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The distribution of income, health and health care: a review of some recent literature

by

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Abstract

This paper summarizes some of the recent literature on the relationships between income, health and health care spending. At the population level, the associations (or the lack of it) between these variables are well-known. Wealthier developing nations are healthier, though there appear to be decreasing marginal returns to scale: above a certain income level, the association becomes very weak. More recently, some researchers have turned from the analysis of levels *to the analysis of* distributions *across population groups. Many research findings have suggested that the hypothesis that the extent of* relative *income inequality adversely affects health cannot be rejected. The evidence from the ecological studies on aggregate data awaits confirmation from longitudinal studies at the individual level. Although it seems premature to conclude that mortality rates in high-income, developed countries can be lowered by redistributing income, the body of evidence that has accumulated is sufficiently large to merit further empirical investigation.*

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Key-words

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1. Introduction

This paper attempts to review what appears to be known about the relationships between income, health and health care, both at the aggregate level of nations and at the micro level of individuals and households. Obviously, these inter-relationships have been the subject of a large volume of research over many years, and certainly not only – perhaps not even primarily – by economists. A large number of disciplines engaging in public health and health services research have contributed to this literature. The review is, inevitably, rather selective in being based mainly on the more *recent* contributions and in covering more of the literature with an *economic* flavour. It also focuses on the *distributions* of each of the key variables, and this also seems to be a more recent phenomenon in the literature. It is well-known that income, ill-health and health care utilization – or expenditures – all have highly skewed distributions, with a minority of any general population earning most of the income, another minority – usually not the same one – experiencing most of the ill-health, and yet another minority – in this case hopefully the same one! – accounting for most of the health service utilization (and expenditure). It is the *joint* distribution of two of these three variables (income and health) that is increasingly receiving attention.

2. National income, health and health care: cross-national evidence

It has been shown over and over again in many countries and for many years that individuals with higher socioeconomic status generally live longer and healthier lives. Compelling recent evidence that "wealthier nations are healthier nations", at least in *developing countries*, comes from a recent article by two World Bank economists (1). Point of departure for their analysis is the non-linear relationship between per capita income and life expectancy for their sample of developed and developing countries in 1990. They clearly find decreasing marginal life expectancy gains with rising income. Beyond the income level of about $ 8,000 the curve becomes very flat. Their econometric analysis uses

cross-country time-series data on health – measured by child mortality and life expectancy – and income per capita for about 60 countries with per capita GDPs below US$ 6,000 and for the period 1960 to 1985. They point out that at least three problems complicate the appropriate estimation of any income effect: (i) it is important to separate the *partial* effect of income (i.e. while keeping all other factors constant) from the *total* effect (i.e. including *indirect* effects through, inter alia, these other factors); (ii) the relationship does not need to be linear; and (iii) causality can run both ways. By using appropriate econometric methods[1] they are able to isolate the causal effect of income on population health from reverse causation and from incidental association in order to show that the long-run income elasticity of infant and child mortality lies between –0.2 and –0.4. That means that a 10% economic growth would reduce infant mortality by 20 to 40%. This implies, of course, that economic growth can save lives in these countries, but that lack of growth or stagnation does the opposite. They go on to show that developing countries with high economic growth rates –in particular the two largest, China and India – have seen rapid falls in infant mortality, on average by 50% from 1960 to 1990. However, the 1980s was a decade of reduced or even negative growth. The World Bank researchers show that over 450,000 infant deaths, and possibly over a million child deaths, in 1990 alone, would have been averted had countries been able to maintain the same rate of economic growth in the eighties as they enjoyed in the previous two decades. These effects were especially large in Africa and Latin America.

Obviously, it should not be taken for granted that all income growth produces the same health benefits irrespective of the type and distribution of this growth. Kakwani (2) for instance, shows that the income elasticity varies by the total *level* of income. Anand and Ravallion (3) find that most of the income effect on aggregate health indicators in 22 developing countries is due either to its effect on poverty reduction or to increased public spending on health. This points towards the importance of the *distribution* of income, an issue to which we shall return below.

