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Globalisation, Inequality and Health

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Abstract - As we suggested in a previous work (Borghesi and Vercelli, *Sustainable globalisation*, Ecological Economics, vol.44, n.1, 2003), the process of globalisation affects the sustainability of development mainly through three channels: economic growth, inequality and environmental degradation. This conceptual framework may help us to understand also the causal influence of globalisation on health that represents a fundamental dimension of the quality of life enjoyed by the people and of sustainability. For this purpose, the present paper aims to investigate both the direct and the indirect effects of post-war globalisation, with particular attention to the role played by inequality in the globalisation-health relationship. A few policy implications emerging from the analysis are also discussed, suggesting a policy strategy that can at the same time improve health and make the current globalisation process more compatible with sustainable development.

Keywords: globalisation, inequality, health, sustainable development
JEL classification: F02, O15, I10, I18

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1. Introduction

The process of globalisation affects more and more different aspects of our life progressively impinging on its quality. This is true also for a crucial determinant of the quality of our life: health. However, notwithstanding its fundamental importance, the nexus between globalisation and health has been insufficiently analysed. In order to clarify the nature and the implications of this nexus we intend to focus on a particular channel of influence of globalisation on health: the link between income inequality and health inequality. The influence of globalisation on the inequality of income distribution has been extensively analysed in the literature (see, e.g., Bourguignon and Morrisson, 2002; Brandolini, 2002; Lindert and Williamson, 2003 and literature there cited). There is a wide, though not unanimous, agreement that the process of globalisation tended to increase the inequality of income both across countries and within many of them (Wade, 2001). Only recently the economic literature has devoted some attention to the relationship between inequality and health. As several contributions (WHO, 2001; OECD, 2001) have pointed out, income inequality is often associated with health inequality. It has been observed (e.g. Gwatkin, 2000), for instance, that poor people generally have higher mortality rates and lower life expectancy than rich people. Moreover, mortality rates tend to be lower in countries with a more egalitarian income distribution (Wilkinson, 1992, 1996, 2002). Putting these two branches of the economic literature together, we may try to build a bridge between globalisation and health.

Therefore, starting from the above point of view, in this paper we intend to clarify how and to what extent inequality can affect the causal relationship between globalisation and health. We intend to show that the results of this analysis have relevant implications for defining a policy strategy meant to improve the sustainability of global development.

The structure of the paper is as follows. In section 2 we try to clarify which are the main causal links between globalisation and health and argue that inequality in income distribution plays a crucial role in explaining the health effects of post-war globalisation. The link between inequality and health is explored in greater details in section 3 by taking into account also the underlying psychological and physiological mechanisms. In section 4 we examine the inverse causality from health inequality to income inequality. Then we investigate in section 5 a few direct effects that

globalisation may have on health. Some policy implications of the preceding analysis are briefly spelled out in section 6. A few concluding remarks follow.

2 Causal links between globalisation and health

As we have tried to clarify elsewhere (Borghesi and Vercelli, 2003), the process of globalisation affects the sustainability of development mainly through three channels: an *economic*, a *social* and an *environmental* channel. The *economic* channel is mainly represented by the effects of globalisation on per capita income growth, the *social* channel by its effects on poverty and income inequality, while the *environmental* channel includes the consequences of globalisation on a variety of environmental degradation indexes.

Globalisation affects the income growth rate of countries according to their degree of involvement in the liberalisation of exchanges. Since the population growth rate changes slowly in relation also to extra-economic factors, globalisation affects not only the dynamics of total income, but also of per capita income. The rate of growth of per capita income influences, in its turn, both the environmental and social conditions of sustainability. In addition, the process of globalisation may have a direct effect on the environmental and social indexes of sustainability (*ibidem*).

This conceptual framework may help us to understand also the causal influence of globalisation on health. In fact, globalisation may affect the health status of a population both directly and indirectly through the same three channels mentioned above.

As to the *economic* channel, the average per capita income of a community (at a local, national or international level) is generally considered as a measure of its standard of living and thus also a major determinant of the average health status of the population that lives in that community. Globalisation tends to increase the per capita income growth rates of the countries that participate actively in the process of globalisation (as shown, e.g., by Lindert and Williamson, 2003), therefore it may also improve their health conditions. For instance, an increase in per capita income is generally accompanied by higher expenditures in health programs, better technologies that tend to improve the therapeutic instruments at disposal and higher education levels that favour the diffusion of updated medical know-how both within and across countries [1].

As far as the *social* channel is concerned, it has been observed that the health of the poor has higher income elasticity than that of the rich. Cross-country evidence suggests that life expectancy increases with average per capita income in relatively poor countries, whereas this relationship tends to disappear for relatively rich countries (Preston, 1975). This can be clearly seen by looking at Figure 1 that shows the relationship between life expectancy and per capita Gross Domestic Product (GDP) in year 2000 using World Bank data on 175 countries [2]. Similar results emerge also in single-country studies. Using a survey on health and income in Britain, Wilkinson (1992) finds that several health indicators increase rapidly as income rises from the lowest to the middle classes of the income distribution, while no further health improvements occur at high income levels. Similarly, using data from the National Longitudinal Mortality Survey in the USA, Deaton (2001) observes that the male (age adjusted) probability of death decreases rapidly as income grows at low family income levels, while it flattens out at high family income levels. These results are relevant for policy as they suggest that redistributing income from the rich to the poor would reduce both income and health inequalities, improving the average health status of the population since it benefits the health of the poor much more than it damages the health of the rich (see section 6).

