, and 3) a high proportion of the local governments' medical expenditures. However, the medical policy in Norway is funded with revenues from social insurance premiums in addition to tax revenues. The Scandinavian countries are well known as a compassionate social security system, but they are confronted with several issues. First, elimination in the increase in wait time is required. Second, the financing of resources with respect to an

increase in healthcare demand due to the decline of population.

The three Scandinavian countries had left the healthcare service supply to prefectural administrative organizations by the decentralization reform in 1970s. In Sweden, counties (Landstings) are in charge of the responsibility and supplier of the second medical care. After the aged person nursing care reform (Adel-Reform) [17] in 1992, Municipalities (Kommuns) at the municipal level are in charge of the responsibility for long-term medical services for the aged. The proportion of fiscal revenues in counties is mainly about 71% of local tax, 17% of government general subsidy, and 3% of specific subsidy respectively (2009). Although counties have adopted a horizontal fiscal equalization system, the influence of this system over revenues is relatively limited. The distribution amount of general subsidy accounts for about 17% is determined by equalization of differences among the number of residents, specific needs and tax bases between governments for the purpose of ensuring a certain service level (Anell, A., A.,H.,Glenngård and M.,Sherry, 2012, p.58). The specific subsidy is predominantly used for funding drug and prescription costs. In particular, the cost of expensive drugs has a redistribution function between prefectures.

The following three points are important for understanding the relationship between the trend of medical expenditures and the fiscal structure. First, according to the fiscal equalization system reform in 2005, income equalization of the early system has essentially replaced by a central government financed income equalization, and the general central government grant to municipalities and county councils was phased out (Statistiska centralbyrån,2008, p.64)..

The second is the increase in wait time. The wait time problem is serious and this has been considered a vulnerable point of Sweden's medical service. Thus, the guarantee scheme of a waiting period within three months for twelve specific treatment items was introduced in 1992. In 2005, a "0-7-90-90" rule was introduced as a more comprehensive system. This system guarantees an immediate contact to a healthcare provider (zero days), a GP's medical treatment within 7 days, specialist treatment within 90 days, and re-treatment within 90 days. These wait time guarantee systems in 1992 and 2005 guarantee access of patients exceeding the certain waiting period to hospitals without the additional burden within the Landing or other Landings. The country is supposed to compensate the other prefecture's burden as a subsidy if a patient accesses to a hospital in another prefecture (Anell, A., A.,H.,Glenngård and M.,Sherry, 2012).

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[17] The funds of dental treatment for ages 20 or less people is consisted of national social insurance financed by employment tax(Anell, A., A.,H.,Glenngård and M.,Sherry, 2012, p.56）.

The third is the policy for the restriction of medical expenditures. Almost all Landings abolished the existing fixed-distribution method and introduced a purchaser-provider model. This model is a contract method based on a qualitative evaluation, a limit of its price and amount, and a comprehensive payment under the DRG (Diagnosis Related Groups) method. Moreover, about half of all payments to hospitals by Landings are based on the global budget method (Centre for Health Economics, 2007.p.13).
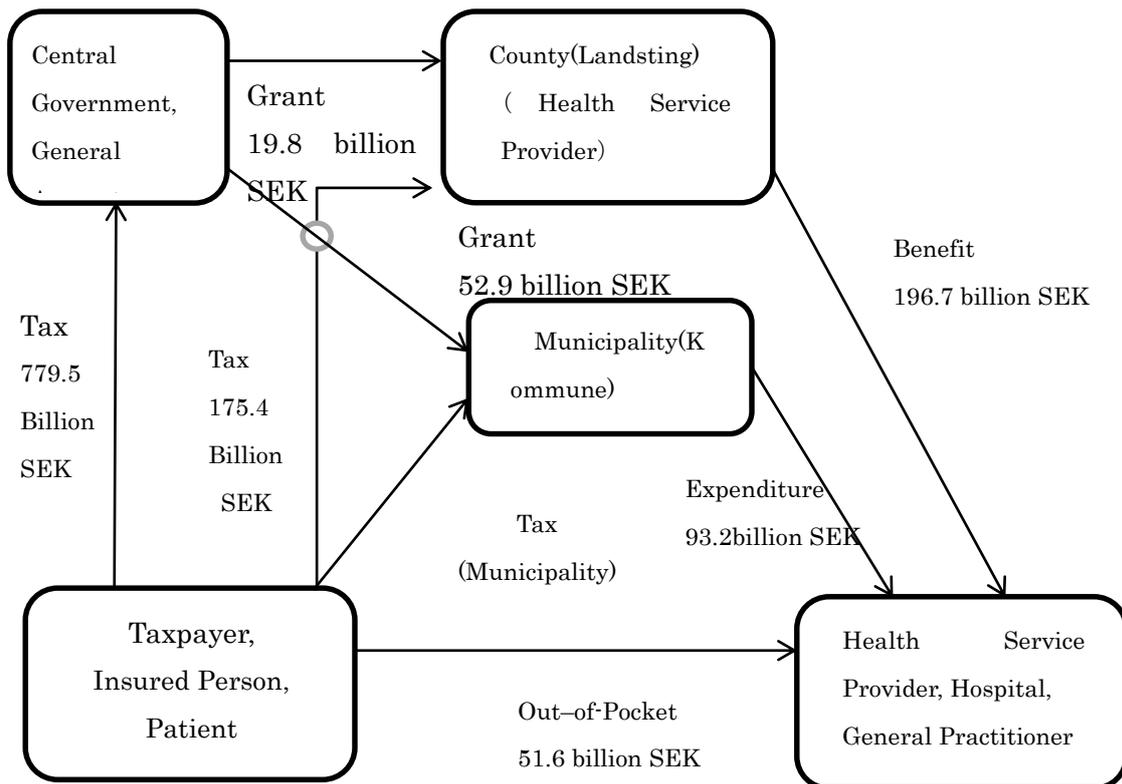
Figure8　Flow of intergovernmental fiscal relationships in the Swedish heath care funds (2010)

Source: Sweden Statistics, OECD Health Data（one's own expense）.

3.7 Denmark

In Denmark, the administrative entity of the secondary medical services is the prefectural level governments called counties (Amter) and its financial revenues are supplied by the County's local tax (95%). The municipality (Kommune) that corresponds to a municipality is in charge of nursing home, visiting care service, and promotion of

preventive care. Fourteen counties were abolished and integrated into 5 regions that have independent revenue sources due to a reform of the local administration in 2007. Eighth percent of the medical contribution (Sundhedsbidrag) was imposed on the tax base of county's taxes In accordance with the abolishment of county, this contribution is not a purpose tax, and medical expenditures are determined by budgetary control (Olejaz et al.2012, p.65). In Denmark, nonprofit private medical insurances are relatively popular and about 40% of the population subscribes to some sort of private medical insurance. The most common insurance among them is the 'Denmark (Danmark)', which used to be a sickness fund and about 34% of the total population subscribes this insurance (Pedersen2005, p.546).