It seems fair to say, then, that the effect of wealth on health is (or was) large in developing countries in recent decades. This finding cannot be replicated for *developed countries.* Most studies show little or no

[1] To be more precise, they use an instrumental variables, multi-equation, double-log, from modeling approach to address these problems in the estimation of the long-run income effects.

relationship between either GDP per capita or health spending on the one hand, and mortality on the other. Hitiris and Posnett (4), for instance, performed a pooled time-series cross-section analysis covering 20 OECD countries for the 28 years 1960-87 (i.e. a total of 560 observations) and estimated a significant but small *positive* income elasticity, indicating that a 10% increase in income would even *raise* mortality by about 0.7%. Admittedly, crude mortality rates had already become an imperfect measure of population health outcome in that period, but it is nonetheless worth noting that the strong relationship found in developing countries seems to be lost when some threshold level of national income is exceeded. A broadly similar conclusion was reached by McGuire *et al.* (5) who rejected the cross-section approach which pools country data on the grounds of non-homogeneity of variables across observations. Instead they adopted a cointegration approach to time-series analysis for selected countries. In addition to crude mortality rates, they analysed three other measures of aggregate health levels: potential life-years lost, and mortality amenable and non-amenable to medical intervention. They do not find any consistent positive effect of income on health measures. They conclude that: "overall, there is little empirical evidence to substantiate a simple link between health and health care expenditure of GDP" (5). Of course, the apparent absence of any clear relationship between wealth and health at the national level is consistent with the view that the aggregate relationship between income and health is non-linear and that above a certain level the marginal health impact of income becomes zero. Further wealth does not seem to buy better health, or at least not insofar as it is reflected in mortality statistics.

On the other hand, it is also well-known that there is a particularly strong relationship – even among developed countries – between income level and health care expenditures (6). This relationship has remained consistently strong in recent decades: while countries have grown richter, their average amount spent on health care per capita has similarly moved upwards. In fact, most countries have moved *along* the regression line describing the (linear) relationship between income and health expenditures. The most notable exception is the richest country: the United States spends even more than one would expect on the basis of its income. A large number of health economic studies over the last 20 years, starting with Newhouse in 1977 (7) up to the most recent one by Hitiris and Posnett in 1997 (4), have looked at this relationship. They have almost invariably reported income elasticities of health expenditure exceeding one, suggesting that the share of income spent on health

care grows more rapidly than income itself. Although a recent re-analysis (8) finds income elasticities below one (around 0.7-0.8) if a two-way fixed-effects estimator is used, the important point is that income and expenditure are closely related, both over time and across countries. Given this close relationship, it is not at all surprising that most attempts at establishing the aggregate relationship between health and health care expenditure at the aggregate level have concluded that there is little or no clear link between expenditures and mortality-related population health measures (5) or that the effect is very small (4).

The World Bank's 1993 World Development Report (9) summarizes the state-of-the-art regarding the income and life expectancy relationship as follows: "The higher a country's average income per capita, the more likely its people are to live long and healthy lives. Of course, this effect tapers off as income rises: a doubling of income per capita (adjusted for purchasing power parity) from, say, $ 1,000 in 1990 corresponds to a gain of eleven years in life expectancy, whereas a doubling from $ 4,000 is matched by a gain of only four years (...). Income growth has more impact in a poor population, because additional resources buy basic necessities, particularly food and shelter, that yield especially large health benefits" (9).

Although above a certain level of income further increases in income (and associated increases in health expenditure levels) do not seem to buy further reductions in mortality, it is by no means the case that all higher-income countries have almost identical mortality experiences. This is shown in Figure 1, for instance, which is based on data taken from Musgrove (11). It shows the variation in life expectancy at birth by level of income in the 24 richest countries in the world in 1991.

The correlation is weak and confirms earlier findings (e.g. by Wilkinson (10) on data for the seventies and early eighties) that both the cross-sectional correlation between levels and the correlation between changes in these levels is very low: "these data seem to confirm that there is, at best, only a weak relation between gross national product per head and life expectancy in developed countries" (10). In other words: the higher average national incomes of, for instance, the US and Switzerland, do not generate higher life expectancies for its population, at least not to the same extent as in developing countries. The question that arises is: are there any other factors that seem to contribute to an explanation of the residual variation in mortality?