What we have reported so far is consistent with the traditional view that health is mainly affected by absolute income, while income inequality (both within and across countries) would have only an indirect effect on health: a reduction in income inequality would improve average health only because health indicators increase at a decreasing rate with income. In recent years, however, several studies have argued that socioeconomic inequality has also a direct impact on individuals' health, particularly in developed countries. A host of new evidence in different disciplinary fields clarified that, after a threshold of minimum income is reached, income inequality becomes a crucial determinant of health. Using data on nine OECD countries, Wilkinson (1992) finds evidence of a strong correlation between life expectancy and income distribution that is independent of absolute income since in this context per capita Gross National Product (GNP) has a statistically insignificant impact on life expectancy in the performed regressions [3]. As table 1 shows, similar results emerge in several other studies that focused on different groups of countries and periods of time. The same relationship, moreover, may also apply at the local level. For example, comparing the 50 states of the U.S. it was found a very weak

relationship between their average income and mortality rates, whereas on the contrary a close relationship emerged between inequality and mortality rates (Kaplan et al., 1996) (see figure 2) [4]. Analogously, among the 282 metropolitan areas of the USA the ones with the most unequal income distribution have the highest mortality rates (Lynch et al, 1998). Although the regressions do not control for some potential explanatory variables and there is not yet unanimous consensus in the literature on the evidence at disposal [5], these results suggest that relative income, independently of absolute income, may have a crucial influence on health in these countries. More generally, the relative deprivation suffered by people in the lowest deciles of the income distribution may determine their exclusion from the social activities that promote or preserve health. Moreover, as several empirical papers have pointed out (see section 3), relative deprivation may be a source of psychosocial stress, loss of self-esteem and depression that tends to damage the individuals' health. People tend to compare themselves with several reference groups around them (neighbours, co-workers, friends, relatives, TV stars etc…) and may suffer chronic psychological stress from comparison with these benchmark individuals [6]. These psychological mechanisms can adversely affect people's health as much as the material deprivation suffered by the poor (see, e.g., Sapolsky, 1998; Brunner and Marmot, 1999; Wilkinson, 2002). To the extent that these results are robust, since increasing inequality damages the average health of a population, it can be said that globalisation has indirectly contributed to deteriorate health in several countries. Empirical evidence suggests, in fact, that the process of globalisation has determined a progressive increase in income inequality between countries and within countries (see Vercelli, 2003*b* and the literature there cited). In particular, the evidence shows that in the last twenty years there was a marked increase of inequality in many OECD countries including the USA and the UK (see in particular Brandolini, 2002).

The third main channel of influence of globalisation on health that should be considered is the influence of globalisation on the environment. The process of globalisation has globalised also the environmental problems and these have huge effects on health (the thinning of the ozone layer, pollution, the exhaustion of vital resources such as drinkable water, etc). However, the influence of globalisation on environmental degradation is quite complex and ambiguous (see, e.g., Borghesi and Vercelli, 2003). Thus, for instance, by increasing the economic growth of the participating countries, the globalisation process may contribute to raise the scale of

the production and consumption activities that damage the environment. At the same time, however, the higher economic growth that generally characterises the globalisation process may promote technological progress and thus reduce the intensity of environmental degradation. The environmental consequences of globalisation and its implications for health would require a full-length specific study, therefore in this work we have to ignore this important channel of influence [7]. As for (absolute) poverty, we will consider it only to the extent that it is linked to income inequality [8]. Thus, we will mainly focus here on the role played by income inequality in the globalisation-health relationship.

3 The influence of inequality on health

Before discussing the economic mechanisms that affect health through inequality, we have to understand the physiological and psychosocial foundations of such an influence. Though the relevance of psychosocial factors on health was recognised long ago [9], until recently very few observers realised that they are an important etiological factor [10].

As a reserve of (relatively liquid) financial capital is crucial to absorb economic shocks, and a reserve of natural capital to absorb environmental shocks, analogously in order to withstand psycho-physiological shocks it has been argued that a crucial role may be played by the intensity and quality of social relations, i.e. what is often called “social capital”. In particular, the lack of social trust was shown to be positively and significantly correlated with mortality in the USA (Kawachi et al., 1997), with a correlation coefficient ranging between 0.71 and 0.79 depending on the kind of social trust indicators used for the analysis (see table 2) [11]. Analogously hostility was found positively correlated with mortality. For example, Williams et al. (1995) estimated that mean hostility scores of ten cities in the USA were strongly and significantly correlated with their mortality rates after adjusting for race, age, gender, income and education level of the individuals (see table 2). On the other hand, trust and hostility appear to be strictly correlated to inequality. Table 3 reports the Pearson correlation coefficients between various social capital and income inequality indicators in selected studies, with p-values in parentheses. As the table shows, two commonly used indicators of social capital (civic engagement as measured by membership in groups and associations, and lack of social trust) were significantly related to inequality in the USA (Kawachi et al., 1997). Similar results were obtained

by Uslaner (2001), who found a high correlation coefficient (r = -0.684) between inequality and trust in a cross-country analysis. As the author showed, this connection between the two variables holds true also in multivariate tests that take into account economic, cultural and religious aspects that might affect the observed levels of trust and inequality in the selected countries. In particular, estimating a simultaneous equation model to test the direction of causality between trust and inequality, Uslaner (2001) found that trust has no effect on economic inequality, whereas the latter turns out to be the strongest determinant of trust among the explanatory variables (see table 3). Analogously, many studies (see table 3 and the survey by Hsieh and Pugh, 1993) have confirmed the existence of a close relationship between income inequality and both homicides and violent crime that can be interpreted as indirect measures of hostility and social capital [12]. Summing up, the empirical evidence suggests that inequality acts as a wedge between people that engenders mistrust and hostility with negative effects on people's health, the more so the more upper incomes are considered unrelated or non-proportional to individual effort and merit.

