



Project no: 028412

AIM-AP

Accurate Income Measurement for the Assessment of Public Policies

Specific Targeted Research or Innovation Project

Citizens and Governance in a Knowledge-based Society

Deliverable 1.3g Public health in the Netherlands

Due date of deliverable: July 2007
Actual submission date: January 2008

Start date of project: 1 February 2006

Duration: 3 years

Lead partner: CentERdata

Revision [draft]

Accurate Income Measurement for the Assessment of Public Policies (AIM-AP):

Project 1. Non-cash incomes

WP1.3 Public health

Deliverable D1.3g

The distributional impact of public health expenditures in the Netherlands

Klaas de Vos

CentERdata

Tilburg University

PO Box 90153

5000 LE Tilburg

The Netherlands

December 2007

Abstract

This report analyses the distributional impact of public health expenditures in the Netherlands. On the basis of the Euromod baseline simulation for 2001 we examine the effect on the income distribution of adding the public health expenditures attributable to the households in question to disposable household income. Among others, the effects on income inequality are discussed, decomposed according various household characteristics. We compare the results of various approaches to the definition of public health expenditures.

0. Introduction

One of the objectives of the AIM-AP project is to enrich the definition of disposable household income by taking into account non-cash components such as education, housing and health care. Next to the reports on education and housing, this third AIMAP report on the Netherlands concentrates on health expenditures. Using micro-data on household income from the Euromod baseline 2001 we compare the baseline income distribution with the income distribution where public health expenditures per capita differentiated by age are added to disposable income. We also use two alternative measures of public health expenditures where we differentiate between households with public health insurance and households with private health insurance. In addition, we compare the distribution of income when we deduct private health insurance premiums instead of adding public health expenditures.

1. Health insurance in the Netherlands

Until January 1, 2006 the large majority of the Dutch population was divided in two categories: people with a (usually compulsory) statutory public health insurance (ZFW) and people with a private health insurance. These insurances took care of most 'ordinary' health care costs. In addition, all residents were insured against 'special' health care costs (in particular long-term care) by another public insurance (AWBZ).

The public health insurance (ZFW) was compulsory for private employees, recipients of social insurance benefits and self-employed with incomes below the relevant income threshold. A large part of the health insurance contribution was income related. Taking into account that the insured risk is mainly age-related, it can be inferred that the public health insurance had a significant redistributive effect. This effect was compounded by the fact that the state contributed about 25% to the ordinary health care costs of those insured via the ZFW, and that the persons with a private health insurance aged below 65 were charged a statutory supplement (MOOZ) to their private health insurance premium to compensate for the overrepresentation of elderly in the ZFW. In addition, persons with a private health insurance aged below 65 were charged another statutory supplement (WTZ) to guarantee the access of elderly to private health insurance with a limited premium.

In AIM-AP we assume that consumers derive utility from public health expenditures and therefore these expenditures should somehow be taken into account in the definition of disposable income. From table A, it can be concluded that definitions of what is to be included in health expenditures may vary, and that the amounts vary with them. Next to public health expenditures and private health insurance premiums, there is a

nonnegligible component 'Other', which includes a.o. out-of-pocket expenditures. In the AIM-AP project, it has been decided to use the public health expenditures per capita as published by the OECD as an internationally comparable amount that is to be added to disposable income. The OECD amounts can be assumed to include the ZFW expenditures as well as part of the AWBZ expenditures. OECD calculated public health expenditures (excluding long term care) in 2001 as € 23,300 million. According to CVZ, public health expenditures in 2001 amounted to about € 30,400 million: € 14,200 million ZFW and € 16,200 million AWBZ¹. The latter includes long term care. This would imply that about € 9,100 million AWBZ expenditures are included in the OECD measure².

Table A. (Health) care expenditures in the Netherlands (€ 10⁹) from various sources

Source	2000	2001	2002	2003	2004
OECD (OECD Health data)					
Public	21.0	23.3	25.8	27.8	28.1
Private ins.	5.3	6.0	7.1	7.8	8.6
Other	6.9	7.9	8.4	8.0	8.4
CBS ('Care exp.' Statistics Netherlands www.cbs.nl)					
Public	28.8	32.4	36.4	39.3	40.4
Private ins.	5.7	6.3	7.2	7.8	8.7
Other	7.6	8.5	9.4	10.4	10.8
CVZ (CVZorgcijfers, 2006)					
Public :					
ZFW	12.9	14.2	15.8	16.8	16.8
AWBZ	14.8	16.2	18.4	20.3	21.3
KVZ (cost of illness: www.kostenvanziekten.nl)					
'CBS'				57.5	
'Budget'				43.7	
'OECD'				45.1	

An earlier study calculating the effects of adding public health expenditures to income was done by SCP (2003)³. However, in this study all AWBZ expenditures were considered to be long term care and ignored. Moreover, this study included the redistributive effect of compulsory supplements to private insurance premiums discussed above (WTZ, MOOZ). On the other hand, the so-called cost-of-illness study by Slobbe et al (2006)⁴ in which the costs of health care by age group were calculated did make a distinction between health care costs financed via the health insurance system and the

¹ College voor Zorgverzekeringen (2006), CVZorgcijfers, Diemen, www.cvz.nl.

² € 23,300 million (total) – € 14,200 million (ZFW).

³ Pommer, E and J.J. Jonker (2003), Profijt van de Overheid, Sociaal en Cultureel Planbureau (SCP), Den Haag, www.scp.nl.

⁴ Slobbe, L.C.J., G.J. Kommer, J.M. Smit, J. Groen, W.J. Meerding and J.J. Polder (2006), Kosten van Ziekten in Nederland 2003, Zorg voor euro's – 1, RIVM/Statistics Netherlands/Erasmus University, Bilthoven, www.kostenvanziekten.nl.

AWBZ but did not distinguish between public and private health insurance. This could be seen to anticipate the new legislation introduced in 2006 in which the public health insurance ZFW was abolished (see text box below).

