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REDISTRIBUTIVE EFFECTS OF THE SWEDISH HEALTH CARE FINANCING SYSTEM*

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Abstract. The paper investigates the redistributive effects of the Swedish health care financing system in 1980 and 1990 for four different financial sources: County council taxes, payroll taxes, direct payments and state grants. The redistributive effects are decomposed into vertical, horizontal and reranking segments for each of the four financial sources. The data used in this study is based on probability samples of the Swedish population, the Level of Living Survey (LNU) from 1981 and 1991. The paper concludes that the Swedish health care financing system is weakly progressive, although direct payments are regressive. There are some horizontal inequity and reranking, which mainly comes from the county council taxes, since those tax rates vary for each county councils. The implication is that, to some extent, people with equal incomes are treated unequally.

JEL-Classification: D3, D63

Keywords: Equity, health care, financing, redistributive effects

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1. INTRODUCTION

Though a substantial part of health care is publicly financed and delivered in Sweden, health care is privately consumed in quantities determined by physicians and patients. Health care prices are highly subsidised by the society, and neither physicians nor patients are, to a large degree, concerned about the real costs of health care. Moreover, with growing welfare the desire for better health has increased and the health expenditures for the public sector have grown. Because there are great deficits in the Swedish public sector, several changes have been introduced to reduce health expenditures and/or to use the available resources more efficiently, e.g., introduction of internal markets (Rehnberg 1995). There have also been propositions to finance a larger part of health care via private financing.

The financing and organisation of the public sector, including the health care sector, may have redistributive effects and equity consequences. Changes in health care financing affect the individual, and the question arises whether reforms in the financing of health care is equitable or not. An increase in direct payments may restrict the use of health care, which would be unfair to poor people because poor people are more often sick. Higher direct payments also affect the distribution of the disposable income, which can be used for other goods than health care, and more financing through taxes affects the taxpayers proportionally, progressively or regressively depending on how the tax system is designed.

The Swedish Health Care Act (1982) states that the county councils (landstingen) are allowed to determine individual payments for care, and that people living within the county council must be treated equally. The Act further holds that the goal for health

care is good health and treatment under equal conditions for the total population. However, the Act does not tell us explicitly anything about judgements of equity, which instead are determined by politicians in the county councils.

In empirical studies, the customary equity definition concerning financing is payments according to ability to pay, which means that individuals having a greater ability to pay ought to pay more regardless of their health (vertical equity) and that individuals having the same ability to pay ought to pay the same, regardless of their health (horizontal equity).

In the present study,[1] equity in the financing of health care in Sweden is examined for the periods 1980 and 1990. We will also compare changes in the system between these two periods. Until now, the Swedish financial health care system has not been studied in the perspective of redistributive effects. In our study, we will decompose the redistributive effects of all financing sources, such as county council tax, payroll tax, state grants and out of pocket payment, in both vertical and horizontal equity and discuss redistributive effects from differential treatments.

The paper is organised into six Sections. Section 2 briefly describes the Swedish financial health care system; Section 3, describes the methods used to analyse equity in the financing of health care; Section 4 presents the data and incidence assumptions; Section 5 reports the results; and Section 6 summarises and concludes the paper.

[1] This paper is part of a larger study on equity in the financing of health care in selected European countries (and the United States) within the so-called ECuity-group. In this group, there are people from Belgium, Denmark, England, Finland, France, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United States with Adam Wagstaff (England) and Eddy van Doorslaer (the

2. THE FINANCING OF HEALTH CARE IN SWEDEN

The major part of health care expenditures is covered by the proportional tax levied by the 26 politically, economically and administratively "independent" county councils. These county councils (including some independent larger municipalities) are, by law, responsible for health care delivery within their geographical boundaries. In accordance with the Swedish Health Care Act of 1982, the fundamental goals of health care are "good health and health care under equal conditions for the entire population". The county councils are required, under this Act, to promote the health of their residents and to offer equal access to good medical care. The Act requires county councils to plan the development and organisation of health care with reference to the needs of the population. This planning must also include the health care rendered by other providers, such as private practitioners and physicians in occupational health care. Private health care exists only to a limited extent. Health care is practically the county councils sole responsibility; health care accounts for about 80% of the operating costs of a county council. In addition to health care, the county councils have certain limited commitments in the field of social welfare, culture and public transportation. The county council tax, or more exactly, that portion of this tax that is assigned to health care, must be regarded as comparable with a universal public health insurance fee covering the individuals expenditure for health care. The remaining health care expenditures are financed through the health insurance for in-patient and ambulatory physician visits, additional grants to support teaching and research at university hospitals and to equalise income among rich and poor county councils and consumer charges.

Netherlands) as project leaders. The results from a previous study within this group, where Sweden was not included, have been presented in van Doorslaer et al. (1993) and Wagstaff and van Doorslaer (1992).

Thus, the overall health care expenditures in Sweden are financed through four different sources: County council taxes (60.0% in 1990), health insurance (17.8%), grants from the state (11.9%) and direct consumer charges (10.3%)[2]. There are direct consumer charges for visits to public health care facilities, for prescribed drugs, and for visits to private physicians who are associated with the social insurance plan. Table 1 shows the composition of the financing sources in 1980 and 1990.

TABLE 1**:** THE FINANCING SOURCES OF HEALTH CARE EXPENDITURES

FINANCING SOURCE	**PERCENT 1980**	**PERCENT 1990**
COUNTY COUNCIL TAXES	56.0	60.0
State grants to the county councils	12.9	8.0
State grants to health care in the social insurance	3.1	3.9
TOTAL STATE GRANTS	16.0	11.9
PAYROLL TAXES TO HEALTH INSURANCE	19.9	17.8
PRIVATE CONSUMPTION	8.1	10.3

Source: Own estimations from National Accounting and Yearbook for the County Councils.

After having been at a low level, consumer charges have increased recently, and it now appears as though the public authorities will, to some extent, use consumer charges as a means of restriction to reduce the demand for health care. The patient pays a standard fee that has been enacted by each county council for public ambulatory services. This means that the patient pays about SEK 100 to consult a physician[3]. Visits to private physicians come under a separate national governmental regulated system, where the patient as a rule pays SEK 140 per consultation. The standard fee also covers drug

[2]Own estimations from National Accounting and Yearbook for the County Councils. See Appendix 1 for details.

[3]All figures in this section are based on medical prices in 1992.

prescriptions, a doctor's certificate to qualify for sickness benefit, X-rays, therapeutic radiology, laboratory tests, and referral to a specialist.

An insured person may be entitled to reimbursement for travel expenses incurred in connection with medical or dental treatment or hospital stay. This is calculated according to the cheapest means of transport suitable for the patient and is normally paid for expenditures over SEK 35.

The patients costs for medical treatment and drugs are restricted to a maximum of SEK 1,600 per annum, after which further treatment/drugs are free of charge (high cost shelter). Charges for in-patient care in hospital are usually SEK 65-70 per day. A retired person pays at most SEK 65. There is no fee for children under 16 years for in-patient care.

The National Dental Service offers all children up to the age of 19 years free dental care. For adults, health insurance (social insurance) covers treatment and preventive dental care given by employees of the National Dental Service, as well as the majority of dentists in private practice. Dentists must adhere to government regulated prices. In 1993, for any one course of treatment, the patient paid 70% of the cost up to SEK 3,000, 50% of the cost between SEK 3,000 and SEK 7,000 and 25% above SEK 7,000. Dentists are directly reimbursed for the remainder of the costs by the health insurance authorities.

The health insurance partly refunds medicines expenses that have been prescribed by a doctor or a dentist. There are no refunds for drugs connected with preventive measures.