This may explain why mortality rates are strictly related to the inequality of income distribution in cross-section analyses: "thus, among the developed countries, the most egalitarian societies, not the richest, tend to have the best health and highest life expectancy. For example, the United States, although it is richer and spends more on medical care than any other country, has poorer health than almost all western European countries and comes 22nd in the international league tables of life expectancy. On the other hand, countries such as Greece, despite having just under half the level of income per head, have substantially higher life expectancy than the United States. More egalitarian countries such as Japan, Norway and Sweden have among the best health in the developed world" (Wilkinson, 2002, p.14). A similarly close relationship between income inequality and mortality rates has been found also in time series analyses on single countries including Russia, United Kingdom and Taiwan [13].

Income inequality may be interpreted as a measure of the intensity of relative deprivation and gap of status affecting individuals in a society. It was found that in human and non-human primates (such as baboons and macaques) the experience of a low status severely damages health producing "obesity, glucose intolerance, increased atherosclerosis, raised basal cortisol levels and attenuated cortisol responses to experimental stressors" (Wilkinson, 2002, p.15 and literature there cited). The

physiological mechanism is based "on the effects of sustained activation of the hypothalamus-pituitary-adrenal axis and the sympathetic nervous system. The stress response activates a cascade of stress hormones that affect the cardiovascular and immune systems" (ibidem, pp.15-16).

The mechanism through which chronic stress jeopardises the health of individuals is very similar to economic "short-termism": energies are mobilised to obtain a result in the short term even at the cost of jeopardising the sustainability of the good performance in the longer term. In fact, whenever a human being has to face an emergency, the body mobilises all the resources that may be useful to face the exceptional threat (or risk or challenge) preparing muscular activity for fight or flight and\or nervous alert for devising a quick solution to the problems. But also the body has to comply with the first law of thermodynamics, or in economic terms with the budget constraints; in other words the energy mobilised to face the immediate task is subtracted from the resources available for routine functions such as tissue maintenance and repair, growth, digestion, depuration of liquids and food through liver and kidneys, reproductive functions and immunity. This mechanism of, so to say, "auto-doping" may be very efficient when the emergencies are brief and rare because in this case the suspension of routine functions does not produce serious damages. However, it is bound to affect health in an irreversible way, as a sort of acceleration of aging, when they are frequent or permanent, like in the case of low social status (or, worse, of a diminished social status) or relative deprivation (or, worse, increasing relative deprivation). An increase in income inequality, as that induced by globalisation in the last twenty years, produces for many people exactly a reduction in social status and an increasing feeling of relative deprivation.

We have to stress the link between the physiological mechanism that explains how inequality deteriorates health and the economic mechanism that explains how certain aspects of globalisation may deteriorate the "health", i.e. the stability and sustainability, of the economic performance (Vercelli, 2001). In both cases, the pathology originates from short-termism, i.e. the myopic emphasis on short-term objectives to the cost of jeopardising the achievement of longer-run objectives.

In the last two decades the globalisation process, driven by the principles of privatisation and deregulation (Vercelli, 2003*b*), progressively shortened the time horizon chosen by decision-makers to optimise their strategies. This mechanism can be seen in some more detail by focussing on three of its salient features. The first one

is the growing importance of the financial side in the budget and balance sheets of corporations and households. Financial decisions are liable to big, often unexpected, gains and losses and must be revised almost continuously in the light of the latest available information, thus greatly contributing to the shortening of the time horizon of economic decisions. Globalisation accelerated this trend by unifying financial markets and increasing the size and velocity of "hot money" transferred at very short notice from one sector or country to the other. This greatly increased the instability of financial markets and the size of potential losses and gains of financial decisions, focusing the attention of operators on the speculative factors rather than on the long-run trends of economic fundamentals.

A second important aspect of short-termism is the growing flexibility of labour markets and industrial relations. Workers are compelled to shorten the time horizon of their decisions while the employers have the opportunity of revising their choices concerning the size and use of the labour force almost continuously on the basis also of merely speculative considerations.

The third example may be found in the field of corporate governance. Managers are evaluated and rewarded according to indexes of performance calculated over increasingly short time horizon. This trend has negative implications on the sustainability of the economic performance of the firms and on its compliance with the tenets of business ethics and is a source of greater stress for the top managers and all the people affected by their decisions.

The recent phase of globalisation has greatly reinforced the three trends briefly recalled above. The increasing importance of financial capital was promoted by the radical liberalisation of the capital movements across countries. The growing flexibility of labour markets and industrial relations was enhanced by the increasing international competition based on the opportunity of shifting capital in the countries and sectors where the flexibility of labour is higher. In addition, the growing international mobility of capital and skilled labour encouraged the adoption of short-termist capital governance and reward systems.