The new health insurance system in the Netherlands

As of January 2006, a new health insurance system was introduced. All residents are obliged to take out a private health insurance. Health insurance companies are obliged to accept (almost) all applicants and can not differentiate the (flat rate) basic health insurance premium between risks. Instead, they are compensated for the presence of high risks out of the proceeds of a statutory income related health insurance contribution levied via the tax authorities. Competition between health insurance companies focuses on the basic health insurance premium, on collective contracts and on the supplementary insurances for e.g. dentist and other costs not covered by the basic health insurance. At the start of a new year, everyone can choose a different insurance company. Persons with low incomes may qualify for a state subsidy to compensate the health insurance premium.

It is unclear to what extent this health insurance would be counted as 'public' health insurance by OECD. On the one hand, we have private insurance companies competing on the market for health insurances, on the other we have the tax authorities collecting (and (re)distributing) the income related health insurance contribution.

This report presents results pertaining to the pre-2006 health insurance system. Whilst it would also be interesting to study the distributional impact of the new health insurance system, this is not possible within the scope of the AIM-AP project.

2. Method

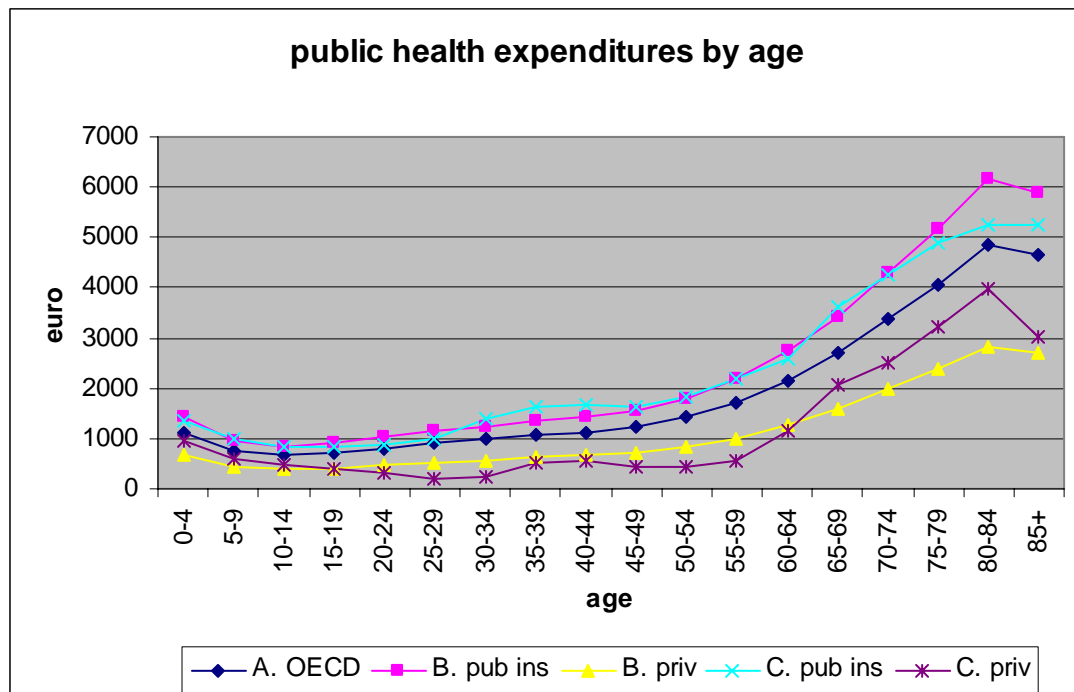
In this report we start by examining the effects on the distribution of income of adding the public health expenditures per capita by age group as calculated by OECD to disposable household income (approach A). This approach is chosen for the sake of comparability between the various countries in the AIM-AP project. However, from the description above it can be inferred that by not differentiating between persons with public and private health insurance, we overestimate the public health care expenditures spent for the benefit of those with a private health insurance whilst we would underestimate the public expenditures benefiting those with a public health insurance⁵. Hence we also present results of alternative approaches in which we take into account that privately

⁵ The distortion is exacerbated by the fact that public health insurance contributions have been deducted from disposable income but private health insurance premiums have not.

insured persons profit less from public health care expenditures than those with a public health insurance. The first approach (approach B) assumes that the age pattern of health care expenditures is similar for the expenditures financed through the ZFW, the AWBZ and the expenditures paid for by private insurances. The second approach (approach C) uses information on health care costs financed through the health insurance system (ZFW and private insurances) in 2003 differentiated by age and gender as collected by Slobbe et al (2006)⁶. We assume that the age pattern remained the same between 2001 and 2003, and that this pattern did not differ between people insured through the private health insurance system and people with a public health insurance, but we do allow for possible differences with the age pattern of the AWBZ health care expenditures.

Figure 1 presents the age patterns of these three approaches. As expected, public health care expenditures benefiting those with a private insurance are lower than the amounts for persons with a public health insurance, both in approach B and approach C. The differences between approach B and C are small, except in the oldest age categories, where approach B suggests somewhat higher expenditures for persons with a public insurance than approach C, and a reverse result for persons with a private health insurance.

Figure 1



⁶ See footnote 4 above.

In addition to the three approaches introduced above, we also present results of an alternative approach which assumes that, in fact, adding health expenditures per capita differentiated by age to disposable income does not result in income levels that are comparable. In particular, the high expenditures for the elderly should not be taken to imply that the elderly have high levels of well-being. Instead of adding public health expenditures, we try to improve comparability by deducting private health insurance premiums for those who do not qualify for the public health insurance ZFW. In doing so, we implicitly assume that the level of health care provided by public health insurance is equal to the level provided by the private health insurances. By and large, this assumption is justified since both types of insured benefit from the same health care facilities.