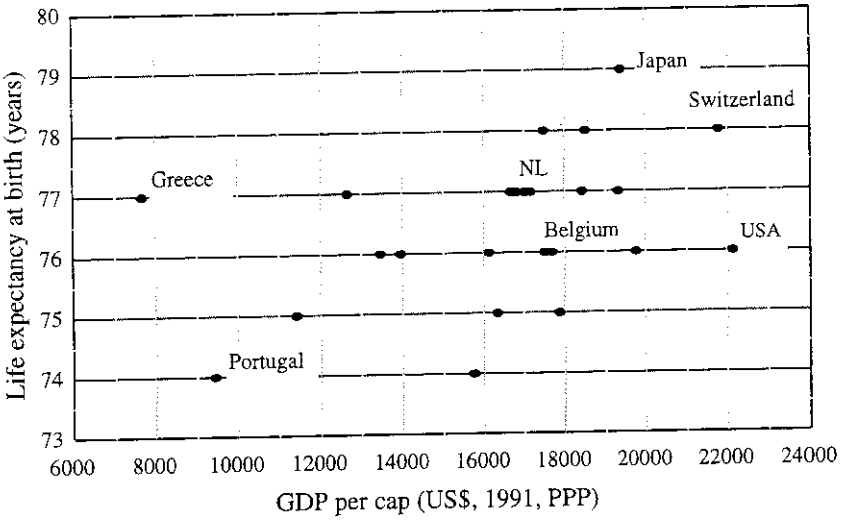

Fig. 1: Per capita income and life expectancy in 24 richest countries, 1991
Source: data taken from (11)

3. The income inequality hypothesis

More recently, some investigators have turned their attention to the distribution of income as one of the potential determinants of mortality. A fairly strong association with income inequality had previously been reported already for samples with mixed data for developed and developing countries for total mortality (12). This is not surprising because infant mortality tends to be concentrated among the poor. What is surprising is that Waldmann (13) showed that infant mortality is positively related to the income share of the richest 5 percent of the income distribution even when the incomes of the non-rich are controlled for[1]. This would mean that the income distribution has an independent influence. Another study (14) confirmed that per capita income no longer has a significant effect on aggregate health indicators in 22 developing countries when the incidence of poverty and the level of public health spending are controlled for. In a recent update and extension, Bidani and Ravallion (14) decompose these health impacts into effects on the health of the "poor" and the "non-poor" segments of the populations[2]. They show that the level of public health spending and primary school enrolment primarily affect the health of the poorest segment, while the

[1] Waldmann even goes on to question the Pareto criterion as a basis for social welfare comparions because his finding would imply that the rich could be made better off in terms of incomes while the poor are no worse off, and yet an important indicator of social well-being (infant mortality) would show a deterioration.

[2] Althougt no separate observations of the life expectancy and mortality rates of the poor and non-poor are available, estimates are obtained by treating the latent subgroup values as random coefficients in a regression of the observed aggregates on the distributional data (cf. Bidani and Ravallion, 1997, p.127-128).

incidence of poverty is a strong determinant of aggregate health outcomes.

But it was primarily Richard Wilkinson who, in several publications (10, 15, 16), has drawn attention to the fact that also in highly *developed* countries, with high average incomes, there appears to be a much stronger correlation of average life expectancy with the level of income inequality (crudely measured as the percentage of income received by the 70% worst off in society) than with the level of income itself. The correlation implied by his 9 observations for 1981 is 0.86.

But Wilkinson also subjected the association to a more rigorous test by analysing the *changes* in life expectancy and income inequality and found similarly high associations between increases in life expectancy and increases in the share of income going to the lower income groups. The correlation for 6 observations (Japan was included only once) was similarly high ($r = 0.85$). Of course, these simple correlations between a limited number of observations could not be regarded as conclusive evidence, but the demonstration generated a lot of interest because the finding would suggest that health differences between affluent societies result mainly from the extent of *relative deprivation* in each society.

For example, the World Bank quoted Wilkinson's example of the diverging experience between Japan and the UK since the seventies to make essentially the same point in the 1993 World Development Report:

"In industrial countries life expectancy depends much more on income distribution than on income per capita, and it has been rising faster in countries with improving income distribution. Japan and the UK had similar income distributions and life expectancies in 1970, but they have diverged since then. Japan now has the highest life expectancy in the world and a highly egalitarian income distribution. In the United Kingdom, where income disparity has widened since the mid-1980s, life expectancy is now more than three years shorter than in Japan" (9).