Summing up, the growing short-termism induced by globalisation progressively increased the stress of workers, entrepreneurs, shareholders and households and this nurtured an analogously short-termist physiological and psychological response that undermined their health. Of course, this effect is particularly visible and sizeable in individuals affected by absolute and relative deprivation and weakly protected by a

social security network and accessible social capital. Policies that reduce poverty and inequality and invest in social capital may counteract these negative effects on health. More generally, any measure capable to curb short-termism in favour of the consolidation and diffusion of a longer-term horizon would improve health, the quality of life and the sustainability of the process of globalisation.

4 Reversed causality: the impact of health on inequality

There is a growing debate in the literature about the possible explanations underlying the observed correlation between health and inequality. It seems reasonable to argue that there exists a bidirectional link between these two variables. As a matter of fact, income inequality is likely to play a crucial role in determining health differentials across the population since the rich enjoy higher living standards and higher access to the health care system than the poor. Health inequality may contribute, in turn, to consolidate income inequality both within and across countries. The children of poor families, in fact, generally have worse health conditions than the children of rich families, and this adversely affects their future earning possibilities as adults. Health, therefore, as many other traits (e.g. wealth, race), may explain much of the intergenerational transmission of economic status (Bowles and Gintis, 2001).

Thus, inequality jeopardises health and health in its turn strongly affects the earning capacity of individuals. This feedback may trigger a vicious circle between bad health and inequality that risks to reinforce progressively both of them. Since the poor generally have worse health conditions than the rich, this tends to increase the income gap between rich and poor people, both in the present and in the future. One can identify two main channels through which a lower health status adversely affects the agents' earning capacity. In the first place, bad health conditions increase absence from work and reduce both physical and mental productivity. This obviously applies to the person who suffers the disease, but can also extend to other members of her family, with a negative spillover effect on the whole household income capacity. In particular, the other members of the family may be compelled to reduce their working hours to provide medical assistance to the sick person. Moreover, they may suffer a loss in their own productivity for the mental stress provoked by the disease in the family and the physical exhaustion due to a long assistance to the person who is ill.

In the second place, the lower health conditions of a family adversely affect the education level of their children, which reduces their future earning capacity and the

options that they will have at disposal in their life. When one member of a family is sick, the household faces higher expenditures to cure the person while suffering a reduction in total earnings. This reduces the budget that can be allocated for the education of children. Poor families, that are generally highly vulnerable to diseases and suffer already severe budget constraints, may decide to send their children to work, making them leave the school to provide financial support to the family. Poor families, moreover, generally have lower life expectancy and higher infant mortality rates than rich families. On the one hand, this reduces the incentive of the poor to invest in their children's education because of the limited time horizon that they have at disposal to enjoy the benefits of such investment. On the other hand, it induces the poor to have more children to increase the probability that at least some of them may survive, thus reducing the educational expenditures allocated for each child. Even when the children of poor and rich families receive the same level of education, the former may suffer inferior cognitive capacities because of the lower health conditions in which they live. For instance, several studies (Bhargava and Yu, 1997; Pollitt, 2001) find a strong correlation between reduced cognitive capacity and low nutritional status (e.g. lack of iron and vitamin A in the organism).

Low health conditions can increase inequality not only within countries (as in the examples given above), but also across them (WHO, 2001). Developing countries, in fact, often have poor average health conditions that hinder their ability to grow and converge towards the developed economies. Countries with high rates of infant mortality have grown more slowly during the period 1964-1995 than countries with low levels of the same variable (WHO, 2001). Several empirical studies (Barro and Sala-i-Martin, 1995; Bloom and Sachs, 1998; Bhargava et al., 2001) confirm that the average health status of a country has a statistically significant impact on its economic growth, estimating that a 10% decrease in life expectancy reduces economic growth by 0.3-0.4%. This occurs not only because, as mentioned above, the worsening of public health in a country reduces its human capital and labour productivity, but also because as a consequence the country attracts less foreign investments and has a lower capital accumulation. The wide diffusion through the population of a disease like malaria causes high turnover and absenteeism in the labour force, inducing higher training costs for the firms and reducing their incentive to invest in the country. Many firms, for instance, have decided to cut their investments in southern Africa due to the high mortality rates that AIDS is causing among the labour force (WHO, 2001). The

high incidence of a disease, moreover, increases households' expenditures, which reduces their savings and thus also the aggregate level of capital accumulation.

5 The direct influence of globalisation on health

After examining the indirect effects of globalisation on health through inequality, let us now move to the analysis of the direct effects.

Globalisation may increase the cross-border transmission of infectious diseases by augmenting the movements of people and the consequent risk of contagion. People move from the North to the South and vice versa mainly for tourism and labour, although other causes can also contribute to this sort of decisions [14]. Thus, for instance, Northern people may go on holiday to the South to enjoy unpolluted natural resources that have been depleted in their own countries by the industrialisation process. At the same time, Southern people may go to the North to find a job and enjoy higher living standards [15].

These large multi-directional movements of people that characterise the globalisation process can spread, therefore, transmissible diseases across countries, which raises the health interdependence between developed and developing countries. Thus, for instance, large migrations from the South to the North may increase human settlements in poor areas without adequate sanitation and access to safe water (e.g. suburban areas in large Northern towns), augmenting the consequent risks of contagion throughout the Northern population. The worldwide diffusion of AIDS (apparently originated in Western Africa in the 1930s) and the transmission of multidrug resistant tuberculosis from poor to rich countries provide other important examples of how low health conditions of the poor can have negative spill-over effects on the health status of the rich. The outbreak of SARS is another recent example.