The maximum amount payable at one time by a prescription holder for a pharmaceutical preparation (officially registered drug) is SEK 120, plus SEK 10 for each additional drug prescribed. Life-saving drugs needed for chronic and serious diseases are free of charge. A reduced charge also applies to prescriptions for oral contraceptives for birth control. From January 1993, the patient is required to pay extra if he or she chooses a more expensive drug than the generic alternative.

3. METHODS

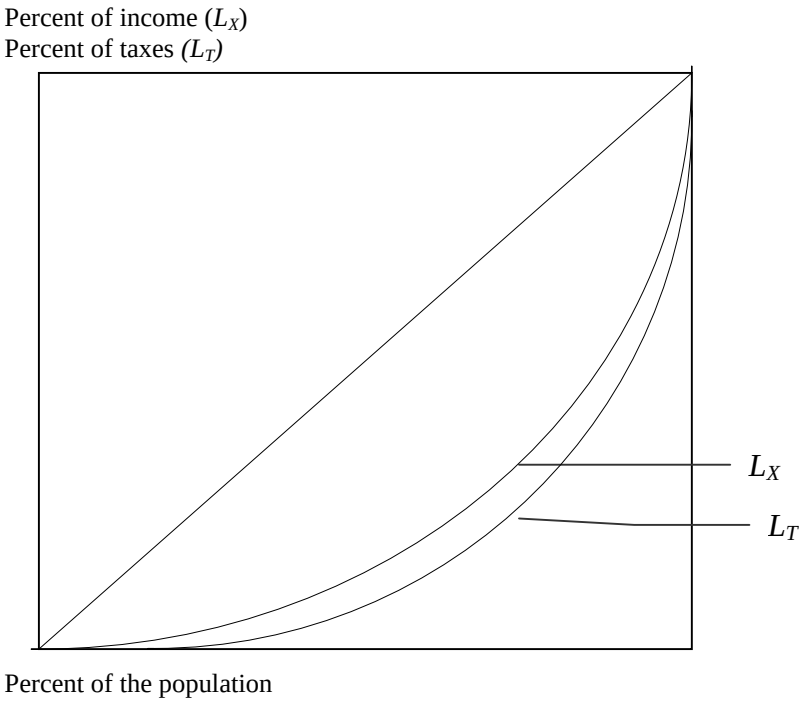
The progressivity of a health care financing system refers to the extent to which payments for health care rise as a proportion of a person's income when his/her income rises. The most common index of progressivity is Kakwani's index (Kakwani (1977)). This index measures the extent to which a tax system departs from proportionality. The cumulative proportion of the population, ranked according to pre-tax income, is plotted against the cumulative proportion of tax payments to obtain the tax concentration curve. If the tax system is proportional, the Lorenz curve (L_X in Figure 1) and the tax concentration curve (L_T in Figure 1) will coincide, and if the system is progressive, as in Figure 1, the tax concentration curve will lie outside the Lorenz curve. The tax concentration index for n people may be formalised to

$$C_{tax} = 1 - (2/(n^2\,\overline{Tx}))(t_1x_1 + 2t_2x_2 + ...+nt_nx_n) + 1/n,$$

where $x_1 \geq x_2 \geq .... \geq x_n$ equals pre-tax income, t_1 to t_n tax rates, $Tx = t_1x_1 + t_2x_2 + ...+t_nx_n$ and $\overline{Tx} = Tx/n$. If G_X is the Gini coefficient for pre-tax income then Kakwani´s index of progressivity, K_T, is defined as $K_T = C_{tax} - G_X$. The Gini coefficient is defined as one minus twice the area under the Lorenz curve, and the concentration index for taxes as one minus twice the area under the concentration curve for taxes. Because $-1 \leq C_{tax} \leq 1$ and $0 \leq G_X \leq 1$, the lowest value for K_T is -2. This is a situation where the richest person receives all incomes so that G_X is 1 (L_X coincides with the axes in the corner below to the right), and the poorest person pays all taxes, so that C_{tax} is -1 (L_T coincides with the axes in the upper corner to the left). The highest value for K_T is 1. Then one person pays all taxes, so that C_{tax} is 1 (L_T

coincides with the axes down to the right), and incomes before tax are distributed so that G_X is zero (L_X overlaps the diagonal). Kakwani (1977) states that if K_T is positive the tax system is progressive; when K_T is negative the tax system is regressive. Kakwani´s index is defined as twice the difference of the area below the tax concentration curve and the Lorenz curve.

Figure 1. Lorenz curve of income and concentration curve for taxes



When a progressive tax is imposed on income, there is a redistributed effect and the Gini coefficient is reduced (Aronson et. al. (1994), Lambert and Aronson (1993)). If people are ranked according to income after tax, the corresponding Gini coefficient is G_{ATI}, and the redistributed effect may be measured as

$$RE = G_X - G_{ATI}$$

If t is the average tax rate, which faces everybody irrespective of civil status or other non-income characteristics, the redistributed effect is measured as

$$RE = (t/(1 - t))K_T.$$

However, civil status, children, property, housing etc. function so that households pay differential taxes even though they have the same incomes. Tax liabilities may then differ between households and become $Tx = Tx(x) + \varepsilon(x)$, where $\varepsilon(x)$ is the deviation from average tax burden for a specific household. If households with the same incomes are differentially taxed $\varepsilon(x) \neq 0$. Then we have horizontal inequity. Moreover, because households with the same incomes pay different taxes they may have another ranking after tax than before. Therefore, the redistributive effect shown above is no longer valid, and one household may be better off than another before tax but worse off after tax. Note that the measures used are only descriptive measures of inequity, which we can not interpret normatively. Formally, the decomposition of the Gini coefficient into between-groups and within-groups contributions then takes the form (shown by Aronson et al. (1994) and Aronson and Lambert (1994))[4]:

$$RE = (t/(1 - t))K_T - \Sigma\alpha(x)G_{ATI} - (G_{ATI} - C_{ATI}) = V - H - R, \text{ where}$$

$$V = (t/(1 - t))K_T, \; H = \Sigma\alpha(x)G_{ATI} \text{ and } R = G_{ATI} - C_{ATI}.$$

[4]Jenkins (1988a) develops a measure of inequity caused by reranking, but it does not refer to vertical inequity as Aronson et al.

$\alpha(x)$ is the product of the population share and post-tax income share of those with income x; G_{ATI} is the Gini coefficient for post-tax income for households with income x before tax; and C_{ATI} is the concentration index after tax for households with the same income before tax. Thus, the redistributive effect takes the form of vertical, horizontal and reranking terms[5]. The vertical term V equals G_X-G_0, where G_0 is the Gini coefficient between groups, which is received by putting income $(x - Tx)$ instead of income after tax $(x - Tx - \varepsilon(x))$. G_0 is the post-tax Gini coefficient obtained if all units with pre-tax income x pay the same tax. V may also be written as $t/(1 - t)K_T$ and measures the inequality reduction when all units face the same tax schedule. The horizontal term H equals $\Sigma\ \alpha(x)G_{ATI}$, which comes from unequal treatment of equals[6]. The reranking term R is the Atkinson/Plotnik index of reranking and equals G_{ATI} - C_{ATI}[7]. It measures the extent of reranking by comparing the post-tax Gini coefficient with the post-tax concentration coefficient, when the households move from pre-tax distribution to post-tax distribution. R is zero only if there is no reranking. This term is also called the residual or overlap, because it arises if the subgroup income ranges overlap. This decomposition enables us to distinguish between horizontal inequity, which refers to treatment of equals and, reranking, which refers to treatment of unequals. The terms H and R vary between zero and one. The difference between horizontal inequity and reranking may also be illustrated by Figure 2.