Was Wilkinson on to something? His income inequality hypothesis has been criticized and subjected to new tests with more recent data from the Luxembourg Income Study (LIS) and other measures of income inequality which showed a much weaker association and cast doubt on the earlier finding (17). Judge (1995) concluded that publication bias may be at work and that "a careful review of the evidence does not support the hypothesis that inequalities in income distribution largely explain

differences in average life expectancy among rich countries" (17). But Wilkinson (18) replies with more evidence and by drawing attention to the simultaneous publication of two American studies in the British Medical Journal showing similarly strong associations between measures of income inequality and mortality in 50 US states.

A group of Californian researchers (19) found a significant correlation ($r = 0.62$, $p \cdot 0.001$) between the percentage of total household income received by the less well-off 50% in each state and all-cause mortality, which was unaffected by adjustment for state median incomes. Moreover, states with higher income inequality in 1980 were shown to have had smaller declines in mortality. Trends in income inequality between 1980 and 1990 were, however, *not* significantly related to trends in mortality by state. Another group, from the Harvard School of Public Health (20) reported strong correlations between another income inequality measure, the so-called Robin Hood Index, and total age-adjusted mortality for 1990. This index was also strongly correlated with all indicators of treatable causes of mortality, even after adjustment for poverty and smoking levels.

The income inequality hypothesis suddenly regained lively interest. Some recent additions to the ecological studies have sought to examine the robustness of the earlier findings, primarily with respect to the choice of income inequality measures, and more extensive control for potential confounders. McIsaac and Wilkinson (21), using more recent LIS income distribution data, show that the strong international association holds for both all-cause mortality and for all 6 major causes of death. A sensitivity analysis by Kawachi *et al.* (22) suggests that the US state association is *not* dependent on the choice of income inequality measure: 8 different summary measures were all strongly associated with mortality, *even after adjustment for median income and poverty.*

But the sceptics did not give up. Judge *et al.* (23) used new LIS results on income inequality in 14 countries (for the first time including Belgium[1]), employed a large variety of income inequality measures, used multivariate analysis and looked at three different measures related to mortality: life expectancy, potential years of life lost and infant mortality. Their conclusion is now less radical, but still negative: "*although*

[1] The countries included in the study are: Australia, Belgium, Canada, Finland, France, Germany, Ierland, Italy, Netherlands, Norway, Sweden, Switzerland, United Kingdom and the United States.

income inequality cannot be dismissed as a contributory factor in accounting for variations in population health among the richest industrialized nations, there is little evidence to support the proposition that it is the 'single most important determinant' (as was claimed by Quick and Wilkinson (24)" (23). But perhaps their most interesting finding is that they signal the outlier position of the USA in the scatterplot. None of the correlations still reaches statistical significance after the USA is excluded from the sample. This leads them to conclude that *"the distribution of income within the OECD countries has, at best, only a marginal impact on average levels of population health. However, extreme levels of income inequality may have much more impact in grossly unequal societies such as the USA"* (23).

The persistence of this remarkable empirical finding at the aggregate level raises the obvious question: *why?* Why would income inequality and mortality be related? And why would relative inequality be associated with lower population health levels irrespective of the absolute (average) level of national income? And why would the response of mortality to changes in the income distribution be so rapid? It seems hard to believe that redistribution of income could actually save lives at such a short term, especially since the mechanism appears to operate through the *relative* position in the income distribution rather than the *absolute* level of income (or standards of living).

The focus of research now seems to be shifting towards the search for a theory that can help to explain the observed association. According to Wilkinson himself *"the evidence strongly suggests that the health effects of income distribution involve comparative social and cognitive processes, rather than the direct effects of material standards"* (25). That would imply that being relatively low on the social ladder has detrimental health effects, whatever the actual material conditions of life (26). Several potential explanatory mechanisms have been suggested – and some have been put to an empirical test. Both US groups further explored potential pathways through which the presumed "effect" of income inequality may materialize, thereby focusing primarily on social indicators and investments in human and social capital. The Californian group (19) reported that state-specific income inequality strongly correlated with indicators of (under)investment in human and social capital such as education outcomes, homicide and crime rates, etc. The Harvard group (27) has investigated whether the growing gap between the rich and the poor in the US has led to declining levels of social cohesion and trust, or disinvestment in what they call "social capital". In their

path analysis, they find that there remains residual direct association between state income inequality and mortality when "social capital" is controlled for. These findings suggest that US states with more social policies of investment in human and social capital also generate more social cohesion which would, in turn, be protective for longevity of life. The question is whether this hypothesis is also supported by the international evidence. Surely, it may not be a coincidence that *"Japan experienced both the greatest decrease in income inequality and the greatest increase in life expectancy ... (such that it) ... now enjoys the most equitable distribution of income and the longest life expectancy in any OECD country"* (28).