The region's revenues consist of a comprehensive subsidy from the national government (79%), a subsidy related to the national activities, a basic subsidy from the local government (7%), and a subsidy related to the local activities. The national comprehensive subsidy which occupies the largest portion of it is calculated by the total of a basic allocation amount (1 billion DKK[18]), local expense needs related to age, And local expense needs according to socioeconomic criteria (økonomi og inderigsministeriet2013, p.10). The activity-based subsidy was introduced in 1997 and is calculated based on the total amount of county's (region's) specific healthcare service. The lower limit is set in this subsidy and this aims at providing incentives to increase healthcare supply to counties (Regioner).

Municipality's basic payment is fixed at 1,000 DKK per resident, but an activity-based allocation depends on the number of outpatient, inpatient, and service recipients from the GB and adopts a system to bear 10% of hospital treatment cost. This municipality contribution for a part of funds in the medical policy is intended for prevention projects to reduce the financial burden of the medical policy (Ministry of Health and Prevention 2008, p.12f, Council of Local Authorities for International Relations, 2006, p.14).

The total budget method distribution and the activity-based fund account for 30–50% and 50–70% in the contribution to the region's hospital, respectively (Olejaz et al.2012, p.76). When the activity-based fund was first introduced, it was obligated to allocate more than 10% of the activity-based allocation to hospitals. However, thereafter, the ratio of the activity-based allocation has been increased to 20% in 2004, and 50% of the distribution was mandatory in 2007.

The relationship between the medical expenditure and the fiscal structure in Denmark has the three following features, similar to that of Sweden. The first is the

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[18] Denmark Krona (DKK) is the national currency in Denmark.

broadening and centralization of the healthcare supply system. The reorganization of local administration from county to region in 2007 expands its scale of healthcare supply area, but the major revenues in regions were occupied with the general subsidy from the national government. Furthermore, the central government tried to control the local governments by increasing medical supply with the activity-based allocation for regions and granting incentive to increase the preventive medical care for municipality.

The second is the measures for the waiting time problem. The waiting list problem (Ventetidsproblematik) has become a major political issue from 1980s to 1990s. It has basically offered for outpatient and inpatient care in county's hospital in the past, but the introduction of hospital free choice system in 1993 enables people to visit and come into every hospital throughout the country (Suganuma 2005, p.113). The center-right government that achieved a change of administration in 2001 proposed a guarantee system of the treatment waiting period. When a waiting time exceeds the guaranteed time, a patient can choose a private medical facility that provides a similar treatment (hospital free choice system), and the treatment costs is paid by the local government instead of by the patient. After 2002, the freedom of choice scheme has been expanded and medical treatment in other hospitals is receivable regardless of being at home or abroad, in the case of more than 2 months waiting period. At the same time, the criteria of the activity-based allocation has been improved and expanded in order to grant financial incentive for shortening of waiting periods (Onishi 2007, p.10). Accordingly, 90 days of waiting period on average at the start of its administration in 2001 has been shortened to 57 days on average in 2005 (Yasuoka, Suzuki 2010, p.21).