As these examples show, inequality tends to strengthen the health interdependence between developed and developing countries. In a globalised world, in fact, the health of a country depends on infectious diseases that are breed by poverty in some far-distant country (Sandler and Arce, 2002) [16].

Globalisation has also a direct health effect through the consequences that international agreements can have on the health status of the population (Woodward et al., 2001). The international agreements on food security standards and on the use of Genetically Modified Organisms (GMO), for instance, can have large positive as

well as negative impacts on public health. These agreements pose important trade-offs between conflicting interests. The food security standards imposed by some developed countries, in fact, can protect the health of their inhabitants. However, this may come at the cost of a reduction in the exports of developing countries. If so, low-income countries might become even poorer, with a consequent negative impact on their average health status and on inequality between countries. Similarly, the adoption of GMO poses a delicate trade-off between the need to feed an ever-increasing population in the developing countries (that have the highest rates of demographic growth) and the unknown consequences that GMO might cause to their population in terms of health risks and variability of the agricultural production.

The recent agreements on Trade-Related Aspects of Intellectual Property Rights (TRIPS agreements) provide another example of how the governance of globalisation can directly affect public health. Even in this case, a trade-off arises between the need to promote research in health technologies (that generally takes place in developed countries) and the need to protect public health in developing countries that cannot afford high-costs medicaments. The "Declaration on the TRIPS agreements and public health" promulgated at the WTO meeting in Doha in November 2001 tried to find a compromise solution between the opposite interests of developed and developing countries in this field. While reaffirming the commitment of the WTO members to the TRIPS agreement, the Declaration recognised that each member has the right to grant compulsory pharmaceutical licences in case of national public health crises, especially those resulting from HIV/AIDS, tuberculosis, malaria and other epidemics that afflict many developing countries. However, most of these countries were unable to make effective use of this right since they had no manufacturing capacities in the pharmaceutical sector and wanted therefore to be allowed to import the necessary pharmaceutical medicaments from countries that can sell them at low costs. This request caused a lively debate between developed and developing countries that have reached an agreement on this issue only recently in Geneva (August 2003). During this long bargaining process, Brazil has asked for WHO to be involved in the negotiations to safeguard its own interests, which further confirms that global governance and public health are strictly intertwined.

The international agreements on labour standards represent another important case of global governance that can affect public health and thus also income inequality, particularly in the developing countries. The possible existence of "sweatshop" labour

conditions in some multinationals that produce in developing countries and the use of children in their production process have recently attracted much attention in the public opinion. The actual extension of this phenomenon is still the object of debate [17]. However, some legitimate concerns exist on the potential impact that these labour conditions might have on the health status of the population in developing countries. The exploitation of adults and children in unhealthy labour conditions could provoke diseases among the poor in the developing countries and thus reduce also the average health in these countries. If so, this would tend to raise inequality both within developing countries and across countries. On the other hand, one must be aware that imposing in the South the same labour standards of the North might increase labour costs in developing countries and reduce the incentive of Northern enterprises to invest in these countries. As the other international agreements mentioned above, therefore, also those on labour standards might generate a trade-off in developing countries between better health from higher labour standards and lower income (thus possibly lower health) from a reduction in investments.

A deeper analysis of the economic and social implications of these international agreements goes beyond the scope of the present paper [18]. These few examples, however, although largely incomplete, can help to clarify the strict linkage between globalisation, health and inequality. In all these examples, in fact, the governance of globalisation and its direct impact on public health raises potential trade-offs and conflicts of interests between the North and the South that are likely to increase, the higher is the level of inequality across countries.

6 Policy implications

As we have seen, crucial socio-economic determinants of health are poverty, inequality, and social capital. Therefore, in principle, any policy that reduces the poverty and the inequality of a population and invests in its social capital also improves its health and the life quality of its members contributing to the sustainability of its economic development. We are here specifically interested in the socio-economic policies that may offset the negative implications of globalisation on health and exploit its potentialities.

As we have argued elsewhere (Vercelli, 2003*a* and 2003*b*), inequality has increased in several countries in the last two decades or so, basically because in this period redistributive policies proved unable to offset these tendencies and reduce

inequality. As a matter of fact, the welfarist policies pursued in the 1950s and 1960s succeeded to some extent in this task in many countries. In principle, globalisation is fully consistent with these policies, but it raises specific obstacles to their implementation. Since the welfarist policies may increase the cost of labour, investment and production may shift to the countries where the cost of labour is the lowest, thus triggering a sort of race to the bottom in the labour markets not sheltered by the use of superior technology. Globalisation, therefore, can make welfare state policies more difficult. The higher factor mobility that characterises globalisation imposes constraints on the instruments that countries may use for redistribution, such as progressive taxation and health security systems. In a globalised world progressive taxation on capital and labour income is more likely to cause an outflow of capital and the emigration of high-income earners (Sandmo, 2002). The same applies, in our opinion, to health policies that aim to promote equality in the access to health services. Globalisation, therefore, may prevent governments from reducing income and health inequalities. Given the bi-directional link between inequality and health discussed above, this might be a serious problem for those developed countries where income inequality tends to increase with globalisation. Following the Heckscher-Ohlin theory of international trade, in fact, international market integration may lead rich countries to produce and export commodities that are skilled labour intensive. This tends to increase the wage differential between skilled and unskilled workers in the developed countries that, in the absence of redistributive policies, may widen also the health differential between these two categories.