4. Income and health at the individual level

The associations described so far are all based on data referring to some aggregate level, of nations, or of US states, and therefore run the risk of ecological fallacy. Although relative income inequality – or the extent of relative deprivation, or social capital for which it may be an indicator – is inherently a societal characteristic which lends itself most easily to an ecological analysis because it can only be measured at some group level, the risk of death is not an inherently ecological variable and can be explored at the individual level. One does, of course, require longitudinal datasets with good measures of income. Some recent studies have addressed the income-mortality association at the individual level. The first question to ask is, of course, whether the increased probability of dying mainly affects the poorer segments of the income distribution. A couple of large prospective studies have demonstrated that indeed low income is an important predictor of risk of death. Both a longitudinal analysis of older Canadian men (29) and that of more than 300,000 white men screened for the multiple risk factor intervention trial (MRFIT) (30) showed that men with lower incomes have an increased mortality risk and, perhaps more importantly, that the risk increased continuously with decreasing income.

A recently published study by Fiscella and Franks (31) went one step further by using a much more powerful design. Using longitudinal cohort data on more than 14,000 adults from the first National Health and Nutrition Examination in the US in 1971-75, they attempted to separate the effect of income inequality in the community of residence (an eco-

logical variable) independent from the effect of household income (an individual characteristic) on that same individual's all-cause risk of mortality. No other study had done this before. Interestingly, they find that community income inequality *does* show a significant association *both* with subsequent community mortality *and* with individual mortality after adjusting for age, sex and mean income in the community. This confirms the earlier findings of the ecological studies. *However*, after adjustment for individual household income the association was no longer significant. They conclude that community income inequality is simply a confounder for individual family income and has no independent effect on mortality as soon as that much more powerful predictor has been controlled for. A serious rejection of the income inequality hypothesis.

In his commentary, Wilkinson (32) tries to rescue the income inequality hypothesis by arguing that it is important to distinguish between income inequality within small areas and income inequality between areas. *"After all,"* he says, *"Harlem's appalling health does not result from the inequalities within Harlem but from its deprivation in relation to the United States outside Harlem.* In other words: within small enough communities (e.g. neighbourhoods), there is not as much inequality as at the state or national level. *"Thus what their analysis really shows is that the effect of the inequality attributable to the residual social heterogeneity within counties (used by Fiscella and Franks) can be explained by the effects of people's incomes relative to the wider society"* (32, p. 1728). He remains convinced that it is relative, not absolute income that matters.

One of the most striking features of the literature on income as a predictor of mortality is indeed that the gradient does not disappear as soon as some income threshold is exceeded. As in the famous Whitehall study of British civil servants (33), the higher mortality is not solely concentrated amongst the lowest income groups but shows a clear gradient that continues to the highest income groups. In other words: even the highest income groups have a slightly better mortality experience than the income groups just below them. Moreover, none of the civil servants in the Whitehall Study belonged to truly impoverished or deprived groups. Even in this relatively homogeneous population there appears to be a striking stepwise relation between cumulative death rate and grade of employment as a measure of social position: each group experiences a higher mortality than the one just above it in the hierarchy. Socioeconomic status does not appear to be just a nuisance – but an independent effect in its own right. Again, this points at an independent

influence of *relative position in the social hierarchy* which a focus on just the effects of poverty and absolute deprivation (poor diet, bad housing conditions, etc.) cannot help to explain away (28). Or in the words of Evans: "... there is *something* powerfully that influences health and that is correlated with hierarchy *per se*"(34) – but what?