The third is the control of medical policy costs. The Economic Agreement in June 2002 introduced the DRG scheme for settlement of medical service fees between the activity-based allocations. Some counties introduced this on a trial basis in January 2003, and was introduced all the counties in 2004 (Suganuma 2005). Moreover, the municipal actively-related contribution mentioned is intended to reduce the medical expenditures through the prevention project.

```
Central                    Region/County
Government        →        (Health    Service
General Account            Provider)

        Grant              Contribution
        79.6 Billion DKK   17.2 Billion DKK

Tax                        Municipality
                           (Kommune)                    Benefit94.3 Billion DKK

                  Local Tax
                  31.9 Billion DKK

Taxpayer,                                    Health        Service
Insured Person,              →               Provider, Hospital,
Patient                                      General Practitioner
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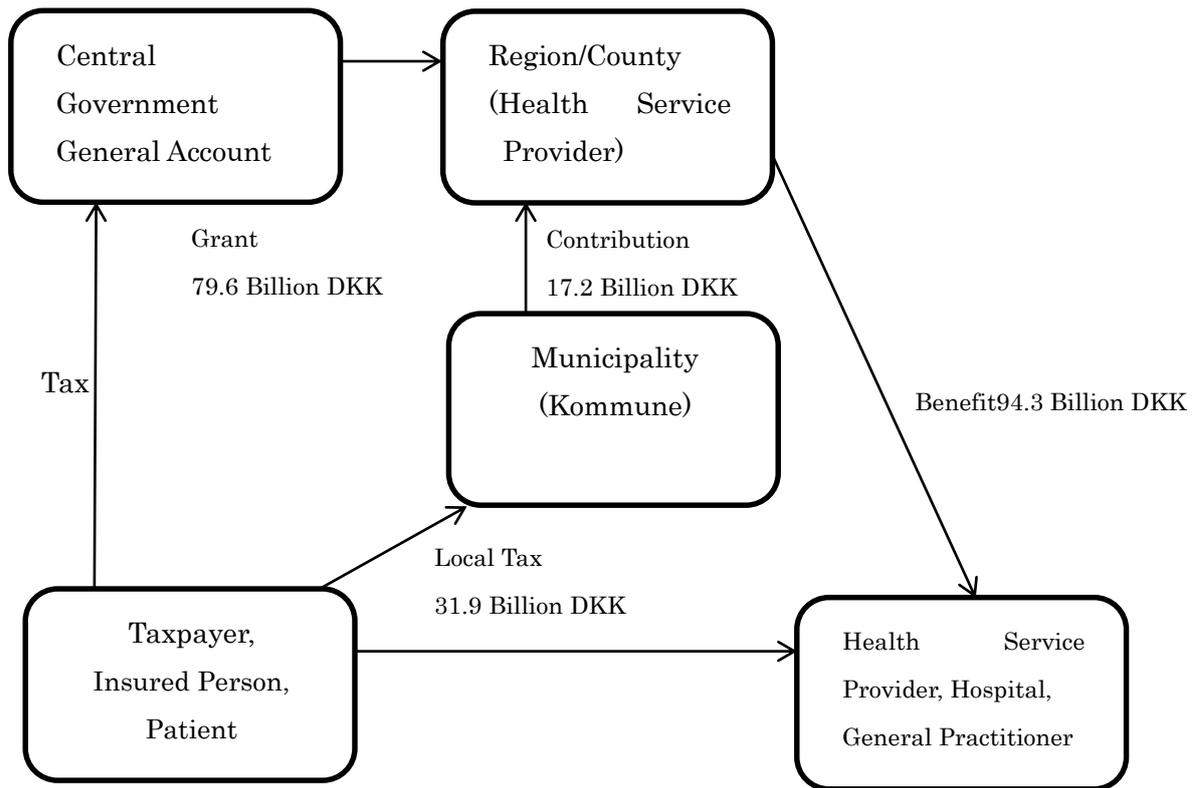
Figure9 Flow of intergovernmental fiscal relationships in the Danish heath care funds (2010)

Source: Statistics Denmark; OECD Health Data

3.8 Norway

　　Before 2001, the county (fylke) or a prefectural level government was the supplier of secondary healthcare and its revenues were funded by an independent local tax and a fiscal adjustment. The responsibility of medical supply was transferred from county to the central government in 2002. Correspondingly, 25 regional health enterprises (RHF: Regionalt helseforetak) that are the administrative body on 4 medical areal units managed by the country, are in charge of fiscal responsibility and the supply of medical services. The RHFs have no independent fiscal resources, and its fiscal resources are mainly a basic activity-based allocation, and they depend on fiscal transfers from the central government[19].

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[19] In 2007, the funds of treatment for physical patient consists of about 60% of basic allocation and about 40 % of activity-based allocation（The Directorate for Health and Social Affairs, 2007, p.11）.

The basic allocation is determined based on the population density and the number of resident in the RHF. This allocation is able to equalize the difference between needs and unit prices of the RHF secondary medical service. The activity-based allocation is determined based on treatment results of patients. This allocation is medical service fees based on the DRG method[20] and the allocation is distributed to the RHFs by the country. However, each RHF has an independent responsibility for medical supply and fiscal management (Directorate for Health and Social Affairs, 2007, p.11f). The country provides outpatient-specialized hospitals with a direct subsidy and an activity-based allocation.

The National Insurance Scheme (NIS) in Norway is partially used for fiscal revenues of special medical treatments in private healthcare. The fiscal revenues of the NIS consist of insurance premiums paid by employees and self-employed, employer's contributions, and the central government's contributions. The NIS is an important primary care provider. The GP System was introduced in 2001. The municipal level government has the authority for providing primary care, and the comprehension payment of medical service fees to GPs is left to a decision in the municipal level's negotiations. Municipalities close a contract with GPs and NIS subscribers have free choice of GPs from a list provided by municipalities. Treatment in the hospital or special treatment applies the NIS when a patient gets medical attention introduced by the GP; in other cases the full expenses are required[21] (Policy Research Institute 2006).

The characteristics of the relationship between medical expenses and the fiscal structure of secondary medical care are as follows. First, the activity-based allocation is a measure for the waiting time problem and increase in medical expenditures. From 1980 to 1997, the comprehensive subsidy had been transferred from the central government to county. This subsidy was to provide a fixed amount of fiscal revenues for hospital management and other activities (secondary school, culture, and transport). This subsidy restrains medical costs but caused the wait time problem. Therefore, this subsidy was revised and modified to a subsidy in proportion to output called the activity-based allocation in 1997. Concern for an increase in expenses for other areas with jurisdiction over county increased a comprehensive subsidy. In 1997, this subsidy

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[20] Nordic DRG（Nord DRG）has been promoted to develop by The Nordic Medico Statistical Committee since 1994, and has been used in the Nordic countries expect for Iceland since 2002（Matsuda 2003, p.96; Directorate for Health and Social Affairs2007）.

[21] Most of participant's expense is guaranteed by NIS. Taxpayers who can prove extra expenses (at least 6120NOK (Norwegian Krone) more) due to permanent illness are entitled to a special deduction in the tax base equal the amount of the expenses (Jonsen 2012, p.40ff.）.