3. Data

The data we use as our baseline is the Euromod simulation for 2001, updated from the Socio-Economic Panel (SEP) data collected by Statistics Netherlands in 2000. The SEP is a representative panel survey in which information on income, wealth, housing and work was collected on a yearly basis (1984-2002) from all household members aged 16 or over. It should be noted that households with one or more members who did not fill out the income questionnaire (unit non-response) have been dropped out of the Euromod baseline sample without adjusting the original weights produced by Statistics Netherlands. In addition, for the purpose of the analysis in this report, households with negative or zero post-government incomes have been dropped.

The distinction between households with public and private health insurance is approximated on the basis of the Euromod simulations. Children below 18 are assumed to be insured with the health insurance of the highest earning parent, and when it can be concluded that at least half of the household members have a public health insurance we assume that the household has a public health insurance.

4. Results

4.1 Overall results

Table C1 summarizes the effects of adding public health expenditures to disposable income of households with public and private health insurance, differentiated by quintile of equalized disposable household income. The income increase amounts to more than 25% in the lowest quintile, decreasing to about 6% in the highest quintile. The mean transfer per capita is also the highest in the lowest quintile, where it amounts to about € 1700 per year. This confirms that the elderly are overrepresented in the lowest quintile.

We also see that in the lowest quintile the bulk of the transfer goes to households with a public health insurance, whilst in the higher quintiles a considerable share of the transfer benefits households with a private health insurance. All in all, the income share of the lowest quintile increases from 10.0% to 11.2% whilst the share of the highest quintile decreases from 34.5% to 32.8%.

The second panel of table C1 presents comparable results when the public health expenditures are differentiated between households with public and private health insurance according to approach B. We see that the increase in the lowest quintile amounts to almost a third of disposable income, whilst the increase in the highest quintile barely reaches 5%. Per capita, the mean transfer is more than € 2100 in the lowest quintile and less than € 1200 in the highest, again pointing to the presence of many elderly with a public health insurance in the lowest quintile. The increase in the income share of the lowest quintile is 1.8%, about 1.5 times as high as with approach A. The third panel of table C1, giving the results according to approach C, does not differ substantially from the second panel.

Table C1. Effects of adding public health expenditures by income quintile and type of health insurance

Approach A

Quintile	Income share		% Increase in disposable income due to transfers to persons with health ins.			Mean transfer per capita due to transfers to persons with health insurance			% in hh public health ins.
	Baseline	Appr. A	Public	Private	All	Public	Private	All	
1	10.0	11.2	25.3	1.3	26.6	1626.5	82.0	1708.6	92.6
2	14.3	15.0	11.7	5.3	17.1	1004.1	458.0	1462.1	71.4
3	18.2	18.4	6.0	6.3	12.4	650.9	681.4	1332.3	53.7
4	23.0	22.6	3.7	5.9	9.6	521.2	826.8	1348.0	43.2
5 (top)	34.5	32.8	2.3	3.9	6.2	523.3	893.5	1416.8	41.6
All	100.0	100.0	6.9	4.7	11.6	865.3	588.3	1453.6	60.5

Approach B

Quintile	Income share		% Increase in disposable income due to transfers to persons with health ins.			Mean transfer per capita due to transfers to persons with health insurance			% in hh public health ins.
	Baseline	Appr. B	Public	Private	All	Public	Private	All	
1	10.0	11.8	32.1	0.7	32.8	2062.4	47.8	2110.2	92.6
2	14.3	15.1	14.9	3.1	18.0	1273.2	267.0	1540.2	71.4
3	18.2	18.2	7.7	3.7	11.3	825.3	397.2	1222.5	53.7
4	23.0	22.3	4.7	3.4	8.1	660.8	482.0	1142.8	43.2
5 (top)	34.5	32.6	2.9	2.3	5.2	663.5	520.9	1184.3	41.6
All	100.0	100.0	8.8	2.7	11.5	1097.1	343.0	1440.1	60.5

Approach C

Quintile	Income share		% Increase in disposable income due to transfers to persons with health ins.			Mean transfer per capita due to transfers to persons with health insurance			% in hh public health ins.
	Baseline	Appr. C	Public	Private	All	Public	Private	All	
1	10.0	11.7	31.2	0.7	31.9	2006.2	43.5	2049.7	92.6
2	14.3	15.1	14.9	3.5	18.4	1276.5	302.0	1578.5	71.4
3	18.2	18.3	7.7	4.0	11.7	833.0	433.3	1266.3	53.7
4	23.0	22.3	4.7	3.7	8.4	666.4	517.2	1183.6	43.2
5 (top)	34.5	32.6	3.0	2.3	5.2	676.8	512.8	1189.6	41.6
All	100.0	100.0	8.7	2.9	11.6	1091.9	361.7	1453.6	60.5

Approach D

Quintile	Income share		% Increase in disposable income due to transfers to persons with health ins.			Mean transfer per capita due to transfers to persons with health insurance			% in hh public health ins.
	Baseline	Appr. D	Public	Private	All	Public	Private	All	
1	10.0	10.2	0.0	-0.9	-0.9	0.0	-55.1	-55.1	92.6
2	14.3	14.3	0.0	-3.0	-3.0	0.0	-254.9	-254.9	71.4
3	18.2	18.1	0.0	-3.7	-3.7	0.0	-398.5	-398.5	53.7
4	23.0	22.8	0.0	-3.4	-3.4	0.0	-483.9	-483.9	43.2
5 (top)	34.5	34.6	0.0	-2.3	-2.3	0.0	-533.3	-533.3	41.6
All	100.0	100.0	0.0	-2.8	-2.8	0.0	-345.1	-345.1	60.5

If, instead of adding public health expenditures we subtract the private health insurance premium from disposable income (approach D), we obtain the results as presented in the fourth panel of table C1. In this case, the income shares of the various quintiles are hardly affected. On average, the relative decrease in disposable income is almost 3%. The decrease is largest in the third quintile: almost 4%. Per capita, the decrease in disposable income varies from 55 euro in the lowest quintile to more than 530 euro in the highest quintile.