Given the focus so far on mortality as a (fairly negative) indicator of population health, it is time to turn to morbidity now and to ask oneself whether similar gradient findings are observed for patterns of illness. The answer is – not surprisingly – yes. In fact, as Bob Evans (1994) argues, "it would have been surprising if the people who died earlier died in better health" (34). The gradient in morbidity as measured by sickness absence of the British civil servant is at least as steep as the mortality gradient (35). This is not the place or time to review the massive literature on social inequalities in health that has developed since the Black report in England (for a recent review, see e.g. (28)). No, more interesting is the question what might explain why social inequalities are so pervasive and persistent across cultures, diseases, and populations? Or expressed more eloquently by Bob Evans: "*So what is going on? ... First, what are the causal factors – status? empowerment? stress? coping skills? ... that are correlated with hierarchy and thus with health, and can they be changed? Second, what are the biological pathways through which these causal factors operate? We do not believe in spooks or the supernatural; disease and death are biological phenomena. Whatever factors lie upstream in the sequence of causes, at some point in the chain there must be biological processes at work*" (34). The Canadian Institute for Advanced Research's Population Health Programme, in its recent book entitled "Why are some people healthy and others not? Determinants of population health" made some effort towards uncovering these biological pathways by discovering some analogies with findings in animal studies. Research on social relationships among baboons in Kenya (36) shows that free-ranging olive baboons at lower levels of the dominance hierarchy are less capable of coping with induced stress. In dominant males the measurable physiological response to stressful events disappears more rapidly. Strikingly, something similar is reported by Marmot for "free-ranging" British civil servants (33). All ranks have similar elevated blood pressure while at work, but the blood pressure of senior administrators drops much more when they go home, again indicating greater ability to cope with stress response. These potential biological channels through which the social microenvironment may be influencing the health of populations are only just beginning to be understood. But they seem fascinating.

5. Income and health inequality

We conclude this review by drawing attention to one of our own recent findings which has a slightly different angle. Van Doorslaer *et al.* (37) looked at the cross-national variation in income-related inequalities in self-reported morbidity in 8 European countries and the US. By using the answers to the general question on self-perceived health ("How do you rate your health in general?") and disposable household income from health interview surveys, we could generate age-sex adjusted inequality measures (so-called concentration indices) for a latent ill-health variable for all countries. Unsurprisingly, we find that in all countries, inequalities are in favour of the higher income groups and are statistically significant. But there is some important variation across countries, with high health inequality in the US and the UK and low inequality in Sweden and East Germany. Furthermore, there appeared to be a very strong association with the degree of income inequality in these countries ($r = 0.87$). Again, the strength of the association owes much to the position of the US. None of the other variables included in a regression analysis (GDP per capita, health care expenditure per capita or the public share of expenditure) were significant. We therefore concluded that the most important factor associated with income-related inequality in ill-health appears to be income inequality. Given that it is also well-known that self-assessed health is a strong predictor of subsequent mortality (39), it seems not unlikely that the effect of income inequality on mortality is mediated through health inequalities.

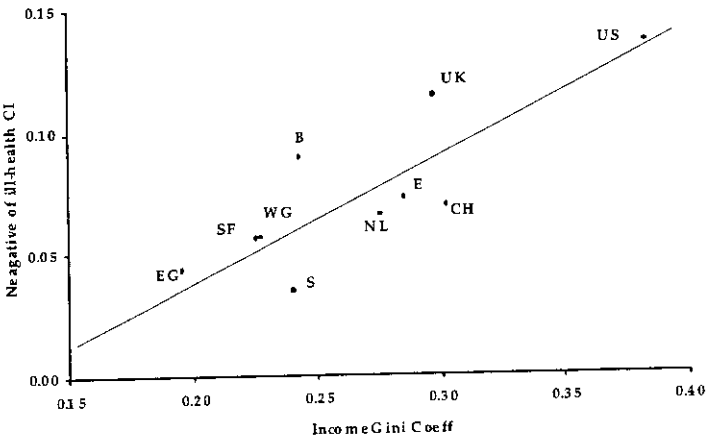

Fig. 2: Health income inquality in 10 countries
Sources: (37) and (38)
Legend: B = Belgium; CH = Switzerland; E = Spain; EG = East Germany; NL = Netherlands; S = Sweden; SF = Finland; WG = West Germany; UK = United Kingdom; US = United States