consisted of 35% of the activity-based allocation and 65% of the comprehensive subsidy, this amount is piecework system based on the DRG, and the fluctuation is large every year since it is determined by the governmental congress. In 2005, the ratios of the activity-based fund and the comprehensive subsidy are reversed to 60% and 40% respectively, but in 2006 the proportion of comprehensive subsidy (60%) was larger than that of the activity-based fund (40%) again (Siciliani et al.(ed.)2013). The activity-based allocation does not cover all expenses and aims at reduction of the waiting time and substantially increasing the medical supply (Johnsen 2006, p.52ff).

Second, the waiting time problem has become a medical policy issue in Norway as well. However, the policy to control the waiting period in this country is a unique format. The hospital groups patient's diseases into 6 types and sets the maximum waiting period requiring specialist medical treatment. Its feature is to set a shorter waiting period based on the priority, but a decreasing trend of the waiting time cannot be confirmed.
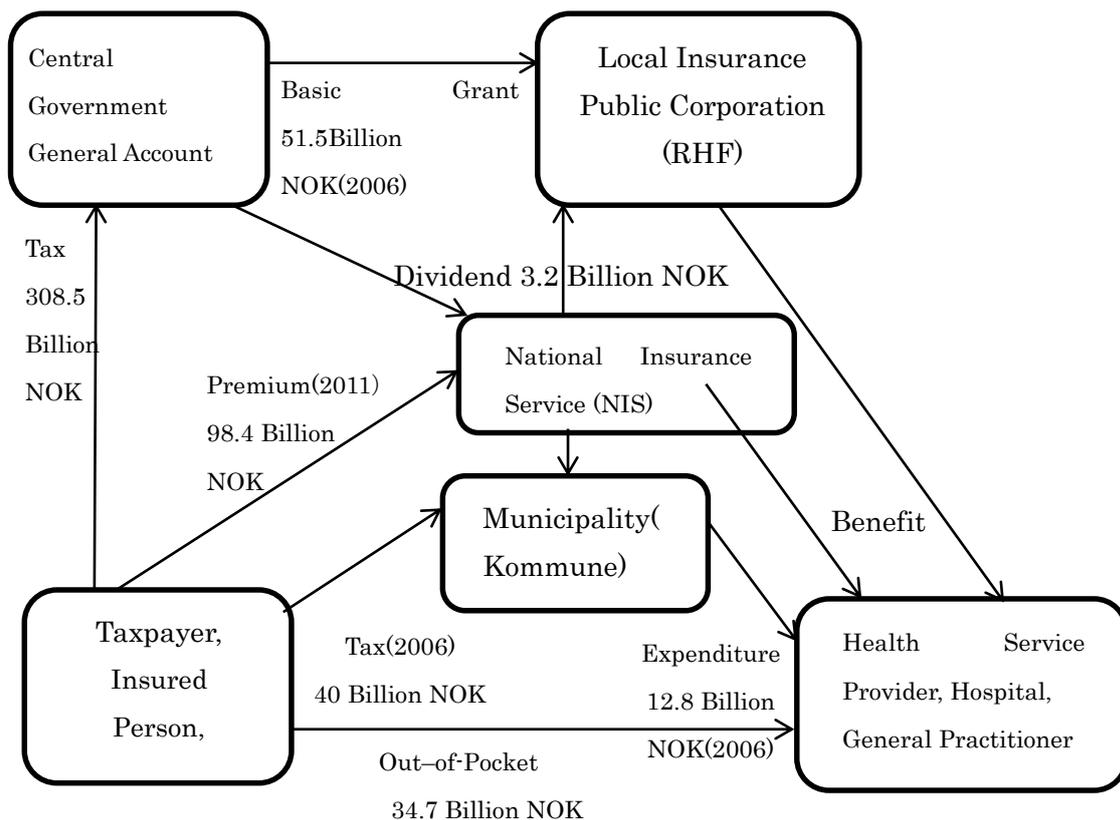
Figure10 Flow of intergovernmental fiscal relationships in the Norwegian heath care funds

Source: Norway Statistics, Social-og helsedirektoratet, Activity-based funding of health services in Norway, 2007, p.25, Local Government in Norway, 2008, p.22ff.

3. Comparative Analysis on Financing Structure of Health Care system

This section organizes the findings of this paper. First, when focusing on population aging, it is difficult to measure the ease of finance only by the classification into the insurance scheme or the taxation scheme. Japan and Germany that adopted the insurance scheme saw an increase in medical expenses despite a constant ratio of aged people. The Netherlands and France have medical expenditures per capital that increased faster than that of Japan and Germany. On the other hand, the trend of medical expenditures in countries that adopted the taxation scheme is not uniform: we can distinguish between the C-Shaped curve of Sweden and Denmark, and a comparatively constant increase in medical expenditures of the UK and Norway. However, the trend of medical expenditures in these countries after the financial crisis of 2008 has shown a similar slowdown in growth of medical expenditures, except for in Japan and Germany.

Second, private insurances play the role of a safety valve and contribute to the growth of medical expenditures per capita, although there are substantial big differences among these countries. The fixed insurance premiums of the Netherlands' ZVW and the supplemental insurance in France make the final accounts balance of medical policy financing. Moreover, medical consultations beyond the framework of the NHS using private insurance support medical demands in the context of the waiting time problem.

Third, the fiscal structures are divided into centralized control or decentralized control regarding each expenditure control, such as the determination of medical service fees and financing, and these structures are categorized in a different way based on the financing choice between the insurance scheme or the taxation scheme (Table 3). The authority in regard to financing is centralized in the Netherlands, France, the UK, and Norway and these countries have relatively increased medical expenditures during the analysis period. On the other hand, countries such as Japan, Germany, Sweden, and Denmark have a decentralized financing authority and the growth of medical expenditure is relatively low. Although certain reservations are needed to consider only the growth rates due to a difference in the level of original medical expenditures, Norway, which has the lowest ratio of aged people has achieved the highest growth rate, and it is believed that the arrangement of the financing authority is related to the background of medical expenditures that have not increased as much as in Japan and Germany.

In particular, when the central government has no financing authority, it is not possible to implement a policy to increase medical expenditures politically. The central government increased fiscal expenditures through the activity-based allocation on a

piecework payment basis in Norway or through piecework payments and the increase in budget for the increase in medical expenditures in the UK. The fiscal transfer from the central government has increased in Sweden as well, and the activity-based allocation was introduced in Denmark. However, the scales at which this was done are relatively small as compared to that in Norway, and less centralized financing is involved. In the Netherlands, the AWBZ for long-term care is controlled by the centralized mechanism and the availability to secure fiscal resources by the unified income-based insurance premiums makes it possible to drastically increase medical expenditures.