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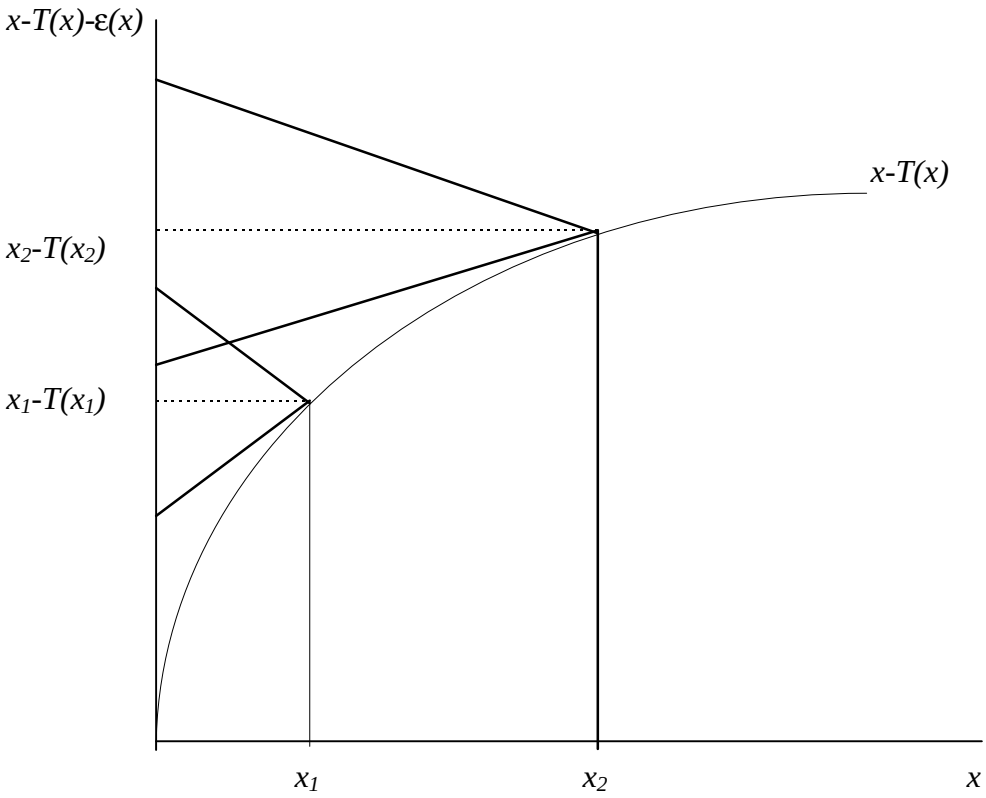
[5]Kaplow (1989) has a discussion of the relationship between horizontal inequity and vertical inequity, where he argues that the smaller the income equality groups the less horizontal inequity, and, thereby the inequity turns out to be only a case of vertical inequity. Also, Musgrave (1990) argues about horizontal and vertical inequity. He is concerned about the conflict between the two goals, that a trade-off will be needed and the problem with the valuation of, for example, a reform that reduces the horizontal inequity and increases the vertical inequity.

[6]Note that the implicit assumption when we calculate the index for horizontal inequity is that the system is regressive within each group. This follows from the fact that within each group $G_x = 0$ and $G_{x\text{-}T} > 0$, that is $RE = G_x - G_{x\text{-}T} < 0$ within each group.

[7]Jenkins (1988b) analyses the importance of taking into account the reranking effect.

Some authors (e.g., Atkinson (1980) and Plotnick (1981)) have suggested that horizontal inequity and reranking refer to the same thing. In Figure 2, it is easy to distinguish between horizontal inequity and rerankning. Horizontal inequity occurs when people with equal incomes are treated unequally, whereas reranking happens when people with unequal incomes change places in the ranking after taxes. That is, horizontal inequity refers to the existence of the fans, while reranking refers to the case when the fans overlap. Thus, reranking can never occur if there is no horizontal inequity.

Figure 2: Horizontal inequity and reranking

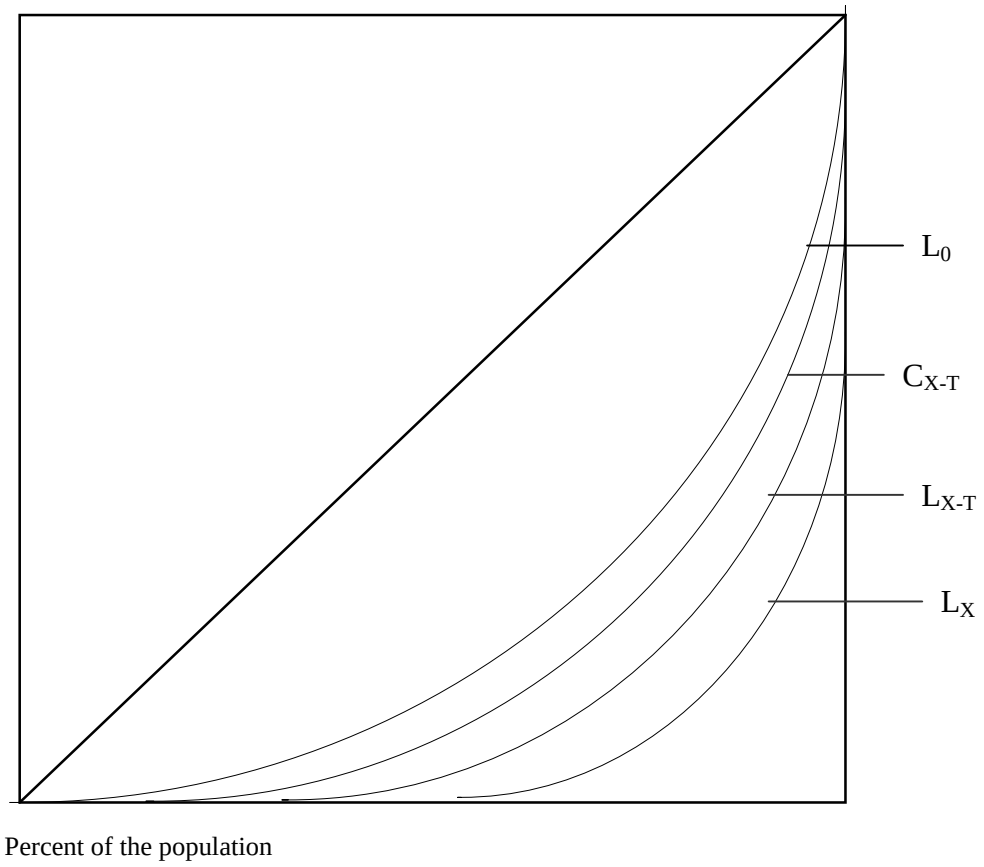


Source: Aronson et al. (1994), page 264.

The decomposition described above may also be illustrated by concentration curves. In Figure 3, L_X is the pre-tax Lorenz curve and L_0 the Lorenz curve for income after tax payments if there is no unequal treatment. Thus, the vertical term V is the movement from L_X to L_0. If there is unequal treatment then it may be shown in two parts, the horizontal part and the reranking part. The horizontal part is illustrated in Figure 3 by C_{X-T}, which is the concentration curve for income after tax for people with the same income before tax. Thus, horizontal inequity is illustrated by the move from L_0 to C_{X-T}. If there is unequal treatment of equals, then the distribution of income after tax is more uneven for people with the same income before tax. Thus, the curve C_{X-T} must always lie below L_0 (or overlap), that is H always has to be positive or zero. The reranking

segment of the redistribution is illustrated in Figure 3 by the move from C_{X-T} to L_{X-T}, where L_{X-T} is the Lorenz curve for income after tax. Also, the reranking term has to be positive.