Clearly, the latter approach, based on the assumption that the benefits of the health care system do not affect the relevant distribution of resources, and the costs should be taken into account consistently, has a completely different effect than the approach where we add public health expenditures per capita differentiated by age group to disposable income.

This is also clear from table C2 where we supplement the results of the previous table with a differentiation by age group. The results confirm that, according to the first three approaches, in the lowest quintile, more than half of the increase goes to persons aged 65 or older. Moreover, this group shows the largest difference between approach A on the one hand and B and C on the other, both in terms of the percentage increase in disposable income and in terms of the mean transfer per capita. By contrast, according to approach D, the income of elderly in the lowest quintile is hardly affected. Instead, the elderly account for a relatively large share of the income decrease in the second quintile.

Table C2. Effects of adding public health expenditures by income quintile and age group
Approach A

Quintile	% Increase in disposable income due to transfers to persons aged				Mean transfer per capita due to transfers to persons aged			
	0-14	15-64	65+	All	0-14	15-64	65+	All
1	2.8	10.2	13.6	26.6	181.0	655.3	872.3	1708.6
2	2.5	7.8	6.7	17.1	217.0	672.1	573.1	1462.1
3	2.0	6.9	3.5	12.4	212.1	745.6	374.6	1332.3
4	1.3	5.8	2.5	9.6	185.2	811.3	351.5	1348.0
5 (top)	0.4	4.2	1.6	6.2	98.4	957.7	360.8	1416.8
All	1.4	6.1	4.0	11.6	178.7	768.4	506.5	1453.6

Appr B

Quintile	% Increase in disposable income due to transfers to persons aged				Mean transfer per capita due to transfers to persons aged			
	0-14	15-64	65+	All	0-14	15-64	65+	All
1	3.4	12.3	17.1	32.8	216.1	791.5	1102.6	2110.2
2	2.6	8.8	6.6	18.0	222.6	754.5	563.0	1540.2
3	1.7	7.1	2.6	11.3	180.3	766.3	275.9	1222.5
4	0.9	5.6	1.6	8.1	125.5	794.3	223.0	1142.8
5 (top)	0.3	3.9	1.0	5.2	60.2	898.2	225.9	1184.3
All	1.3	6.4	3.8	11.5	160.9	801.0	478.2	1440.1

Appr C

Quintile	% Increase in disposable income due to transfers to persons aged				Mean transfer per capita due to transfers to persons aged			
	0-14	15-64	65+	All	0-14	15-64	65+	All
1	3.4	12.3	16.2	31.9	217.1	792.6	1039.9	2049.7
2	2.7	8.8	6.9	18.4	235.1	751.3	592.0	1578.5
3	1.9	6.8	3.1	11.7	203.9	733.1	329.3	1266.3
4	1.1	5.3	2.0	8.4	157.2	744.0	282.4	1183.6
5 (top)	0.4	3.6	1.3	5.2	80.2	820.8	288.6	1189.6
All	1.4	6.1	4.0	11.6	178.7	768.4	506.5	1453.6

Appr D

Quintile	% Increase in disposable income due to transfers to persons aged				Mean transfer per capita due to transfers to persons aged			
	0-14	15-64	65+	All	0-14	15-64	65+	All
1	-0.2	-0.6	0.0	-0.9	-13.3	-39.4	-2.4	-55.1
2	-0.6	-1.1	-1.2	-3.0	-52.5	-97.6	-104.8	-254.9
3	-0.8	-1.7	-1.2	-3.7	-88.6	-179.1	-130.9	-398.5
4	-0.8	-1.7	-1.0	-3.4	-109.3	-234.4	-140.3	-483.9
5 (top)	-0.3	-1.4	-0.7	-2.3	-64.5	-316.0	-152.8	-533.3
All	-0.5	-1.4	-0.8	-2.8	-65.6	-173.3	-106.2	-345.1

Table D1. Effects on inequality and poverty by type of health insurance
Approach A

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons with health insurance		
	Baseline	Appr. A	Public	Private	All
Gini	0.246	0.220	-11.0	1.6	-10.6
Atkinson0.5	0.050	0.040	-19.2	1.6	-20.0
Atkinson1.5	0.155	0.117	-19.8	-1.6	-24.5
Poverty Rate (FGT0)	0.125	0.084	-46.2	26.6	-33.3
Norm. Poverty Gap (FGT1)	0.023	0.015	-41.0	24.8	-32.2
FGT2	0.008	0.006	-31.3	8.7	-34.3

Approach B

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons with health insurance		
	Baseline	Appr. B	Public	Private	All
Gini	0.246	0.213	-13.1	0.7	-13.5
Atkinson0.5	0.050	0.038	-22.8	0.4	-24.2
Atkinson1.5	0.155	0.111	-23.0	-2.5	-28.1
Poverty Rate (FGT0)	0.125	0.069	-51.4	16.7	-44.7
Norm. Poverty Gap (FGT1)	0.023	0.013	-46.6	14.5	-42.6
FGT2	0.008	0.005	-35.6	4.5	-38.8

Approach C

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons with health insurance		
	Baseline	Appr. C	Public	Private	All
Gini	0.246	0.213	-13.1	0.7	-13.5
Atkinson0.5	0.050	0.038	-22.8	0.4	-24.2
Atkinson1.5	0.155	0.112	-23.0	-2.0	-27.6
Poverty Rate (FGT0)	0.125	0.069	-51.0	19.5	-44.6
Norm. Poverty Gap (FGT1)	0.023	0.013	-46.6	16.3	-42.5
FGT2	0.008	0.005	-35.3	6.5	-37.6