As for the control of the expenditure, such as the determination of medical service fees, the social insurance scheme is more centralized as compared to the taxation scheme, but it does not allow us to draw a uniform conclusion regarding medical expenditures. The social insurance scheme has no choice but to centrally set medical health insurance treatment menus and each price; thus it is difficult to control the total budget. However, it is not impossible to strictly control the total budget as Germany has done to insurance doctors, but the meaning of the setting of a medical treatment fee mark is diluted. On the other hand, the taxation scheme basically controls expenditures through the budget. In particular, it is possible to control medical expenditures if the GP system is introduced, or comprehension payment or total budget for the payment to the GPs or hospitals is adopted. However, they cause the waiting time problem, which ends up increasing the budget or partial subsidies or bonuses on a piecework payment basis.

While taking account of the analysis in this paper above, this section corrects the argument by Mossialos and others. The classification of the insurance scheme or the taxation scheme is important as ever, but it is not possible to decide easily on which scheme ensures finical resources in the context of the non-uniform fiscal demands of medical policies. With a certain medical service fee determined by the centralized mechanism as a background, it is the social insurance scheme that can constantly secure financial resources in response to an increasing medical demand due to an aging society. Nonetheless, when the setting of an insurance premium rate is determined by the centralized mechanism, it is easy to secure additional financial resources. It is possible for the taxation scheme to secure additional financial resources, even though there is a tendency to control medical expenditures even if medical demands expands in a downward phase, since the insurance scheme/centralized finance and the taxation scheme strongly receive political insurances. It is easier to increase medical expenditures in the taxation scheme countries when there are the centralized finance and budget/ subsidy on a fee-for-service basis. Thus, the centralized-decentralized arrangement of the budgetary control, in particular, the financing authority is of importance in addition

to the framework of an insurance taxation.

The analysis of this paper is extremely narrow analysis to fully understand the relationship between the growth of medical expenditures and the fiscal structure. This paper has especially not analyzed some important issues in medical policy, such as the relationship with income distribution, the relationship with management status and introduction of the primary care such as the GP, and the relationship between quality and supply of medical care. These issues are possible subjects for future research.

	Fiscal scheme	Fiscal resource	Payment for medical service	Increase ratio of health expenditure
Japan	Insurance scheme	Decentralized	Centralized	188%
Germany	Insurance scheme	Decentralized	Centralized	143%
Netherland	Insurance scheme	Centralized	Centralized	257%
France	Insurance scheme	Centralized	Centralized	179%
United Kingdom	Taxation scheme	Centralized	Decentralized	257%
Sweden	Taxation scheme	Decentralized	Decentralized	134%
Denmark	Taxation scheme	Decentralized	Decentralized	192%
Norway	Taxation scheme	Centralized	Decentralized	297%

Table3 International comparison of financial structure and health policy (1990-2000)

Source: the authors made

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	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General Government	5.1%	5.3%	4.4%	2.3%	16.6%	2.3%	2.5%	2.9%	3.0%	4.9%	5.4%	6.3%	-1.0%	3.4%	4.2%	3.8%	3.8%	3.0%	4.2%	1.0%
Central Government														0.0%	0.1%	0.2%	0.1%	0.0%	0.3%	-0.2%
State/provincial government																				
Local/municipal government														0.1%	0.0%	0.1%	0.1%	0.2%	0.2%	0.1%
Social security funds	5.1%	5.2%	4.3%	2.0%	**13.5%**	2.1%	2.3%	3.0%	2.9%	4.5%	5.1%	5.6%	0.5%	3.3%	4.0%	3.5%	3.5%	2.9%	3.8%	1.2%
Private sector	2.0%	1.2%	1.5%	1.4%	-0.5%	0.7%	0.5%	0.9%	0.9%	1.3%	1.4%	1.3%	2.1%	1.1%	1.2%	1.8%	1.0%	1.5%	1.0%	0.4%
Private insurance	0.8%	0.7%	0.9%	1.3%	1.8%	0.8%	0.4%	0.7%	0.5%	0.9%	0.8%	0.9%	0.4%	0.8%	0.7%	0.9%	0.7%	0.8%	0.7%	0.4%
Private households out-of-pocket	1.2%	0.5%	0.6%	0.1%	-2.2%	-0.1%	0.1%	0.2%	0.3%	0.4%	0.6%	0.3%	0.2%	0.2%	0.5%	0.7%	0.3%	0.6%	0.3%	0.1%
Non-profit institutions serving households						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corporations						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.2%	-0.1%	0.2%	0.1%	0.1%	0.0%	-0.1%
Total	7.1%	6.5%	5.9%	3.7%	**16.1%**	3.0%	3.0%	3.8%	3.8%	**6.2%**	**6.8%**	**7.5%**	1.1%	**4.6%**	**5.3%**	**5.6%**	4.8%	4.5%	5.3%	1.4%
Services of curative and rehabilitative care	3.8%	4.1%	3.4%	2.3%	0.3%	1.6%	1.4%	1.6%	1.3%	2.6%	3.2%	3.8%	0.2%	2.0%	2.6%	2.7%	2.2%	2.1%	2.6%	0.8%
Services of long-term nursing care	0.3%	0.3%	0.3%	0.3%	**6.4%**	0.6%	0.3%	0.3%	0.3%	0.6%	0.6%	1.2%	-1.0%	0.6%	0.9%	0.7%	0.8%	1.0%	1.1%	0.5%
Ancillary services to health care	0.3%	0.3%	0.2%	-0.1%	1.8%	0.0%	0.1%	0.3%	0.3%	0.3%	0.4%	0.5%	0.1%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%
Medical goods	2.2%	1.3%	1.6%	0.8%	-0.3%	0.5%	0.8%	1.3%	1.5%	2.0%	2.1%	1.4%	0.3%	1.0%	1.1%	1.0%	1.1%	0.8%	0.8%	0.3%