Figure 3. Decomposition of the Gini coefficient by concentration curves



Health care is financed by taxes and other payments. We may, therefore, use the decomposition of the redistributive effect of the health care system in Sweden into the three components *V*, *H* and *R* mentioned above. Thus, instead of taxes we speak about payments to health care.

In our calculations, *RE* has been estimated by taking the difference between the Gini coefficient for income before and after health care payments (G_X - G_{ATI}). The

calculations have been done by use of the covariance method used by Jenkins (1988). The Gini coefficient for income before payments has been estimated by the formula

$$G_x = [(n^2 - 1)/6n](b/\bar{x}),$$

where $\bar{x}$ is mean income before payments, $b = cov(x,rx)/var(rx)$ and rx the rank variable for x; b is estimated by a regression of x on rx. The Gini coefficient for income after payments has been estimated by the same formula used to estimate income before payments. The reranking coefficient R has been calculated by the difference between the Gini coefficient after payments (G_{ATI}) and the concentration index for income after payments for people with equal incomes before tax (C_{ATI}). V has been calculated by Kakwani´s index from the formula $(t/(1-t))K_T$ and H has been calculated as a residual ($V - R - RE$).

4. DATA, VARIABLE DEFINITIONS AND INCIDENCE ASSUMPTIONS

The present empirical analysis is based on data from probability samples of the Swedish population, the Level of Living Survey (LNU) from 1981 and 1991. In both samples, the interviews were made during spring and summer, and consists of about 7,000 individuals between 15-76 years in 1981 and 18-76 years in 1991. The response rate was about 80 % in both samples. The surveys contain data on health status, use of medical care, socio-economic variables and family composition. Because the LNU samples have been linked to national income tax statistics, we also have data on incomes, wages and transfers, including non-taxable transfers, paid taxes for both the respondent and the wife/husband/cohabitant. (For further details, see Erikson and Åberg (1987), Levnadsnivåundersökningen (1991) and Fritzell and Lundberg (1994)). All figures concerning income, grants, subsidies and taxes refer to the year before the interview, that is 1980 and 1990.

The income concept in the current study is total pre-tax household income per equivalent adult. Household is defined in terms of the respondent in addition to wife/husband/cohabitant and children. Pre-tax income is total income for the respondent and his/her wife/husband/cohabitant[8]. This includes earned income, capital income, all taxable social insurance transfers (e.g., pensions, sick pay, maternity pay, parents allowances and unemployment pay), non-taxable child allowances and means tested allowances such as housing allowances and social benefits[9]. The definition of income follows the definition of gross income by the Luxembourg Income Study (LIS).

[8]Farmers and self-employed are included.
[9]Data for means tested social allowances are available only for 1990.

Although the tax authorities use annual taxable income as a definition of pre-tax income, we argue that by using gross income as an income measure we can capture the inequities in the financing of health care in a better way[10].

The Swedish equivalence scale used is that suggested by Jansson (1990): 1 adult = 1, 2 adults = 1.65, children younger or equal to 5 years = 0.51, children 6 to 15 years = 0.62 and children 16-18 years = 0.65[11]. Another equivalent scale commonly used in studies of income distribution in Sweden is the one recommended by the National Board of Health and Welfare, and derivations from these recommendations. Some of those scales do not use different weights for children, only different weights for a different number of persons in the household. This means that a household with two adults receives the same equivalent weight as a single person with one child, irrespective of the age of the child[12]. We argue that we can describe the burden in the household more efficiently by using the described equivalence scale.

We will now discuss how we distribute all health care payments among the households in the sample, i.e. payments through the county council tax, payroll tax, which mainly finance the social insurance, grants from the state, which partly finance expenditure of

[10]If we would use taxable income as our income definition, we would possibly have very small inequities in health care payments from the county council tax, because that tax is proportional to municipal taxable income. The only inequities we would get should come from the different county council tax rate in different county councils. By using gross income as our income measure, we may have both vertical and horizontal inequity, as well as reranking due to different deductions, different family composition and different non-taxable transfers.

[11]Jansson (1990) has equivalent weights for children 0 - 15 years only. We argue that children 16-18 years are the same burden in the family as the second adult. We have also tried the equivalence scale used by the ECuity-group; 1 for the first adult and 0.5 for every other family members irrespective of whether the family member is an adult or a child. Moreover, we have also tried an equivalence scale used by OECD. There are only marginal differences in the results when we use different equivalence scales.

[12]See for example Björklund et al. (1995).

the county councils and the social insurance and out-of-pocket payments[13]. All payments have been adjusted by the same equivalence scale as was done for gross income. In both samples, we have included people in the ages 18 years and over. After correcting for missing values and because of the age restriction, the final samples consist of 4,994 and 5,274 individuals for 1980 and 1990, respectively. Descriptive statistics of the samples are shown in Appendix 2.

County council tax: Of the total financing of the Swedish health care, about 60% is financed from the county councils. In turn, the county councils are mainly financed through a proportional tax on total taxable incomes of their inhabitants. The county council tax payment is not directly available from the data source. However, because we have information about both the tax rate in different county councils and the residence for each respondent, we can easily estimate how much each individual in the sample has contributed to the financing of health care through county council taxes. The county council tax rate in 1980 varied between 11.00% and 13.50% (13.50% and 14.50% in 1990) and was on average 12.61% (13.96% in 1990).[14] On average, 78% (the same for 1980 and 1990) of all expenses of the county councils was expenses for health care[15]. However, this part varies across the county councils from about 64 to about 86 % in 1980 and 70 to 85% in 1990. In our estimations we have taken account of these variations. On average, each person with a taxable income contributed 78% of

[13]In many international studies it is common to analyse the redistributive effects from direct and indirect taxes, social insurance and direct payments. In another version to this study we have added up county council tax and the part of state grants that comes from state income taxes and property taxes into direct taxes, and the part of state grants that comes from indirect taxes into indirect taxes. Moreover, in that study we have used another equivalent scale: 0.5 for the second adult and each child. This study is forthcoming in van Doorslaer and Wagstaff (Eds), Equity in the Finance of Health Care.

[14]Malmö, Göteborg and Gotland, which are county councils of their own, have assumed to have the average tax rate.

[15]Source: Statistical Yearbook for the County Councils 91/92, Table 2.4.

their county council tax to the finance of health care. We assume that the incidence of the tax falls entirely on the employees.

Payroll tax: The social insurance destined to health care (health insurance) is mainly financed by payroll taxes, 86% in 1980 and 77% 1990[16]. These payroll taxes, paid directly by the employer and earmarked for the health insurance in the social insurance, are 10.6% and 10.1% on earned income for 1980 and 1990, respectively[17]. However, only 32% (both in 1980 and 1990) of the health insurance is bounded to health care.[18] We assume that the burden of the payroll tax is borne fully by the employees. The payroll taxes are, therefore, seen as a tax on the household. In the estimation, payroll taxes are distributed on the households by multiplying household earned income first by 0.106 and 0.101 for 1980 and 1990, respectively, and then by 0.32.

Grants from the state: The remaining financial sources to the county councils and the social insurance are grants from the state. These grants were 7,247 and 24,665 million SEK in 1980 and 1990, respectively, to the county councils and 4,235 and 16,251 million SEK to health insurance[19]. Because grants from the state are paid out of taxes that are not earmarked for health care, we attempt to get rough estimates of household contributions for the financing of state grants by assuming that these grants are financed through the same financing sources as are the financing sources of total state consumption. State tax sources are direct taxes from personal income and corporation

[16]Sources: Statistical Yearbook for the County Councils Table 9.3 1984 and Table 2.27 1994.

[17]In 1980, payroll taxes were paid only up to 7.5 of the basic amount. The calculation of the basic amount is based on changes in consumer price index.