Approach D

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons with health insurance		
	Baseline	Appr. D	Public	Private	All
Gini	0.246	0.246	0.0	-0.3	-0.3
Atkinson0.5	0.050	0.049	0.0	-1.2	-1.2
Atkinson1.5	0.155	0.150	0.0	-3.6	-3.6
Poverty Rate (FGT0)	0.125	0.113	0.0	-10.1	-10.1
Norm. Poverty Gap (FGT1)	0.023	0.020	0.0	-9.8	-9.8
FGT2	0.008	0.009	0.0	2.6	2.6

4.2 Effects on inequality and poverty

Table D1 provides some summary indicators of income inequality and poverty before and after adding public health expenditures to disposable income. As we saw, on average, the low income groups benefit more from public health expenditures than the higher income groups. Hence, it is not too surprising that indicators of income inequality show a considerable decrease when these health expenditures are added to disposable income. Using approach A, the Gini coefficient decreases by almost 11%, whilst the Atkinson indicators, which are known to be more sensitive to changes in the lower tail of the distribution, decrease by 20% ($e = 0.5$) and 25% ($e = 1.5$), respectively. It can also be seen that a large part of the changes in inequality can be attributed to adding public health expenditures to the disposable income of households with a public health insurance. Adding public health expenditures to the incomes of households with a private health insurance has a much smaller effect. In fact, using the Gini or Atkinson indicator with $e = 0.5$, inequality shows a slight increase when public health expenditures are added to the incomes of households with a private health insurance only.

When we recalculate the income inequality indices after adding public health expenditures we assume that the equivalence scale in use is not affected. Likewise, when we compute poverty statistics after adding public health expenditures, we assume that the new poverty threshold amounts to 60% of median income including public health expenditures, where income is again equivalised using the same (modified OECD) equivalence scale. In particular, we add relatively high health expenditures to the incomes of the elderly but do not take into account that the elderly may require a higher level of resources to escape poverty as a result of their higher health needs. This should also be taken into account when interpreting the resulting poverty statistics. In fact, it might not be very plausible that a poor household – before adding health expenditures – should be categorized as non-poor when the amounts spent for the health of its members are taken into account, or, conversely, that a non-poor household may find itself in poverty as a result of the low amounts of expenditures needed to keep the household members in good health. Hence, the result that the poverty rate, the average poverty gap as well as the FGT2 index decrease by about 33% when public health expenditures are added to household income should be interpreted with considerable caution. Notably, the poverty rate and the poverty gap decrease even more when public health expenditures are added to the household income of households with public health insurance only. By contrast, poverty shows a considerable increase when public health expenditures are added to the incomes of households with private health expenditures only.

The second panel of table D1 shows the effects on the indices of inequality and poverty of adding public health expenditures to disposable income using approach B. We see

that inequality and poverty decrease even more than when using approach A. The differences between approach B and approach C, shown in the third panel, turn out to be marginal.

It can be argued that approach D, which subtracts private health insurance premiums from the disposable income of households without public health insurance, does enhance the comparability of the disposable incomes of households with public and private health insurance, since now for both groups the incomes are calculated net of health insurance costs. Therefore, the results on inequality and poverty can be seen to be more meaningful than the results of approaches A to C. In fact, the differences with the baseline are fairly small. Both inequality and poverty show a small decrease as a result of the fact that low income households are least affected by the subtraction of private health insurance premiums.

Table D2. Effects on inequality and poverty differentiated by age group
Approach A

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons aged			
	Baseline	Appr A	0-14	15-64	65+	All
Gini	0.246	0.220	-2.4	-4.1	-3.3	-10.6
Atkinson0.5	0.050	0.040	-4.0	-8.0	-6.0	-20.0
Atkinson1.5	0.155	0.117	-7.1	-14.2	-3.2	-24.5
Poverty Rate (FGT0)	0.125	0.084	-1.6	-5.0	-9.5	-33.3
Norm. Poverty Gap (FGT1)	0.023	0.015	-5.4	-15.6	4.3	-32.2
FGT2	0.008	0.006	-9.0	-25.5	8.0	-34.3

Approach B

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons aged			
	Baseline	Appr. B	0-14	15-64	65+	All
Gini	0.246	0.213	-2.8	-5.1	-4.5	-13.5
Atkinson0.5	0.050	0.038	-5.6	-10.8	-7.2	-24.2
Atkinson1.5	0.155	0.111	-7.7	-15.7	-4.8	-28.1
Poverty Rate (FGT0)	0.125	0.069	-4.0	-11.4	-9.5	-44.7
Norm. Poverty Gap (FGT1)	0.023	0.013	-8.7	-22.1	4.7	-42.6
FGT2	0.008	0.005	-10.9	-28.0	8.4	-38.8

Approach C

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons aged			
	Baseline	Appr. C	0-14	15-64	65+	All
Gini	0.246	0.213	-2.8	-5.4	-4.2	-13.5
Atkinson0.5	0.050	0.038	-5.6	-11.2	-6.8	-24.2
Atkinson1.5	0.155	0.112	-7.9	-15.2	-4.4	-27.6
Poverty Rate (FGT0)	0.125	0.069	-4.1	-11.1	-9.7	-44.6
Norm. Poverty Gap (FGT1)	0.023	0.013	-8.1	-23.6	3.6	-42.5
FGT2	0.008	0.005	-10.9	-27.6	7.5	-37.6

Approach D

Inequality and poverty indices	Value of the index		Proportional change due to transfers to persons aged			
	Baseline	Appr. D	0-14	15-64	65+	All
Gini	0.246	0.246	0.2	-0.4	0.2	-0.3
Atkinson0.5	0.050	0.049	0.8	-0.6	0.2	-1.2
Atkinson1.5	0.155	0.150	8.8	8.4	0.0	-3.5
Poverty Rate (FGT0)	0.125	0.113	-3.1	-4.5	-4.1	-10.0
Norm. Poverty Gap (FGT1)	0.023	0.020	-3.1	-3.6	-4.5	-9.8
FGT2	0.008	0.009	-0.3	4.7	-3.4	2.6

When we look at the proportional changes in the inequality and poverty indices due to the transfer of public health expenditures to the disposable income of persons in various age groups (table D2), we note that the total effects on the inequality indices are approximately equal to the sum of the effects of the transfers to the various age groups.