Prevention and public health services	0.2%	0.2%	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.3%	-0.3%
Health administration and health insurance	0.1%	0.1%	0.1%	0.1%	**7.3%**	0.3%	0.3%	0.3%	0.4%	0.5%	0.4%	0.3%	0.1%	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.1%
Capital formation of health care providers	0.4%	0.3%	0.1%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.4%	0.4%	0.3%	0.3%	0.1%	0.1%	0.0%	-0.1%

Appendix Table1 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Japan

Source: OECD Health Expenditure

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General Government		13.7%	-0.3%	5.4%	6.3%	5.2%	-0.8%	1.7%	3.2%	2.4%	3.6%	3.6%	3.5%	0.0%	4.6%	4.3%	3.4%	5.2%	4.5%	2.9%
Central Government		5.5%	0.7%	0.5%	0.3%	-0.6%	-1.9%	-0.2%	0.2%	0.3%	0.6%	0.3%	0.4%	0.1%	0.3%	0.2%	0.2%	0.5%	0.5%	0.1%
State/provincial government																				
Local/municipal government																				
Social security funds		8.2%	-1.0%	4.9%	6.0%	5.8%	1.1%	1.8%	3.0%	2.2%	3.0%	3.3%	3.1%	-0.1%	4.4%	4.1%	3.2%	4.6%	4.0%	2.8%
Private sector		-2.6%	0.7%	1.1%	0.3%	0.5%	1.5%	1.4%	0.9%	1.0%	1.2%	1.3%	1.7%	2.2%	1.6%	1.6%	1.1%	1.5%	0.9%	0.9%
Private insurance		1.0%	0.4%	0.4%	0.5%	0.3%	0.5%	0.3%	0.5%	0.4%	0.5%	0.6%	0.7%	0.5%	0.7%	0.5%	0.5%	**0.8%**	0.4%	0.3%
Private households out-of-pocket		0.6%	0.3%	**0.7%**	-0.2%	0.3%	**0.9%**	1.1%	0.4%	0.6%	0.7%	0.7%	**1.0%**	1.7%	**0.8%**	1.0%	0.5%	0.6%	0.5%	0.5%
Non-profit institutions serving households		-5.1%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corporations			-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%
Total		11.1%	0.4%	**6.5%**	6.6%	**5.7%**	0.6%	3.0%	4.1%	3.4%	**4.8%**	**4.9%**	5.2%	2.3%	**6.2%**	**6.0%**	4.5%	**6.7%**	**5.4%**	3.9%
Services of curative and rehabilitative care		0.8%	0.6%	4.3%	2.4%	2.3%	0.5%	0.7%	1.4%	1.6%	1.9%	2.1%	2.4%	2.2%	1.8%	3.6%	2.1%	3.5%	2.9%	2.4%
Services of long-term nursing care		4.7%	0.6%	0.6%	1.6%	1.3%	0.1%	0.8%	0.9%	0.5%	0.5%	0.7%	0.6%	0.4%	0.8%	0.8%	0.5%	0.7%	0.7%	0.5%
Ancillary services to health care		3.6%	0.2%	0.3%	0.2%	0.2%	0.1%	0.2%	0.2%	0.3%	0.2%	0.3%	0.2%	0.1%	0.3%	0.3%	0.2%	0.4%	0.3%	0.1%
Medical goods		2.5%	-1.4%	0.9%	1.0%	1.4%	0.0%	1.0%	0.9%	0.8%	1.4%	1.1%	1.3%	-0.7%	2.5%	0.9%	1.2%	1.3%	0.8%	0.5%
Prevention and public health services		-1.2%	0.2%	0.1%	0.2%	0.0%	-0.3%	0.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.1%	0.2%	0.3%	0.4%	0.3%	0.1%	0.0%
Health administration and health insurance		-0.8%	0.2%	0.2%	0.8%	0.1%	0.1%	0.3%	0.3%	0.1%	0.2%	0.4%	0.4%	0.1%	0.3%	0.2%	0.1%	0.3%	0.3%	0.3%
Capital formation of health care providers		1.5%	0.0%	0.0%	0.2%	0.5%	0.0%	-0.1%	0.2%	0.0%	0.3%	0.2%	0.0%	0.1%	0.3%	0.0%	0.0%	0.3%	0.3%	0.0%

Appendix Table2 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Germany

Source: OECD Health Expenditure Source: OECD Health Expenditure

1) The growth rate was used for two years as the data of 1991 is lacking and the growth rate of 1992 is used the data compared with 1990-. It is substituted
subtracting general government from social security fund for the data of central government.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
General Government	6.9%	8.0%	4.0%	1.2%	1.5%	-2.4%	3.6%	1.0%	2.4%	5.1%	5.5%	6.5%	4.5%	2.7%	14.8%	19.1%	5.6%	6.7%	3.3%	2
Central Government	0.8%	0.2%	0.2%	-0.3%	0.1%	-0.2%	0.3%	-0.2%	0.2%	0.2%	0.4%	0.4%	-0.1%	0.3%	1.9%	0.4%	3.1%	0.7%	0.4%	0
State/provincial government																				
Local/municipal government																				
Social security funds	6.1%	7.8%	3.8%	1.5%	1.4%	-2.2%	3.3%	1.2%	2.1%	4.8%	5.1%	6.0%	4.5%	2.4%	12.9%	18.6%	2.6%	6.0%	2.9%	2
Private sector	0.3%	-2.2%	0.2%	1.5%	3.2%	6.1%	-0.7%	6.3%	3.7%	2.4%	3.7%	4.4%	-3.9%	2.7%	1.1%	-12.6%	0.8%	0.7%	-0.5%	0
Private insurance									1.3%	0.5%	1.8%	2.8%	1.1%	2.1%	0.7%	-10.4%	0.5%	0.1%	0.3%	0
Private households out-of-pocket									1.1%	0.7%	0.5%	0.2%	0.0%	0.3%	1.5%	-0.9%	0.3%	0.6%	-0.6%	0
Non-profit institutions serving households									0.8%	0.6%	1.3%	0.8%	-4.6%	0.2%	-1.2%	0.1%	0.0%	0.0%	-0.2%	0
Corporations													0.1%	0.0%	-1.3%	0.1%	0.0%	0.0%	0
Total	7.2%	5.8%	4.2%	2.7%	4.7%	3.7%	3.0%	7.3%	6.1%	7.4%	9.2%	10.9%	9.4%	6.7%	15.5%	7.0%	7.2%	7.6%	3.3%	3
Services of curative and rehabilitative care	4.7%	3.0%	1.4%	1.2%	1.1%	1.9%	2.1%	3.1%	2.9%	3.6%	5.0%	6.9%	-0.8%	3.6%	2.8%	2.9%	3.3%	4.3%	2.4%	1
Services of long-term nursing care	1.1%	0.8%	1.0%	0.4%	0.7%	0.8%	0.6%	-5.7%	0.7%	0.9%	1.5%	1.0%	3.2%	0.7%	12.7%	2.0%	1.3%	1.9%	0.6%	0
Ancillary services to health care	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	1.1%	0.2%	0.1%	0.3%	0.3%	1.8%	0.2%	-1.7%	0.0%	0.2%	0.1%	0.1%	0
Medical goods	1.0%	1.7%	1.1%	0.4%	1.0%	0.5%	0.5%	4.2%	1.3%	1.5%	1.5%	1.2%	1.1%	0.6%	1.5%	0.9%	1.0%	0.8%	-0.4%	0
Prevention and public health services	0.3%	0.1%	0.2%	0.6%	0.3%	0.6%	0.2%	1.5%	0.3%	0.4%	0.4%	0.6%	0.3%	-0.1%	0.2%	0.1%	0.3%	0.3%	0.1%	0
Health administration and health insurance	0.3%	0.2%	0.1%	0.0%	0.2%	0.0%	0.1%	1.2%	0.2%	0.2%	0.1%	0.2%	1.4%	0.3%	-0.3%	0.5%	0.3%	-0.1%	0.0%	0
Capital formation of health care providers	-0.2%	-0.2%	0.3%	0.0%	1.4%	-0.2%	-0.5%	0.0%	0.6%	0.6%	0.0%	0.7%	4.1%	1.3%	-0.4%	0.5%	0.8%	0.3%	0.4%	0

Appendix Table3 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Netherland