[18]The major part of the expenses in health insurance is compensation for loss earnings when people are sick , 45 % 1980 and 42 % 1990. Sources: Statistical Yearbook for the County Councils, Table 9.2 1984 and Table 2.27 1994.

taxes, indirect taxes from value added taxes and other indirect taxes, property taxes, social insurance contributions, taxes on forest, housing, gifts, inheritance and stamps. In Table 2, we show the real percentages of state direct income taxes, indirect taxes and property taxes based on total state revenues, as well as the proximate percentages of total state revenues, i.e. percentages that are assumed to make up state grants to the county councils and social insurance.

When we estimate the household contribution to the financing of state grants we presume that the sample contributes with the same part of the grants as its part of the population in these ages. We further assume that the households contribute by paying direct taxes, indirect taxes and property taxes in the proportions shown in Table 1. Direct taxes are distributed according to income taxes paid to the state. Thus, we distribute corporation taxes in the same proportions as personal income taxes because we do not have data on corporation taxes in the sample. In this way we are not able to capture the effects from different corporation tax payments in different income groups. Property taxes are also distributed according to property taxes paid to the state.

The assumption concerning indirect taxes is that these taxes are distributed directly in proportion to consumption. Because our data do not provide any information about household expenditures, we have to estimate these expenditures. In Appendix 4, we present household expenditure ratios in different deciles for 1988 from another data source. Given that the same expenditure ratios are valid for 1980 and 1990 we have deflated incomes for 1980 and inflated incomes for 1990, and we used these

[19]Sources: Statistical Yearbook for the County Councils 1994, Table 9.2 and Table 2.27. Local Government Finance 1980, Table D1. Statistical Yearbook for the County Councils 91/92 Table 2.6.

consumption ratios to estimate consumption. The adopted expenditure ratios exceeded one in several income deciles in 1988, and are, perhaps, too high on the average in 1980 and 1990. We distribute all indirect taxes, not only value added taxes, and assume that the incidence from all indirect taxes falls on the household at the end.

TABLE 2: INCOME SOURCES OF TAX INCOMES OF THE STATE, REAL PERCENTAGES AND USED PERCENTAGES IN THE STUDY 1980/81 AND 1990/91						
Source of tax income	Total state revenues 1980/81		Total state revenues 1990/91		Percentages of state revenues used in the study[20]	
	Million SEK	Percent	Million SEK	Percent	Percent 1980/81	Percent 1990/91
Personal state income taxes	30,214.3	22.4	56,731.6	16.1		
Corporation taxes and other income taxes	3,842.8	2.9	19,612.5	5.5		
TOTAL DIRECT TAXES	34,057.1	25.3	76,344.1	21.6	34.3	28.1
Value added taxes	37,305.0	27.7	123,429.7	35.0		
Other indirect taxes	27,208.3	20.2	68,007.1	19.3		
TOTAL INDIRECT TAXES	64,513.3	47.9	191,436.8	54.3	65.1	70.5
PROPERTY TAXES	602.5	0.4	3,873.2	1.1	0.6	1.4
Social insurance contributions	33,889.6	25.1	57,586.5	16.3		
Gifts and inheritance taxes	518.3	0.4	1,532.8	0.4		
Stamp taxes	1,221.3	0.9	7,406.5	2.1		
Taxes on forest	16.2	0.0	423.5	0.1		
Residential tax	-	-	5,984.0	1.7		
Taxes on securities	-	-	8,517.5	2.4		
Total	134,818.3	100	353,104.9	100	100	100

Source: National Accounting.

[20]Payroll taxes, here excluded, are taxes which are predestined to special social insurances for example health care, accounted for elsewhere in this study, pensions and occupational safety contributions.

As can be seen in Table 2, we have not accounted for social insurance contributions, gifts and inheritance taxes, stamp taxes and taxes on forest, as well as residential tax and taxes on securities (only for 1990). However, social insurance contributions, which are obligatory for the employers, are predestined to special funds, such as health insurance, insurance for pensions and for occupational safety, and the contribution to health care from social insurance is accounted for as a special source in this study. The other sources excluded here are very small segments of the total state revenues, and if we would include those, we have to distribute them either among the indirect taxes or the direct taxes. Because we do not know how these taxes are distributed and because they are extremely small segments of the total, we have chosen not to include them here.[21]

Out-of-pocket: We know how many visits to doctors the respondents had last year (but not whether they had visited a specialist, a general practitioner or a private physician) and how many care weeks they had in hospital, but we do not know how much money that was paid for these services. We, therefore, have to estimate total out-of-pocket payments for visits to doctors and charges for in-patient care in hospital by using the available quantity data and the standard charge per visit and in-patient care. In 1980, out-of-pocket payments were SEK 20 per visit to physicians in public care, and up to SEK 40 per visit in private care[22]. Because very few visits are to private doctors, we assume that all visits are to physicians in public care with a fee of SEK 20. Charges for

[21]To understand how we have distributed state grants we will give an example. In 1990, the grants were estimated as 5,274 (sample) divided by 6,252,000 (total population in the ages 18-76 years) multiplied by the grants to the county councils and the social insurance (destined to health care) and distributed on direct taxes, indirect taxes and property taxes in the proportions: 0.281, 0.705 and 0.014. Each household pay direct taxes and property taxes in proportion to their part of total direct state taxes and property taxes and indirect taxes in proportion to their part of total consumption, estimated from different expenditure ratios.

in-patient care were SEK 30 per care day in hospital in 1980, but not more than 1/3 of the sick wage paid by the health insurance. The sick wage could never be less than SEK 8 per day for those who were in hospital[23]. Individual payments for medicine and dentists are excluded in this study. In 1990, patients were charged for the first 15 visits; further visits were free of charge. The charges for visits to physicians were different between private and public care; charges for visits in public care were SEK 60 and in private care SEK 60-80 [24]. As in 1980, we assume that all visits are to public care physicians with a fee of SEK 60. In 1990, charges for in-patient care were coupled with compensation for sick days and were, on average, SEK 60 per day during 1990 but maximum 1/3 of the compensation for sick days. For pensioners, the charges for in-patient care were per day 1/3 of the pension per day but maximum SEK 55 [25].

From the interview, figures concerning visits to physicians and care weeks in hospital are only available for the respondent. To obtain out of pocket expenditures for the whole household, we have imputed expenditures for visits to doctors and in-patient care for wife/husband/cohabitant by use of regression analysis, and for children by use of average figures. The independent variables in the regressions have been chosen on the basis of the results in Sundberg (1992), and include age, disposable income, residence, children. (In 1980 unemployment experience was also included[26]). In a regression analysis of health care utilisation (or as here cost for utilisation), age and income are variables that are taken for granted. Residence is a dummy variable

[22]Source: General Insurance 1980.
[23]Source: General Insurance 1980.
[24]Source: Social Insurance 1989/90.
[25]Source: Social Insurance 1989/90.
[26]At the time when the estimations were made the data on unemployment experience was not available for 1990. This variable was, therefore, excluded in the regression equation for 1990.

intending to capture the effects on health care utilisation as a function of where a person resides; people living in big cities have better access to health care facilities. Children between 6 and 15 years and children between 16 and 18 years, like unemployment experience, are variables that resulted in significant estimates in Sundberg (1992), and are thus included in these estimations.[27]

For children, we have information about total visits to doctors in special clinics, such as medicine, surgery and psychiatry. We have counted the average visit per year for children by taking into account the inhabitants in the relevant ages. In 1980, the average visits to doctors for children was 0.45 and in 1990 0.51[28].

[27]See Appendix 4 for the equations in detail.
[28]See appendix 4 for details.