International financial integration provides another reason, beyond factor mobility, why globalisation can make welfarist policies in general, and health policies in particular, less viable. Financial integration, in fact, tends to raise the pressure on single countries to reduce their budget deficit, making governments increasingly unable to cope with the expensive health care programs for the poorest. In the USA, for instance, this program - named Medicaid - represents the second biggest state expenditure after education spending, corresponding to about 15% of the overall USA spending (The Economist, 2003). In recent years, moreover, the costs of Medicaid have grown faster than any other health program, also because the number of poor people that are eligible for the program has increased over time. To cope with the stricter budget constraints imposed by financial integration, many USA states are currently cutting or planning to cut the health program for the poor (by lowering

reimbursement rates to doctor that treat Medicaid patients, reducing the services covered by the program and narrowing eligibility). The same might happen in the future in the EMU countries that are currently the target of large immigration flows of poor people from the South of the world and, at the same time, must respect the Stability Pact that induce them to cut expenditures.

While factor mobility and financial integration tend to reduce the state interventions that promote health, other aspects of globalisation make such interventions more strictly needed. Thus, the increasing health interdependence across countries that has been pointed out before increases the need for Northern interventions with health policies in the South of the world to avoid the potential negative feedback effects on the North of a Southern disease that spreads all over the world. This risk is currently provoking a debate on how to eradicate the risk of global diseases. Some authors (WHO, 2001) argue that the North should partially finance the health policies of the South as an investment to reduce the health risks posed by possible infectious diseases. Thus, for instance, the eradication of smallpox in 1977 was made possible in the past by large investments mainly financed by rich countries for the mass immunisation in poor countries [19]. Moreover, the existing differences in health and thus also in economic growth between countries call for the transmission of new health care technologies from the North to the South of the world that can contribute to reduce both health and income inequality across countries (Sachs, 2001). However, in the short run the introduction of best-practice health care technologies may have ambiguous effects on the health and income distribution within the receiving country, depending on how the disease is distributed between rich and poor people in that country (Deaton, 2001) [20]. The transmission of health care technologies to the South, therefore, should come along with redistribution policies that guarantee equal access to such technologies for people that equally need them, independently of their income level [21].

Summing up, health policies can be interpreted as an investment that can contribute to reduce other expenditures in the long run (e.g. by reducing poverty and thus also future health expenditures for the poor). As any other form of investment, however, health policies take time to produce their returns. Therefore, while the prevailing short-termism may induce to cut health expenditures, a less myopic perspective would induce to follow the opposite path and pursue internationally coordinated policies that exploit the potentialities of globalisation (e.g. diffusion of

knowledge and human capital) to fight its negative effects (e.g. diffusion of global diseases).

Finally, the deep link between psycho-physiological and economic short-termism stressed in section 3 suggests a further strategy of investment in health that is generally neglected in the literature. Whatever intervention may react to the growing short-termism, accelerated by the recent process of globalisation, will reduce stress, improve health, and corroborate the sustainability of development. Here we limit ourselves to a few hints related to the three examples mentioned in section 3. Some control of the speculative flows of capital, for example through a Tobin tax, would give a contribution in the right direction. Analogously, stopping –and possibly reversing– the process of increasing precariousness in labour relations would help. Finally, the adoption of more rigorous and far-sighted rules of corporate governance capable to lengthen the time-horizon of managers and shareholders would provide a very important contribution to curbing short-termism. This may be obtained by adopting criteria of evaluation of managers' performance based on longer-period indicators and by strengthening the role of stakeholders in the definition and control of corporate strategies.

7 Concluding remarks

The nexus between globalisation and health is blurred by a partly spurious correlation between the indexes that measure them. While globalisation spread and intensified since the early 19th century (with the only exception of the period 1915-1945 encompassing the two world wars), in the meantime also the indexes of health improved for reasons partly independent of globalisation and strictly related to the extraordinary continuous progress of theoretical and applied medicine. No doubt globalisation has given a contribution of its own to the strengthening of this positive correlation by spreading updated medical knowledge, know-how, medicines and therapeutic instruments around the world, including less developed countries, as well as by increasing individuals' per capita income, promoting their effective access to the most appropriate medical care. However, it is very difficult to disentangle the specific contribution to health of globalisation from that of scientific and technological progress, and of other economic, social, institutional factors that are in principle quite independent of globalisation. Therefore, in this paper we chose to concentrate the attention on a few specific psycho-physiological and socio-economic

factors of health that explain possible deviations from the long-run positive correlation between economic development (measured by per capita income), globalisation and health observed in the last two centuries or so. The study of these specific factors of health is important for policy because the elimination, or at least the mitigation, of the negative influences of globalisation and the corroboration of its positive influences would improve the overall positive correlation between health and globalisation.