By contrast, the sum of the effects on the overall poverty rate of adding public health expenditures to income in specific age groups only is much smaller than the effect of adding these expenditures in all age groups. Obviously, when only specific age groups benefit from the addition of public health expenditures, the other age groups may experience an increase in poverty. On balance, the poverty rate decreases less than expected. In fact the addition of public health expenditures to the income of the elderly only causes an increase in the normalized poverty gap (FGT1) as well as in the FGT2 index. Moreover, with respect to the effects on poverty and inequality of adding public health expenditures to specific age groups only, the differences between the approaches A, B and C turn out to be fairly small.

As could be expected, the effects on poverty and inequality are much smaller when we use approach D and differentiate by age group. The most notable result is that the Atkinson (1.5) indicator increases by more than 8% when we subtract private health insurance premiums in the youngest age group or in the middle age group, but is unaffected when we subtract them in the oldest age group. By contrast, the indicator decreases by 3.5% when we subtract the premiums in all age groups.

4.3 Results differentiated by socio-economic characteristics

Table E1 presents some results of adding public health expenditures to disposable income, differentiated according to a number of household characteristics. Since the highest amounts of health expenditures are added for the benefit of elderly household members, we expect household groups in which the elderly are overrepresented to show the largest increase in income and the largest decrease in inequality. This expectation is confirmed in all classifications distinguished in table E1.

Differentiated according to household type, we see that older single persons and couples show the highest increase in disposable income (almost 25%), and the largest decrease in inequality (36%). The second largest income increase (14%) as well as the second largest decrease in inequality (28%) is found for mono-parental households. The other household groups contain the highest shares of adults aged between 20 and 60 with the lowest public health expenditures. All in all, the share of older single persons and couples in overall inequality (mean log deviation) decreases by about 2.5% but the share of younger single persons and couples increases by a similar percentage.

Differentiated according to socio-economic category of the head of household we find the highest income increase and the largest decrease in inequality among pensioners. Their share in overall inequality decreases by almost 3%, but the share of workers increases by an even larger percentage.

Differentiated according to education, the elderly are overrepresented among the lower educated, and hence we find that the increase in income and the decrease in inequality are highest the group with primary education only.

Not surprisingly, the elderly also experience the highest income increase and the highest decrease in inequality when we differentiate according to age of the household members.

Finally, the differentiation between households with public and private health insurance results in a somewhat higher increase in income and a moderately higher decrease in inequality among the households with a public insurance. In absolute terms, income of households with a private health insurance show a faster increase, as a result of the fact that relatively many elderly have a private health insurance.

This can also be surmised from looking at the first row of the second panel of table E1, where we give the effects on income position and inequality of adding public health expenditures according to approach B, i.e. differentiating between households with a public health insurance and households with a private health insurance. As a result of the overrepresentation of households with a private health insurance among the elderly, their increase in income is somewhat lower when we apply approach B as compared to approach A. However, because the lower income groups mainly consist of households with a public health insurance, whose income increase relatively faster according to approach B, we see that the decrease in inequality among the elderly is considerably higher according to approach B.

Again, this pattern is more or less repeated when we look at the other classifications: most groups in which the elderly are overrepresented show a slightly lower increase in income, but a clearly higher decrease in inequality according to approach B in comparison to approach A. An exception is the group with primary education or less. This is one of the groups with the largest concentration of households with low incomes and hence, the highest concentration of households with a public health insurance. As a result, their income shows the fastest increase according to approach B.

The fourth panel of table E1 gives the results for approach D. As before, the effects are much smaller than the effects of the other approaches, both in terms of the income levels and in terms of the inequality indicator. The largest income decreases caused by subtracting private health insurance premiums are found among the groups of elderly, where both the premiums and the fraction of persons who have to insure privately are relatively high. The subtraction of private health insurance premiums causes an increase in inequality within the group of privately insured persons which can be seen to translate in a small decrease in overall inequality. All in all, the share of between group inequality decreases from almost 11 to 7%, when we group the population by type of health insurance.

table E1. Effects of adding public health expenditures by household characteristics, approach A

Characteristic of household or household head	A	B	C	D	E	F	G	H	I
	Pop. share	Income position		Income increase	Mean log dev.		Increase in MLD	Contr. to aggr ineq	
		Baseline	Appr A.		Baseline	Appr. A.		Baseline	Appr. A
Household type									
Older single persons or couples (at least one 65+)	15.2	91.1	102.0	24.7	0.094	0.060	-35.9	13.7	11.2
Younger single persons or couples (none 65+)	28.6	118.1	113.9	7.4	0.128	0.107	-16.6	35.0	37.4
Couple w. children up to 18 (no other HH members)	40.7	94.7	93.9	10.5	0.081	0.063	-22.2	31.4	31.3
Mono-parental household	3.1	58.4	59.8	14.1	0.056	0.040	-27.9	1.7	1.5
Other household types	12.4	97.0	95.9	10.2	0.079	0.066	-17.5	9.4	9.9
% Within groups inequality								91.1	91.5
% Between groups inequality								8.9	8.5
Socioeconomic group of HH head									
Blue or white collar worker	72.2	105.1	102.6	8.9	0.084	0.071	-15.7	58.1	62.9
Self-employed	4.7	109.3	107.2	9.3	0.196	0.148	-24.7	8.8	8.5
Unemployed	2.5	55.8	58.3	16.4	0.194	0.127	-34.6	4.6	3.9
Pensioner	16.9	91.1	100.8	23.3	0.095	0.060	-36.5	15.3	12.5
Other	3.7	59.9	64.2	19.4	0.118	0.093	-20.6	4.2	4.2
% Within groups inequality								91.0	91.9
% Between groups inequality								9.0	8.1
Educational level of HH head									
Tertiary education	30.5	124.4	121.0	8.4	0.096	0.081	-15.7	27.9	30.2
Upper secondary education	45.9	96.1	96.0	11.4	0.088	0.068	-21.9	38.4	38.5
Lower secondary education	14.7	78.7	81.7	15.6	0.078	0.060	-23.0	10.9	10.7
Primary education or less	8.9	71.4	78.6	22.6	0.082	0.060	-27.2	7.0	6.5
% Within groups inequality								84.2	85.9
% Between groups inequality								15.8	14.1
Age of HH member									
Below 25	30.2	88.4	87.7	10.5	0.093	0.075	-19.1	26.8	27.8
25-64	55.5	108.8	106.3	8.9	0.105	0.085	-19.8	55.8	57.5
Over 64	14.3	90.2	101.4	25.3	0.092	0.059	-36.2	12.6	10.3
% Within groups inequality								95.3	95.6
% Between groups inequality								4.7	4.4
Type of health insurance									
Public	60.5	87.7	88.4	12.4	0.098	0.074	-24.3	56.4	54.8
Private	39.5	118.8	117.7	10.4	0.087	0.068	-21.7	32.9	33.1
% Within groups inequality								89.3	87.8
% Between groups inequality								10.7	12.2
ALL	100.0	100.0	100.0	11.5	0.105	0.082	-22.1	100.0	100.0