5. RESULTS

The results from the estimations are shown in Tables 3-6. Tables 3 and 5 show first the distribution in the ten deciles. However, the calculation of the redistributive effect and the decomposition of that effect has been estimated on individual data (household equivalents) and not on data grouped in deciles. Taxes and expenditures have redistributive effects that may be progressive or regressive. Horizontal inequity exists if people with equal income before payments are treated unequally, and reranking exists if people with unequal incomes before payments change places in the rank order after tax. Thus, the presence of horizontal inequity and reranking counteract the equalising effect of a progressive system.

When we calculated the indices we ranked individuals according to pre-tax household equivalent income, though the tax base for the county council tax and a portion of the state grants is taxable income and for the payroll tax earned income. The other portions of the state grants have taxable property and consumption as tax bases. Moreover, the base for individual payments is the use of medical care. Thus, equity in the financing of Swedish health care for the different financing sources is to be looked upon in relation to pre-tax household equivalent income although there are different bases for payments.

TABLE 3: DECOMPOSITION OF REDISTRIBUTIVE EFFECTS OF SWEDISH HEALTH CARE FINANCING SYSTEM IN 1980. SWEDISH EQUIVALENCE SCALE. THE DISTRIBUTIONS ARE GIVEN IN PERCENTAGES.

Decile/ index	Gross income	County council	Payroll taxes	Direct payments	State grants	Total
1	2	1	2	7	2	2
2	6	4	5	23	6	4
3	6	5	6	11	6	6
4	8	8	8	10	7	7
5	9	8	9	8	8	9
6	10	11	10	8	10	10
7	11	12	12	9	10	12
8	13	13	14	7	12	14
9	15	16	15	10	15	15
10	20	22	19	7	24	21
G/C	0.27606	0.32978	0.28152	-0.11623	0.30646	0.30614
g		0.07648	0.02994	0.00255	0.01185	0.12082
g/(1-g)		0.08281	0.03086	0.00256	0.01199	0.13742
K_T		0.05372	0.00546	-0.39229	0.03040	0.03008
RE		0.00430	0.00014	-0.00106	0.00036	0.00385
V		0.00445	0.00017	-0.00100	0.00036	0.00413
H		0.00012	0.00003	0.00003	0.00000	0.00019
R		0.00003	0.00000	0.00003	0.00000	0.00009

Note: Gross income and all payments are estimated in household equivalents. Gotland, Göteborg and Malmö, which are county councils, are assumed to have the average tax rate for county councils. Payroll taxes to the health insurance accounted for 10.6 percent of earned income up to 7.5 of the basic amount. In 1980, payroll taxes accounted for 86 percent of the revenues in the health insurance. *g* refers to payments in relation to gross income. When we estimate if people with equal incomes have been treated equally, we define the 'equal' groups in intervals of SEK 3,505 per year, which is the same as £5 per week ranges (intervals) used in Aronson et al. (1994) converted by PPP (13.48 SEK/£ in 1980 (7.01 SEK/$ (0.52£/$)). We have also tried alternative intervals, and the conclusion of the effects of different intervals is that with the larger intervals, one obtain a greater horizontal inequity and a smaller reranking effect. Sources: OECD statistics and Statistical Yearbook for the county councils.

TABLE 4: PERCENTAGE DECOMPOSITION OF REDISTRIBUTIVE EFFECTS OF SWEDISH HEALTH CARE FINANCING SYSTEM IN 1980.					
Index	County council	Payroll taxes	Direct payments	State grants	Total
RE	100	100	100	100	100
V	103.5	121.4	94.3	100	107.3
H	2.8	21.4	-2.8	0	4.9
R	0.7	0	-2.8	0	2.3

The figures for the total finance in 1980 show that the system is weakly progressive, with Kakwani´s index (K_T) of 0.03008 and a redistributive effect (*RE*) of the financing of 0.00385. The redistributive effect would have been 7.3 percent more redistributive if there had been no differential treatment, which depends on reranking (*R*) by 2.3 percentage points and horizontal inequity (*H*) by 4.9 percentage points. On average, 12.1 percent of households´ gross income were used for the financing of health care.

As expected, when we look at the special financing sources, county council taxes and state grants show a progressive structure. Although the county council tax rate is proportional, the system is progressive due to a basic deduction, which is equal for all tax payers. If there was no differential treatment, the redistributive effect for the county council taxes would have been 3.5 percent more, depending on horizontal inequity (*H*) by 2.8 percentage points and reranking (*R*) by 0.7 percentage points.

State grants are progressive and there are no horizontal inequity or reranking in state grants. Thus, people with equal pre-tax incomes are treated equally. Payroll taxes have the lowest positive Kakwani index (K_T), which means that this system is almost

proportional. The value of *V* for payroll taxes indicates that the extent of the pro-poor redistribution would have been 21.4 percent more without differential treatment, which depends wholly on horizontal inequity (*H*).

Out-of-pocket payments have regressive effects, which depend on equal reranking (*R*) and horizontal inequity (*H*). The distribution would have been 5.7 percent less without differential treatment. The pro-rich redistributive effects of direct payments depends on the more extensive use of medical care by poor people. The use is measured here as visits to doctors and care days in hospitals.

In 1990, 13.7 percent of household gross income was payments to health care. (See Table 5). The financing system was overall progressive, which is shown by the positive sign of Kakwani´s index (K_T) and the redistributive effect (*RE*). In the total financing, reranking (*R*) accounts for 2.6 percentage points of the increase in the redistributive effects, whereas horizontal inequity (*H*) accounts for 2.8 percentage points. That is, the financing system of health care does not treat households with equal gross incomes equally, and households are also reranked after payments. The system would have been 5.4 percent more redistributive without differential treatment.

Kakwani´s index (K_T) and the redistributive effect was positive for all sources with the exception of direct payments. For the source state grants there are no horizontal inequity or reranking, whereas for payroll taxes there are horizontal inequity but no reranking. For out-of-pocket payments the redistributive effects is divided evenly by horizontal inequity and reranking. However, these figures are very small and may depend on aroundings.

TABLE 5: DECOMPOSITION OF REDISTRIBUTIVE EFFECT OF SWEDISH HEALTH CARE FINANCING SYSTEM IN 1990. SWEDISH EQUIVALENCE SCALE. THE DISTRIBUTIONS ARE GIVEN IN PERCENTAGES.

Decile/ index	Gross income	County council	Payroll tax	Direct payments	State grants	Total
1	2	1	2	5	2	1
2	5	4	4	13	5	4
3	6	5	6	8	7	6
4	8	7	8	10	7	8
5	9	9	9	11	8	8
6	10	10	10	11	10	11
7	11	12	11	10	10	11
8	13	14	14	9	12	13
9	15	15	15	10	15	16
10	21	23	21	13	24	22
G/C	0.29594	0.33916	0.30635	0.06014	0.31057	0.32451
g		0.08746	0.02935	0.00186	0.01833	0.13702
g/(1-g)		0.09584	0.03024	0.00186	0.01867	0.15878
K_T		0.04322	0.01041	-0.23580	0.01463	0.02857
RE		0.00399	0.00030	-0.00046	0.00027	0.00431
V		0.00414	0.00031	-0.00044	0.00027	0.00454
H		0.00009	0.00001	0.00001	0.00000	0.00012
R		0.00006	0.00000	0.00001	0.00000	0.00011

Note: Gross income and all payments are estimated in household equivalents. Gotland, Göteborg and Malmö, which are county councils, are assumed to have the average tax rate for county councils. Payroll taxes to the health insurance accounted for 10.1 percent of earned income. In 1990, payroll taxes accounted for 77% of the revenues in the health insurance. *g* refers to payments in relation to gross income. When we estimate if people with equal incomes have been treated equally, we define the 'equal' groups in intervals of SEK 4,048 per year, which is the same as £5 per week ranges (intervals) used in Aronson et al (1994) converted by PPP 15.57 SEK/£ in 1990 (9.34 SEK/$ (0.60 £/$)). We have also tried alternative intervals, and the conclusion of the effects of different intervals is that with the larger intervals, one obtains a greater horizontal inequity and a smaller reranking effect. Sources: OECD statistics and Statistical Yearbook for the county councils.