We have seen in particular that poverty, inequality and social capital play a detectable role in explaining these deviations that may affect the health of specific individuals or groups of individuals. The health of individuals is not uniformly proportional to their per capita income but rather to poverty (i.e. mainly to the lowest segment of per capita income) and to the inequality of income distribution. Poverty acts through material deprivation and inequality through relative deprivation. We have analysed in particular the impact of relative deprivation on the health of individuals independently of poverty and per capita income, which emerges in many empirical studies. This established an important link with the recent process of globalisation that in the last twenty years increased inequality both between countries and within many of them, inducing stress and poor health in people hit by a sense of relative deprivation.

This approach has suggested a policy strategy that can at the same time improve health and make the process of globalisation more compatible with the sustainability of development. In this spirit we have emphasised the deep link between the psycho-physiological short-termism that may explain the influence on health of the socio-economic factors such as relative deprivation, and the increasing economic short-termism induced by the recent process of globalisation. This suggests a new line of research and a new strategy of policy intervention that it would be useful to explore in the future.

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Endnotes

1. The recent phase of the globalisation process has also enhanced the spread of medical knowledge through the World Wide Web. Internet, in fact, allows on-line access to specialised journals and web sites that have updated information on the most recent developments in health research.
2. The regression line in the diagram describes how a logarithmic curve fits the data.
3. Regressing life expectancy on per capita GNP and on the income share going to the least well off 70% of the population, Wilkinson (1992) finds that the former variable explains less than 10% of the variance of life expectancy, while the latter accounts for most of the variance. Moreover, the correlation coefficient between life expectancy and the income share to people below the 7th decile of the population is basically unchanged when controlling for per capita GNP, shifting from 0.86 to 0.90 with p-value below 0.001 in both cases.
4. Kaplan et al. (1996) found that the correlation coefficient between the age-adjusted mortality rates and the income proportion that goes to the least well off 50% of the population is high and

basically unchanged when median income is also taken into account among the explanatory variables, shifting from 0.62 to 0.59 with $p<0.001$ in both cases. On the contrary, the correlation coefficient between total mortality and median income is much lower and falls drastically from 0.28 ($p<0.05$) to 0.06 ($p>0.05$) when adjusted for income inequality.

5. Lynch et al. (2000), for instance, have observed that higher inequality has been related to lower mortality rates in Britain during the period 1962-1990.
6. Deaton (2001) argues that this psychological mechanism plays a crucial role in causing stress to the agents and sets up a model assuming that each individual's stress is proportional to the total amount of income that goes to richer people in the community.
7. For a discussion of the health effects of environmental degradation see, for instance, WHO (1997).
8. Also wealth inequality affects health in a way analogous to, but independent of, income inequality (see Wenzlow et al., 2003) but its influence will not be discussed in this paper.
9. For example, the great French sociologist Durkheim documented more than one century ago in his classical work on suicide the crucial importance of the sudden change in social status on the health of individuals (Durkheim, 1952).
10. Wilkinson claims that they are "the most important etiological factors" (Wilkinson, 2002).
11. Kawachi et al. (1997) take also poverty into account since the latter can be a potential confounder in the relationship between social capital and mortality, being related to both these variables. All the coefficients presented in this study, however, were basically unchanged when adjusted for poverty.
12. As Deaton (2001) points out, however, the link between inequality and crime is an object of debate. In principle, high inequality may coexist with little crime since very rich individuals may afford defensive expenditures to protect themselves against potential crimes (Wittenberg, 2000). However, these sorts of repressive measures are rarely sufficient to thwart the crime arising from social tension.
13. Much of the relevant research has been collected in one volume (Kawachi et al., 1999).
14. Part of the literature (e.g. Hugo, 1996; Bates, 2002) has emphasized the role of environmental degradation as a possible reason to migrate. The rise in the sea level that follows from global warming, for instance, might pose serious hazards on the future possibility to live in several islands and low lands, which induces people to migrate. Some authors (Myers, 1997) argue that these "environmental refugees" might become the largest group of involuntary migrants in the near future.
15. The current level of labour mobility, however, is the object of debate. While immigration has increased in some industrialised countries such as in the European Union area, some authors (e.g. Sandmo, 2002; Woodward et al., 2001) argue that labour migration is lower in the present phase of globalisation than in the previous one (1870-1914), also because developed countries have partly closed their borders to unskilled workers.
16. It is estimated that most of the infectious disease epidemics are of special relevance to Sub-Saharan Africa and Asia that account for the poorest 20% of the world's population (Beaglehole and McMichael, 1999).

17. Lindert and Williamson (2003), for instance, argue that there is no positive correlation between globalisation and the use of child labour and that during the last globalisation phase (since 1950) the rates of work by children under 15 have been reducing in all member countries of the International Labour Organization.
18. See Wallach and Sforza (2000) for a thorough discussion of these potential implications.
19. Using a game theoretical model, Barrett (2003) has recently shown that global eradication of a disease, i.e. its complete elimination in every country, requires international cooperation and strong international institutions.
20. Some authors (e.g. Preston and Haines, 1991) report that in some cases the transmission of health care technologies has initially widened the health and income gaps within the receiving country.
21. See van Doorslaer et al. (2000) for a discussion of how health care systems should be financed to ensure an equitable allocation of resources.