Table E1 (continued): Approach B

Characteristic of household or household head	A	B	C	D	E	F	G	H	I
	Pop. share	Income position		Income increase	Mean log dev.		Increase in MLD	Contr. to aggr ineq	
		Baseline	Appr B.		Baseline	Appr. B.		Baseline	Appr. B
Household type									
Older single persons or couples (at least one 65+)	15.2	91.1	100.8	23.1	0.094	0.049	-48.0	13.7	9.7
Younger single persons or couples (none 65+)	28.6	118.1	115.0	8.2	0.128	0.104	-18.8	35.0	38.5
Couple w. children up to 18 (no other HH members)	40.7	94.7	93.1	9.3	0.081	0.059	-27.4	31.4	30.9
Mono-parental household	3.1	58.4	61.7	17.5	0.056	0.040	-28.2	1.7	1.6
Other household types	12.4	97.0	96.7	10.9	0.079	0.063	-20.6	9.4	10.1
% Within groups inequality								91.1	90.7
% Between groups inequality								8.9	9.3
Socioeconomic group of HH head									
Blue or white collar worker	72.2	105.1	102.8	8.7	0.084	0.068	-19.8	58.1	63.2
Self-employed	4.7	109.3	106.0	7.8	0.196	0.151	-23.2	8.8	9.1
Unemployed	2.5	55.8	59.9	19.4	0.194	0.135	-30.1	4.6	4.4
Pensioner	16.9	91.1	99.7	21.8	0.095	0.051	-46.1	15.3	11.2
Other	3.7	59.9	66.4	23.3	0.118	0.095	-19.0	4.2	4.6
% Within groups inequality								91.0	92.4
% Between groups inequality								9.0	7.6
Educational level of HH head									
Tertiary education	30.5	124.4	119.7	7.0	0.096	0.081	-15.6	27.9	31.9
Upper secondary education	45.9	96.1	96.1	11.2	0.088	0.065	-25.8	38.4	38.6
Lower secondary education	14.7	78.7	82.8	16.9	0.078	0.055	-29.1	10.9	10.4
Primary education or less	8.9	71.4	80.7	25.5	0.082	0.053	-35.7	7.0	6.1
% Within groups inequality								84.2	87.1
% Between groups inequality								15.8	12.9
Age of HH member									
Below 25	30.2	88.4	87.5	10.0	0.093	0.071	-23.9	26.8	27.6
25-64	55.5	108.8	106.8	9.1	0.105	0.082	-22.5	55.8	58.7
Over 64	14.3	90.2	100.2	23.4	0.092	0.047	-48.9	12.6	8.8
% Within groups inequality								95.3	95.1
% Between groups inequality								4.7	4.9
Type of health insurance									
Public	60.5	87.7	91.3	15.7	0.098	0.070	-28.6	56.4	54.6
Private	39.5	118.8	113.4	6.1	0.087	0.074	-14.7	32.9	38.0
% Within groups inequality								89.3	92.6
% Between groups inequality								10.7	7.4
ALL	100.0	100.0	100.0	11.2	0.105	0.077	-26.2	100.0	100.0