TABLE 6: PERCENTAGE DECOMPOSITION OF REDISTRIBUTIVE EFFECT OF SWEDISH HEALTH CARE FINANCING SYSTEM IN 1990.					
Index	County council	Payroll taxes	Direct payments	State grants	Total
RE	100	100	100	100	100
V	103.8	103.3	95.7	100	105.4
H	2.3	3.3	-2.2	0	2.8
R	1.5	0	-2.2	0	2.6

6. CONCLUSION AND DISCUSSION

The paper examines the redistributive effect of the Swedish health care financing system in 1980 and 1990 for four different sources of finance. These sources include county council taxes, payroll taxes, direct payments and state grants, where state grants are distributed according to the portions in the total state incomes that come from property taxes, direct state income taxes and indirect taxes. Indirect taxes are estimated in proportion to estimated consumption. Payroll taxes can be interpreted as social insurance and direct payments are out-of-pocket payments for visits to doctors and in-patient care. Because we have only data on the respondent concerning direct payments, we have imputed payments for wife/husband/cohabitant and children. If sick people live together we have an underestimation of direct payments in those households.

The income measure used for the ranking is pre-tax household equivalent income. We have decomposed the redistributive effects into the three portions vertical, horizontal and reranking. Horizontal equity implies that people with equal economic ability should pay the same and vertical equity implies that people having greater economic ability ought to pay more. Reranking occurs when people change rank order before and after payments. These equity concepts are purely descriptive measures that we have not interpreted normatively.

Some of the approximations, which we were forced to do in our study, are assumptions that may have redistributive effects. Probably, horizontal inequity and reranking are underestimated for all financial sources except for county council taxes. Direct payments, for example, are assumed to be proportional to the number of visits to

doctors and care days in hospital. However, some people are reimbursed by their employer for visits to physicians, but we neither have information about the size of the payments nor the persons who are paid. Thus, there may be both horizontal inequity, and reranking, which we fail to capture in our study. Moreover, when we define the households´ incomes we only take into account the incomes from the respondent and his/her wife/husband/cohabitant. That is, we do not account for incomes from other adults living in the household and/or incomes from children in the households. This means that some households may have additional incomes and additional persons in the household, which may have an effect on household equivalent income. Thereby, both county council taxes and the payroll taxes paid by the household are affected. Further, when we estimate the contribution from each household to state grants we have assumed that the taxes paid by the households are exactly in proportion to taxes in total state incomes. If a greater portion of state grants to health care comes from direct taxes, the system would be more progressive, whereas it would be less progressive if a greater portion comes from indirect taxes.

We have imputed direct payments for wife/husband/cohabitant and children. These imputations may also have equity consequences, which we have not captured in our study. There is reason to believe that people who are sick often infect other family members. By imputing the costs for health care utilisation we thereby underestimate the costs for typical ”sick” families and, if those families have low income, the redistributive effect should have still been more regressive for direct payments.

Having these approximations in mind, we will still draw some conclusions. The estimations of the Gini coefficients show that the income distribution is more skewed

in 1990 than in 1980, which is due to increased wage dispersion. The portion of household incomes that is used to finance health care has also increased from 12.1% to 13.7%. As can be seen in Appendix 2 the greatest portion is the increase in the county council tax.

Overall, the Swedish financial system for health care is weakly progressive, and the extent of this pro-poor distribution would have even been higher if it were not for differential treatment. Differential treatment comes almost exclusively from different treatments in the county councils across the country. Even if there are some horizontal inequity and reranking in the total financing, there is only marginal horizontal inequity and reranking in the Swedish financing system of health care in the different sources. The only horizontal inequity and reranking worth mentioning come from the county council tax, where there are different tax rates and different portions of the expenditures that are destined for health care in different county councils. Thus, people with equal gross incomes are treated unequally across the country, and without that unequal treatment the distribution would have been even more pro-poor.

In 1980 and 1990, direct payments are regressive, which depend on the more extensive use of medical care in lower income groups. Direct payments were also more regressive in 1980 than in 1990, depending on payments for maximum 15 visits to physicians in 1990; in 1980, there was no such restriction. All financing sources but direct payments are weakly progressive, and there have been small changes between 1980 and 1990. A comparison of Kakwani's index for 1980 and 1990 shows that the payroll tax is more progressive in 1990 than in 1980, which depends on changes in the tax rules; in 1980, payroll taxes were only paid up to 7.5 of the basic amount, but there

were no such ceiling effect in 1990. State grants were more progressive in 1980 than in 1990 because a tax reform was implemented in 1983-85 when progressivity was reduced.

Private expenditures for health care account for about 10 percent of the total expenditures. A debate is currently in progress where there are suggestions to reorganise the county councils and to shift more of the financing from public to private financing. Our study has shown that changes in the health care financial system towards more private financing has regressive effects; that is, poor people pay more than rich people in direct payments. Thus, a change in the system towards more private financing would be a disadvantage to poor people. Moreover, private financing in the county councils are undergoing changes. That is, there are unequal out-of-pocket payments in different county councils as well as different restrictions, such as different high cost shelter, in the different county councils. These changes have clear equity consequences for Sweden and are an important topic for further research.

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APPENDIX

APPENDIX 1: ESTIMATION OF THE MACRO WEIGHTS IN 1980, 1990

TABLE A1: Macro weights 1980	Million SEK	Million SEK	Percent
Tax incomes in the county councils	31,485		
78.4 % to health care		24,684.24	55.8
State grants to the county councils	7,247		
78.4 % to health care		5,681.65	12.8
Payroll taxes to health insurance	27,270		
32.2% to health care		8,780.94	19.9
State grants to social insurance	4,235		
32.2 % to health care		1,363.67	3.1
Privat consumption to health care		3,716	8.4
Total		44,226.5	100

According to National Accounting (N10SM 8901), total expenditures for health care were in 1980, 46,156 million SEK. Thus, the difference is 1,929.5 million SEK. If we distribute these expenditures to the county councils and health insurance we get the following estimates:

	Million SEK	Million SEK	Percent
Tax incomes to health care in the county councils	24,684.24		
Distributed difference:			
(1,929.5*24,684.24/(44,226.5-3,716))	1,175.70		
Total taxes to health care in the county councils		25,859.94	56.0
State grants to the county councils	5,681.65		
Distributed difference:			
(1,929.5*5,681.65/(44,226.5-3,716))	270.61		
Total state grants to the county councils		5,952.26	12.9
Payroll taxes to health insurance	8,780.94		
Distributed difference:			
(1,929.5*8,780.94/(44, 226.5-3,716))	418.23		
Total payroll taxes to health care		9,199.17	19.9
State grants to health care in social insurance	1,363.67		
Distributed difference:			
(1,929.5*1,363.67/(44,226.5-3 716))	64.95		
Total state grants to health care in social insurance		1,428.62	3.1
Private consumption to health care		3,716	8.1
Total		46,156	100

The state	16.0 %
Health insurance	19.9 %
County councils	56.0 %
Private consumption	8.1 %

TABLE A2: Macro weights 1990	Million SEK	Million SEK	Percent
Tax incomes in the county councils	83,206		
78.1 % to health care		64,983.89	59.8
State grants to the county councils	24,665		
- Payments from social security board	-13,610		
Net state grants to the county councils	11,055		
78.1 % to health care		8,633.96	7.9
Payroll taxes to health insurance	59,826		
32.3 % to health care		19,323.80	17.8
State grants to health care		4,334	4.0
Private consumption to health care		11,394	10.5
Total		108,669.65	100