Source: OECD Health Expenditure

1) The data of the general government and private sector was using the health expenditure per person without capital formation since 2003. 2) It is substituted subtracting general government from social security fund for the data of central government.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
General Government	5.1%	5.3%	4.4%	2.3%	16.6%	2.3%	2.5%	2.9%	3.0%	4.9%	5.4%	6.3%	-1.0%	3.4%	4.2%	3.8%	3.8%	3.0%	4.2%
Central Government	0.0%	0.1%	0.1%	0.3%	3.1%	0.2%	0.2%	0.0%	0.1%	0.3%	0.3%	0.7%	-3.0%	0.0%	0.1%	0.2%	0.1%	0.0%	0.3%
State/provincial government																			
Local/municipal government														0.1%	0.0%	0.1%	0.1%	0.2%	0.2%
Social security funds	5.1%	5.2%	4.3%	2.0%	13.5%	2.1%	2.3%	3.0%	2.9%	4.5%	5.1%	5.6%	0.5%	3.3%	4.0%	3.5%	3.5%	2.9%	3.8%
Private sector	2.0%	1.2%	1.5%	1.4%	-0.5%	0.7%	0.5%	0.9%	0.9%	1.3%	1.4%	1.3%	2.1%	1.1%	1.2%	1.8%	1.0%	1.5%	1.0%
Private insurance	0.8%	0.7%	0.9%	1.3%	1.8%	0.8%	0.4%	0.7%	0.5%	0.9%	0.8%	0.9%	0.4%	0.8%	0.7%	0.9%	0.7%	0.8%	0.7%
Private households out-of-pocket	1.2%	0.5%	0.6%	0.1%	-2.2%	-0.1%	0.1%	0.2%	0.3%	0.4%	0.6%	0.3%	0.2%	0.2%	0.5%	0.7%	0.3%	0.6%	0.3%
Non-profit institutions serving households						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corporations						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.2%	-0.1%	0.2%	0.1%	0.1%	0.0%
Total	7.1%	6.5%	5.9%	3.7%	16.1%	3.0%	3.0%	3.8%	3.8%	6.2%	6.8%	7.5%	1.1%	4.6%	5.3%	5.6%	4.8%	4.5%	5.3%
Services of curative and rehabilitative care	3.8%	4.1%	3.4%	2.3%	0.3%	1.6%	1.4%	1.6%	1.3%	2.6%	3.2%	3.8%	0.2%	2.0%	2.6%	2.7%	2.2%	2.1%	2.6%
Services of long-term nursing care	0.3%	0.3%	0.3%	0.3%	6.4%	0.6%	0.3%	0.3%	0.3%	0.6%	0.6%	1.2%	-1.0%	0.6%	0.9%	0.7%	0.8%	1.0%	1.1%
Ancillary services to health care	0.3%	0.3%	0.2%	-0.1%	1.8%	0.0%	0.1%	0.3%	0.3%	0.3%	0.4%	0.5%	0.1%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%
Medical goods	2.2%	1.3%	1.6%	0.8%	-0.3%	0.5%	0.8%	1.3%	1.5%	2.0%	2.1%	1.4%	0.3%	1.0%	1.1%	1.0%	1.1%	0.8%	0.8%
Prevention and public health services	0.2%	0.2%	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.3%
Health administration and health insurance	0.1%	0.1%	0.1%	0.1%	7.3%	0.3%	0.3%	0.3%	0.4%	0.5%	0.4%	0.3%	0.1%	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%
Capital formation of health care providers	0.4%	0.3%	0.1%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.4%	0.4%	0.3%	0.3%	0.1%	0.1%	0.0%

Appendix Table4 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in France

Source: OECD Health Expenditure

1) It is substituted subtracting general government from social security fund for the data of central government by 2002.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
General Government	7.5%	9.7%	4.5%	4.9%	3.3%	4.5%	0.0%	3.8%	6.5%	5.9%	8.0%	7.4%	5.1%	10.2%	5.6%	7.3%	1.4%	5.6%	6.1%
Central Government																			
State/provincial government																			
Local/municipal government																			
Social security funds																			
Private sector	1.8%	0.3%	0.1%	2.4%	0.7%	2.0%	3.2%	0.9%	1.2%	3.5%	2.1%	1.5%	1.3%	0.5%	1.4%	1.2%	1.8%	0.2%	-0.6%
Private insurance	0.4%	0.4%	0.2%	0.2%	0.0%	0.3%	1.0%	0.1%	0.0%	0.2%	0.8%	0.2%	0.3%	0.3%	0.5%	-0.8%	0.7%	0.2%	-0.2%
Private households out-of-pocket	1.6%	1.0%	0.1%	1.2%	0.2%	0.8%	1.2%	0.6%	0.5%	0.7%	1.1%	0.9%	0.3%	0.7%	0.3%	1.2%	0.5%	-0.6%	0.5%
Non-profit institutions serving households	-0.4%	-1.1%	-2.8%	3.2%	0.3%	1.1%	3.7%	0.3%	0.4%	0.5%	0.3%	0.2%	0.1%	0.3%	0.1%	0.2%	0.0%	0.1%	-0.1%
Corporations																!			
Total	9.2%	10.0%	4.6%	7.4%	4.0%	6.6%	3.3%	4.8%	7.8%	9.4%	10.1%	8.9%	6.4%	10.7%	7.0%	8.5%	3.2%	5.8%	5.6%
Services of curative and rehabilitative care																			
Services of long-term nursing care																			
Ancillary services to health care																			
Medical goods																			
Prevention and public health services																			
Health administration and health insurance																			
Capital formation of health care providers	-0.1%	0.1%	-0.7%	0.8%	0.5%	0.6%	-0.1%	-0.1%	1.2%	-0.4%	0.0%	0.7%	0.3%	0.0%	0.7%	0.6%	0.5%	1.4%	-0.2%

Appendix Table5 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in England

Source: OECD Health Expenditure

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	20
General Government	-2.4%	1.2%	2.2%	0.0%	3.7%	6.2%	0.1%	4.4%	6.4%	5.4%	3.9%	6.8%	4.6%	2.8%	0.1%	6.2%	6.3%	5.5%	1.0%	0.
Central Government												-0.1%	0.6%	0.2%	-0.4%	0.2%	0.2%	0.2%	0.4%	-0
State/provincial government																				
Local/municipal government												6.9%	4.0%	2.6%	0.5%	6.0%	6.1%	5.4%	0.7%	0.
Social security funds																				
Private sector	1.5%	1.4%	0.1%	0.4%	1.0%	0.6%	1.3%	0.8%	1.1%	1.9%	5.5%	1.2%	0.3%	1.4%	0.3%	1.5%	1.2%	1.1%	0.2%	0.
Private insurance												0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.
Private households out-of-pocket												1.0%	0.4%	1.1%	0.4%	1.2%	1.1%	1.0%	0.3%	0.
Non-profit institutions serving households												0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.
Corporations												0.2%	-0.2%	0.3%	-0.2%	0.2%	0.0%	0.0%	0.0%	0.
Total	-0.9%	2.7%	2.3%	0.3%	4.7%	6.8%	1.4%	5.2%	7.5%	7.4%	9.4%	8.0%	4.9%	4.2%	0.3%	7.7%	7.5%	6.6%	1.3%	0.