Recently, the ECuity Project's methods were also applied to Belgian survey data for 1994 taken from the Panel Study on Belgian Households (PSBH) by De Graeve and Duchesne (38). In Figure 2 we have added the Belgian observation to the earlier results. This does not increase the strength of the association. On the contrary, like the UK, the concentration index for income-related inequality in ill-health for Belgium is higher than would be expected on the basis of the (relatively low) income inequality. And the relatively low income inequality in Belgium is consistent with recent evidence from international comparisons of income inequality. In a recent review by Smeeding and Gottschalk (40), Belgium has the second lowest income inequality (after Sweden) of all industrialised countries included in the comparison. Inequality has somewhat increased over the eighties, though not by as much as in the US or the UK. It is possible that Belgium's surprisingly low income inequality rather than its high health inequality explains its outlying position on the graph. The reason for the higher-than-expected health inequality in Belgium is unclear and seems an interesting puzzle for further research.

De Graeve and Duchesne (38) also performed a separate analysis for Flanders, Wallonia and Brussels. They found that both the income-related inequality in ill-health and the income inequality (as measured by the concentration index and Gini coefficient) was substantially higher in Brussels than in the other two regions. An important point to note is that – as in other studies of socio-economic inequalities in health – the unequal distribution is not merely a matter of the lowest income groups. As can be seen from Figure 3, which shows the level of ill-health by deciles of equivalent household income, again a fairly steady gradient across the entire distribution can be observed. Does relative inequality also matter for health in Belgium then?

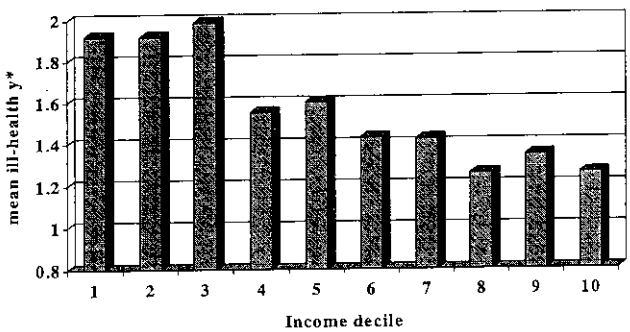

Fig. 3: Self-perceived ill-health by decile, Belgium, 1994
Source: (38)

Finally, as a cautionary note, it is worth mentioning a recent publication in the Lancet which does not confirm this strong association. It even casts doubt on the widely held hypothesis that countries in Western Europe with more egalitarian income distributions also have lower inequalities in mortality and morbidity. Mackenbach *et al.* (41), in another large EU Concerted Action, calculated odds ratios for (several indicators of) self-reported morbidity by level of education and rate ratios for mortality by occupational class. Surprisingly, they found that relative inequalities (for both indicators) were larger than average in Sweden and Norway and lower than average in Switzerland and Spain. France had by far the highest inequality in mortality. Britain, Finland and Denmark ranked fairly average. The authors pointed out that inequalities in morbidity by income differed from inequalities by educational or occupational status. They nevertheless conclude that: *"our data do not support the hypothesis that inequalities in health are smaller in countries whose social, economic and health-care policies are more influenced by egalitarian principles"* (41). It makes clear that the relationship between health and income (or socioeconomic status) still leaves a lot to be investigated.

6. Conclusion

The search for explanations of some of the apparently anomalous findings in the literature on the income-health relationship has not reached a final conclusion. The research on potential mechanisms underlying or mediating the association between relative social position and health is surprisingly lively more than 15 years after the publication of the Black report. The quote by George Kaplan that *"the inverse association between socioeconomic level and risk of disease is one of the most pervasive and enduring observations in public health"* (19) is still true today. The topic seems most likely to continue to occupy an important place on research agendas. Concluding from the evidence to date, as Wilkinson does, that *"national mortality rates can be lowered by redistributing income"* (42), or, as Kawachi and Kennedy do, that "*reducing income inequality offers the prospect of greater social cohesiveness and better population health"* (43) seems a bit premature. But there certainly seems to be something going on that warrants further research effort and energy. In developed countries, there is more to the relationship than just the detrimental health effects of absolute poverty and deprivation. Somebody's relative position *vis-à-vis* the rich or the poor seems to matter too.

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