According to National Accounting (N10SM 9201), total expenditures for health care were in 1990, 110,540 million SEK. Thus, the difference is 1,870.35 million SEK. If we distribute these expenditures to the county councils and health insurance we get the following estimates:

	Million SEK	Million SEK	Percent
Tax incomes to health care in the county councils	64,983.89		
Distributed difference:			
(1,870.35*64,983.89/(108,669.65-4,334-11,394))	1,307.73		
Total taxes to health care in the county councils		66,291.62	60.0
State grants to the county councils	8,633.96		
Distributed difference:			
(1,870.35*8,633.96/(108,669.65-4,334-11,394))	173.75		
Total state grants to the county councils		8,807.71	8.0
Payroll taxes to health insurance	19,323.80		
Distributed difference:			
(1,870.35*19,323.80/(108,669.65-4,334-11,394))	388.87		
Total payroll taxes to health care		19,712.67	17.8
State grants to health care		4,334	3.9
Private consumption to health care		11,394	10.3
Total		110,540	100

The state	11.9 %
Health insurance	17.8 %
County councils	60.0 %
Private consumption	10.3 %

APPENDIX 2: DESCRIPTIVE STATISTICS

TABLE A3 Household means for equivalent variables in payments to health care in 1980 and 1990.

	1980		1990	
Variable	Total SEK	Percent of gross income	Total SEK	Percent of gross income
Gross income	54,141.26		125,575.55	
County council tax	4,140.86	7.6	10,983.15	8.7
State grants	641.64	1.2	2,302.96	1.8
Payroll taxes	1,620.73	3.0	3,686.13	2.9
Out-of-pocket payments	137.81	0.3	234.02	0.2
Direct taxes	4,358.63	8.1	11,632.09	9.3
Indirect taxes	423.98	0.8	1,654.02	1.3
Total payments	6,541.14	12.1	17,206.26	13.7

APPENDIX 3: HOUSEHOLD TOTAL CONSUMPTION EXPENDITURE, DISPOSABLE INCOME AND EXPENDITURE RATIO IN 10 INCOME DECILES 1988

Table A4: Household total consumption expenditure, disposable income and expenditure ratio in 10 income deciles 1988.

	In thousands, SEK					
Decile	Income interval for disposable income 1988	Estimated income interval for disposable income 1980	Estimated income interval for disposable income 1990	Total expenditure 1988 (1)	Disposable income 1988 (2)	Expenditure ratio 1988 (1/2)
1	-63	-42	-77	69.4	50.8	1.37
2	64-79	43-54	78-98	83.9	72.3	1.16
3	80-91	55-62	99-113	90.3	85.7	1.05
4	92-106	63-72	114-131	108.4	99.4	1.09
5	107-130	73-88	132-161	124.8	118.6	1.05
6	131-152	89-103	162-188	148.0	142.6	1.04
7	153-171	104-116	189-217	169.1	162.5	1.04
8	172-193	117-131	218-239	183.1	182.1	1.01
9	194-229	132-155	240-284	206.9	209.3	0.99
10	230-	156-	285-	269.2	284.9	0.94

Source: Family expenditure survey (1988).

Note: Disposable income increased by 23.8 % from 1988-1990 and by 47.4 % from 1980-1988. The income thresholds for 1980 and 1990 have been estimated with these assumptions. We estimated the income deciles for 1980 and 1990 by adjusting the 1988 deciles for income changes between the years. On average in 1980 and 1990, 56.5 and 63%, respectively, of the private consumption were imposed by indirect taxes. The average tax rate was 20.6 and 24.23% for 1980 and 1990, respectively.

APPENDIX 4: ESTIMATION OF OUT-OF-POCKET PAYMENTS FOR WIFE/HUSBAND AND CHILDREN IN 1980 AND 1990

Out-of-pocket payments for wife/husband have been estimated by OLS regression,on the basis of the results in Sundberg (1992). The same variables are used in the estimation of costs, for visits to doctors and in-patient care. The variables included are:

AGE: Age of the respondent.

NETINC: Disposable income for the household.

SMACITY: A dummy variable that refers to the respondent´s residence in a city with more than 30,000 inhabitants, where Stockholm, Gothenburg and Malmö are excluded.

BIGCITY: A dummy variable for respondents who reside in Stockholm, Gothenburg or Malmö.

CHSMALL: Number of children equal to or younger than 5 years.

CHOLD: Number of children between 6 and 15 years.

CHOOLD: Number of children between 16 and 18 years.

UNEMPEXP: A dummy variable that equals one if the respondent has more than two months of unemployment experience. This variable is included in the 1980 estimations only; because of missing data 1990.

Total visits to specific children clinics, (i.e. children medicine, children surgery and children psychiatry) were 943,800 and 1,202,200 in 1980 and1990, respectively and total population for the ages 0 to 18 years were 2,086,661 and 1,995,046 in 1980 and 1990, respectively[29]. Thus, the average visit for children 0-18 years was 0.45 and 0.51 in 1980 and1990, respectively.

[29]Sources: Statistical Yearbook for Sweden 1981 and 1992 and Statistics from the Federation of County Councils, LKELP 1981 and 1991.

Table A5: Payments for visits to doctors and care days in hospital for men and women in 1980. T-values in parentheses.				
Dependent variable	Payments for visits to doctors		Payments for care days in hospital	
	Men	Women	Men	Women
Intercept	19.19 (3.68)	24.87 (3.80)	14.92 (0.39)	109.46 (2.41)
Age	0.46 (4.85)	0.49 (4.60)	1.04 (5.29)	1.44 (1.91)
Disposable income	-33.84 (-0.69)	-36.97 (-0.66)	-13.36 (-3.73)	-8.70 (-2.25)
Small city	-5.42 (-1.33)	3.24 (0.74)	-18.69 (-0.63)	-50.40 (-1.66)
Big city	6.10 (1.71)	22.74 (5.71)	-13.17 (-0.51)	-0.55 (-0.02)
Children 0-5 years	-4.94 (-1.25)	2.61 (0.62)	4.43 (0.15)	-19.96 (-0.68)
Children 6-15 years	-2.87 (-1.22)	-5.13 (-2.03)	-4.33 (-0.25)	-15.24 (-0.87)
Children 16-18 years	5.08 (1.03)	-5.31 (-1.03)	-41.14 (-1.14)	-34.70 (-0.97)
Unemployment experience	14.00 (3.03)	20.05 (3.16)	-16.42 (-0.49)	-34.39 (-0.78)

Table A6: Payments for visits to doctors and care days in hospital for men and women in 1990. T-values in parentheses.				
Dependent variable	Payments for visits to doctors		Payments for care days in hospital	
	Men	Women	Men	Women
Intercept	67.46 (6.14)	107.48 (8.08)	-31.41 (-0.63)	-72.65 (-1.08)
Age	0.89 (4.08)	0.61 (2.53)	3.26 (3.28)	6.05 (5.03)
Disposable income	-87.89 (-1.87)	-62.39 (-1.29)	1.61 (0.75)	-6.13 (-2.51)
Small city	9.87 (1.31)	3.48 (0.41)	-18.89 (-0.55)	-10.48 (-0.24)
Big city	18.24 (2.16)	31.63 (3.34)	-41.83 (-1.90)	32.38 (0.68)
Children 0-5 years	3.86 (0.61)	-15.75 (-2.25)	-13.53 (-0.47)	24.86 (0.71)
Children 6-15 years	-4.43 (-0.87)	-0.27 (-0.05)	-43.18 (-1.85)	18.04 (0.66)
Children 16-18 years	-10.16 (-0.96)	-2.56 (-0.22)	-61.30 (-1.28)	-27.26 (-0.47)