Table E1 (continued): Approach C

Characteristic of household or household head	A	B	C	D	E	F	G	H	I
	Pop. share	Income position		Income increase	Mean log dev.		Increase in MLD	Contr. to aggr ineq	
		Baseline	Appr. C.		Baseline	Appr. C.		Baseline	Appr. C.
Household type									
Older single persons or couples (at least one 65+)	15.2	91.1	101.8	24.4	0.094	0.051	-45.5	13.7	10.1
Younger single persons or couples (none 65+)	28.6	118.1	114.5	7.9	0.128	0.105	-18.0	35.0	38.7
Couple w. children up to 18 (no other HH members)	40.7	94.7	93.2	9.5	0.081	0.058	-28.1	31.4	30.5
Mono-parental household	3.1	58.4	62.1	18.5	0.056	0.040	-28.8	1.7	1.6
Other household types	12.4	97.0	96.3	10.5	0.079	0.063	-20.3	9.4	10.1
% Within groups inequality								91.1	91.0
% Between groups inequality								8.9	9.0
Socioeconomic group of HH head									
Blue or white collar worker	72.2	105.1	102.6	8.7	0.084	0.067	-20.5	58.1	62.5
Self-employed	4.7	109.3	105.7	7.6	0.196	0.151	-22.8	8.8	9.1
Unemployed	2.5	55.8	59.9	19.6	0.194	0.139	-28.4	4.6	4.5
Pensioner	16.9	91.1	100.5	22.8	0.095	0.054	-43.5	15.3	11.7
Other	3.7	59.9	66.1	22.8	0.118	0.098	-16.8	4.2	4.7
% Within groups inequality								91.0	92.4
% Between groups inequality								9.0	7.6
Educational level of HH head									
Tertiary education	30.5	124.4	119.7	7.1	0.096	0.081	-15.1	27.9	32.0
Upper secondary education	45.9	96.1	96.2	11.4	0.088	0.065	-25.7	38.4	38.6
Lower secondary education	14.7	78.7	82.9	17.2	0.078	0.055	-29.2	10.9	10.4
Primary education or less	8.9	71.4	80.3	25.2	0.082	0.053	-35.4	7.0	6.1
% Within groups inequality								84.2	87.1
% Between groups inequality								15.8	12.9
Age of HH member									
Below 25	30.2	88.4	87.4	10.1	0.093	0.071	-23.8	26.8	27.5
25-64	55.5	108.8	106.5	9.0	0.105	0.082	-22.6	55.8	58.4
Over 64	14.3	90.2	101.2	24.9	0.092	0.050	-46.1	12.6	9.2
% Within groups inequality								95.3	95.2
% Between groups inequality								4.7	4.8
Type of health insurance									
Public	60.5	87.7	91.2	15.7	0.098	0.070	-28.5	56.4	54.5
Private	39.5	118.8	113.5	6.3	0.087	0.075	-14.5	32.9	38.0
% Within groups inequality								89.3	92.5
% Between groups inequality								10.7	7.5
ALL	100.0	100.0	100.0	11.3	0.105	0.077	-26.0	100.0	100.0

Table E1 (continued): Approach D									
Characteristic of household or household head	A	B	C	D	E	F	G	H	I
	Pop. share	Income position		Income increase	Mean log dev.		Increase in MLD	Contr. to aggr ineq	
		Baseline	Appr D.		Baseline	Appr. D		Baseline	Appr. D
Household type									
Older single persons or couples (at least one 65+)	15.2	91.1	88.7	-5.5	0.094	0.089	-5.6	13.7	13.3
Younger single persons or couples (none 65+)	28.6	118.1	120.3	-1.1	0.128	0.125	-2.2	35.0	35.1
Couple w. children up to 18 (no other HH members)	40.7	94.7	93.6	-4.1	0.081	0.075	-7.2	31.4	29.9
Mono-parental household	3.1	58.4	59.9	-0.4	0.056	0.071	27.7	1.7	2.2
Other household types	12.4	97.0	98.0	-1.9	0.079	0.076	-4.9	9.4	9.1
% Within groups inequality								91.1	89.5
% Between groups inequality								8.9	10.5
Socioeconomic group of HH head									
Blue or white collar worker	72.2	105.1	105.6	-2.5	0.084	0.084	-0.2	58.1	59.5
Self-employed	4.7	109.3	108.2	-4.0	0.196	0.212	8.1	8.8	9.7
Unemployed	2.5	55.8	56.7	-1.4	0.194	0.135	-30.5	4.6	3.3
Pensioner	16.9	91.1	88.8	-5.4	0.095	0.085	-10.3	15.3	14.1
Other	3.7	59.9	61.0	-1.2	0.118	0.131	11.1	4.2	4.7
% Within groups inequality								91.0	91.3
% Between groups inequality								9.0	8.7
Educational level of HH head									
Tertiary education	30.5	124.4	123.9	-3.3	0.096	0.090	-5.6	27.9	27.0
Upper secondary education	45.9	96.1	96.2	-2.8	0.088	0.087	-0.7	38.4	39.1
Lower secondary education	14.7	78.7	79.2	-2.4	0.078	0.078	0.0	10.9	11.1
Primary education or less	8.9	71.4	71.8	-2.4	0.082	0.080	-3.1	7.0	6.9
% Within groups inequality								84.2	84.2
% Between groups inequality								15.8	15.8
Age of HH member									
Below 25	30.2	88.4	88.0	-3.4	0.093	0.089	-4.4	26.8	26.2
25-64	55.5	108.8	109.7	-2.2	0.105	0.103	-2.7	55.8	55.7
Over 64	14.3	90.2	87.7	-5.7	0.092	0.087	-6.3	12.6	12.1
% Within groups inequality								95.3	94.1
% Between groups inequality								4.7	5.9
Type of health insurance									
Public	60.5	87.7	90.4	0.0	0.098	0.098	0.0	56.4	57.8
Private	39.5	118.8	114.7	-6.3	0.087	0.091	4.3	32.9	35.2
% Within groups inequality								89.3	93.0
% Between groups inequality								10.7	7.0
ALL	100.0	100.0	100.0	-3.0	0.105	0.102	-2.5	100.0	100.0

The largest effects on inequality are found in the relatively small groups of mono-parental households and the unemployed. In both cases a few observations with low incomes have a substantial effect on the inequality indicator. Where the resulting income is still positive, inequality in terms of the mean log deviation shows an increase but where the resulting income is negative, the observation drops out of the calculation and inequality appears to decrease.

5. Conclusion

In this report, we have presented results of adding public health expenditures per capita, subdivided according to age, to disposable income. The first approach did not take into account that the benefits of public health expenditures are lower for persons with a private health insurance than for persons with public health insurance. Two alternative approaches differentiated between these two categories. In addition, we show the result of subtracting private health insurance premiums from disposable income instead of adding public health expenditures.

Because the largest amounts of health expenditures are spent for the benefit of the elderly, the elderly show the largest increase in income when health expenditures are added. In addition, they show the largest decrease in income inequality. Income inequality decreases even more when the difference between public and private health insurances is taken into account. When we deduct private health insurance premiums instead, the effects are much more moderate.

As of 2006, the distinction between public and private health insurance has been abolished. The available data do not yet allow the calculation of the effects of adding public health expenditures where this is taken into account.