Services of curative and rehabilitative care												3.4%	4.0%	2.1%	0.1%	5.2%	4.6%	3.9%	0.9%	0.
Services of long-term nursing care				0.4%	0.7%	1.0%	0.1%	0.4%	0.7%	0.6%	0.9%	0.5%	0.2%	0.4%	0.0%	0.7%	0.4%	0.2%	0.0%	0.
Ancillary services to health care												1.7%	0.8%	0.7%	0.1%	0.1%	0.2%	0.5%	-0.2%	-0
Medical goods				1.0%	1.2%	2.2%	-0.8%	2.1%	1.5%	1.1%	2.1%	1.3%	0.6%	0.8%	0.0%	1.3%	0.8%	0.8%	0.0%	-0
Prevention and public health services												0.4%	-0.2%	0.1%	0.2%	0.0%	0.5%	0.3%	0.2%	-0
Health administration and health insurance				0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	1.7%	0.0%	-0.6%	0.1%	-0.1%	0.1%	0.2%	0.1%	0.1%	0.
Capital formation of health care providers	-0.3%	-0.3%	0.7%	0.3%	0.4%	0.4%	0.1%	-0.1%	1.3%	-0.2%	-0.1%	0.6%	-0.1%	0.0%	-0.1%	0.2%	0.6%	0.7%	0.1%	0.

Appendix Table6 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Sweden

Source: OECD Health Expenditure

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General Government	3.4%	3.7%	4.7%	3.4%	1.0%	4.8%	3.3%	2.8%	12.9%	3.3%	6.1%	6.4%	0.8%	6.4%	3.5%	8.8%	4.3%	6.8%	7.4%	2.1%
Central Government									0.2%	0.1%	0.1%	0.2%	-0.6%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%
State/provincial government									3.7%	1.4%	3.3%	4.8%	1.2%	3.5%	2.1%	5.7%	2.2%	4.7%	4.8%	1.3%
Local/municipal government									9.4%	1.9%	2.2%	1.6%	0.3%	2.1%	1.0%	2.2%	2.5%	2.0%	2.5%	0.7%
Social security funds																				
Private sector	-0.3%	1.1%	1.6%	1.3%	-0.2%	1.1%	0.9%	0.8%	0.2%	0.7%	0.8%	0.8%	0.1%	1.5%	0.4%	1.4%	1.1%	0.9%	0.9%	0.3%
Private insurance	0.0%	0.0%	-0.1%	0.1%	0.1%	0.3%	0.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.2%	0.0%	0.2%	0.2%	0.3%	0.1%	-0.1%
Private households out-of-pocket	-0.2%	1.0%	1.7%	1.2%	-0.3%	0.9%	0.8%	0.6%	0.2%	0.7%	0.7%	0.7%	0.0%	1.4%	0.4%	1.2%	0.9%	0.7%	0.7%	0.3%
Non-profit institutions serving households									0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corporations																				
Total	3.1%	4.8%	6.3%	4.8%	0.8%	5.9%	4.2%	3.6%	13.1%	4.0%	6.8%	7.2%	0.8%	7.9%	3.8%	10.2%	5.4%	7.7%	8.2%	2.4%
Services of curative and rehabilitative care									3.9%	1.4%	3.0%	4.0%	1.3%	3.9%	2.3%	5.6%	2.4%	5.3%	4.7%	1.2%
Services of long-term nursing care									8.3%	2.0%	2.1%	1.3%	0.2%	2.1%	1.1%	1.8%	2.2%	1.8%	2.1%	0.5%
Ancillary services to health care									0.2%	-0.2%	0.2%	0.3%	0.1%	0.3%	0.1%	0.4%	-0.2%	0.1%	0.9%	0.3%
Medical goods	0.8%	0.6%	1.1%	0.9%	0.3%	0.4%	0.6%	2.4%	1.0%	0.6%	0.8%	1.3%	-0.1%	0.7%	0.0%	1.4%	0.8%	0.3%	0.1%	0.2%
Prevention and public health services									0.1%	0.2%	0.1%	0.2%	-0.6%	0.1%	0.0%	0.1%	0.2%	0.2%	0.3%	0.1%
Health administration and health insurance	-0.1%	0.3%	0.0%	-0.1%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	-0.1%	0.1%	0.0%
Capital formation of health care providers	-0.3%	0.6%	0.4%	0.4%	0.1%	0.3%	0.5%	2.6%	-0.3%	0.0%	0.5%	-0.2%	-0.2%	0.8%	0.3%	0.7%	-0.3%	0.1%	0.0%	0.0%

Appendix Table7 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Denmark

Source: OECD Health Expenditure

1) The data of the general government was using the value without capital formation.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	201
General Government	11.2%	5.9%	1.9%	4.6%	4.8%	8.2%	9.5%	7.5%	8.3%	7.7%	7.2%	9.2%	5.0%	5.1%	4.6%	6.2%	5.3%	6.6%	1.0%	1.9
Central Government														1.6%	3.6%	3.8%	3.2%	2.9%	0.6%	1.1
State/provincial government														0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0
Local/municipal government														1.7%	1.7%	2.4%	1.4%	4.1%	1.1%	0.9
Social security funds								1.0%	0.9%	1.8%	1.3%	2.5%	0.8%	1.3%	-0.9%	-0.1%	0.3%	0.2%	0.0%	0.6
Private sector	0.1%	0.6%	0.6%	0.8%	1.4%	1.6%	5.7%	0.6%	1.3%	1.7%	0.1%	1.9%	0.7%	1.2%	0.9%	0.9%	0.6%	0.8%	0.0%	0.2
Private insurance																				
Private households out-of-pocket	2.1%	0.6%	0.6%	0.8%	1.3%	1.6%	5.3%	0.5%	1.3%	1.7%	0.2%	1.8%	0.7%	1.1%	0.9%	0.9%	0.5%	0.9%	-0.1%	0.2
Non-profit institutions serving households																				
Corporations											0.0%	0.1%	-0.5%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0
Total	11.3%	6.6%	2.5%	5.4%	6.2%	9.8%	15.2%	8.1%	9.6%	9.5%	7.3%	11.1%	5.7%	6.3%	5.5%	7.1%	6.0%	7.5%	1.0%	2.1
Services of curative and rehabilitative care								3.0%	3.0%	3.8%	3.4%	5.2%	2.6%	2.1%	3.1%	3.6%	3.6%	3.7%	0.0%	0.9
Services of long-term nursing care								2.1%	2.9%	3.2%	1.7%	3.0%	1.7%	1.8%	1.6%	2.3%	1.3%	4.0%	1.0%	0.7
Ancillary services to health care								0.3%	0.9%	0.5%	0.5%	0.6%	0.7%	0.6%	0.2%	0.4%	0.3%	0.2%	0.5%	0.8
Medical goods	3.2%	1.1%	1.2%	1.2%	1.4%	1.9%	1.0%	1.0%	1.0%	2.0%	0.8%	1.9%	0.4%	1.0%	0.3%	0.5%	0.1%	0.0%	-0.3%	0.4
Prevention and public health services													0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.4%	0.1
Health administration and health insurance													-0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%	-0.2
Capital formation of health care providers	1.4%	-0.6%	-0.1%	0.2%	1.0%	1.1%	0.7%	1.7%	1.4%	-0.3%	0.9%	-0.2%	0.4%	0.5%	0.1%	0.2%	0.5%	-0.6%	-0.8%	-0.6

Appendix Table8 Factor analysis of Increase of Health Care Expenditure per capita by Financing Agents and Functions in Norway

Source: OECD Health Expenditure

1) The data of the general government and private sector was using the value without capital formation since 2003.