Table 1: Correlation between income inequality and health indicators in selected studies

Health indicator	Inequality indicator	Correlation coefficient	Period	Countries	Study
Life expectancy (years at birth)	Income share to 7th decile[1]	0.86 ($p<0.001$)[2]	1979-1983 (single years)	9 OECD countries	Wilkinson (1992)
Life expectancy (annual rate of change)	Relative poverty[3] (annual rate of change)	-0.73 ($p<0.01$)	1975-1985	12 European Union countries	Wilkinson (1992)
Life expectancy (annual rate of change)	Income share to 6th decile (annual rate of change)	0.80 ($p<0.05$)	Different periods (mainly in the '70s)	7 OECD countries	Wilkinson (1992)
Life expectancy (annual rate of change)	Income share to 6th decile (annual rate of change)	0.47 ($p<0.05$)	1979-90	15 OECD countries	Wilkinson (1992)
Age-adjusted total mortality	Income share to 5th decile	-0.45 ($p<0.001$)	1980	50 US states	Kaplan et al. (1996)
Age-adjusted total mortality	Income share to 5th decile	-0.62 ($p<0.001$)[4]	1990	50 US states	Kaplan et al. (1996)
Age-adjusted total mortality (% change 1980-1990)	Income share to 5th decile in 1980	-0.62 ($p<0.0001$)[5]	1980-1990	50 US states	Kaplan et al. (1996)
Age-adjusted total mortality (% change 1980-1990)	Income share to 1st decile (% change 1980-1990)	-0.53 ($p<0.001$)	1980-1990	50 US states	Kaplan et al. (1996)
All-cause mortality	Robin Hood Index[6]	0.54 ($p<0.0001$)	1990	50 US states	Kennedy et al. (1996)
Age-adjusted total mortality	Gini coefficient	0.25 ($p<0.001$)	1990	282 US metropolitan areas	Lynch et al. (1998)
Age-adjusted total mortality	Theil Entropy coefficient	0.21 ($p<0.001$)	1990	282 US metropolitan areas	Lynch et al. (1998)
Age-adjusted total mortality	90th:10th percentile income share ratio	0.52 ($p<0.001$)	1990	282 US metropolitan areas	Lynch et al. (1998)

[1] By this we mean the proportion of income going to the least well off 70% of the population. A similar interpretation applies to the other deciles in these tables.
[2] The correlation coefficient is 0.90 ($p<0.001$) when controlling for Gross National Product per head.
[3] Relative poverty is defined as the proportion of the population living on less than 50% of the national average disposable income.
[4] The correlation coefficient is basically unchanged ($r=-0.59$ with $p<0.001$) when median income is also taken into account among the explanatory variables.
[5] The correlation coefficient is $r=-0.51$ ($p<0.002$) when adjusted for changes in median income for each state.
[6] The Robin Hood Index is defined as the proportion of aggregate income that must be redistributed from households above the mean to those below it to achieve a perfectly equal distribution. Obviously, the higher the Index, the more unequal the distribution.

Table 2: correlation between health and social indicators in selected studies

Health indicator	Social indicator	Correlation coefficient	Period	Countries	Study
Age-adjusted rates of total mortality	Lack of social trust (perceived unfairness)[7]	0.77 ($p<0.0001$)	1990	39 US states	Kawachi et al. (1997)
Age-adjusted rates of total mortality	Lack of social trust (perceived mistrust)[8]	0.79 ($p<0.0001$)	1990	39 US states	Kawachi et al. (1997)
Age-adjusted rates of total mortality	Lack of social trust (perceived lack of helpfulness)[9]	0.71 ($p<0.0001$)	1990	39 US states	Kawachi et al. (1997)
Age-adjusted rates of total mortality	Per capita group membership in voluntary groups	-0.49 ($p<0.0001$)	1990	39 US states	Kawachi et al. (1997)
Mortality rates	Hostility rates[10]	0.9 ($p<0.0001$)	1994	10 US cities	Williams et al. (1995)

Table 3: correlation between income inequality and social indicators in selected studies

Social indicator	Inequality indicator	Correlation coefficient	Period	Countries	Study
Homicides/100000	Income share to 5th decile	-0.74 ($p<0.0001$)	1989-91	50 US states	Kaplan et al. (1996)
Violent crimes/100000	Income share to 5th decile	-0.70 ($p<0.0001$)	1989-91	50 US states	Kaplan et al. (1996)
Per capita group membership in voluntary groups	Robin Hood Index	-0.46 ($p<0.01$)	1990	39 US states	Kawachi et al. (1997)
Lack of social trust (perceived unfairness)	Robin Hood Index	0.73 ($p<0.0001$)	1990	39 US states	Kawachi et al. (1997)
Social trust[11]	Gini index	-0.908 ($p<0.0001$)	1990-93 and 1995-96	33 countries	Uslaner[12] (2001)

[7] Perceived unfairness was measured by the percentage of respondents who agreed with the first part of the following question: "Do you think most people would try to take advantage of you if they got a chance or would they try to be fair?"

[8] Perceived mistrust was measured by the percentage of people that agreed with the second part of the following question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?".

[9] Perceived lack of helpfulness was measured by the percentage of respondents that agreed with the second part of the following question: "Would you say that most of the time people try to be helpful, or are they mostly looking out for themselves?".

[10] Hostility rates were based on the scores obtained through a telephone poll conducted on about 200 persons residing in each of the ten US cities taken into account.

[11] See Uslaner (2002, p.29, footnote 22) for a description of how this variable is constructed from the data set of the World Values Study.

[12] The value reported in the third column for this study is the two-stage least square estimator of a multivariate regression, therefore it provides information on the partial correlation between social trust and the Gini index.

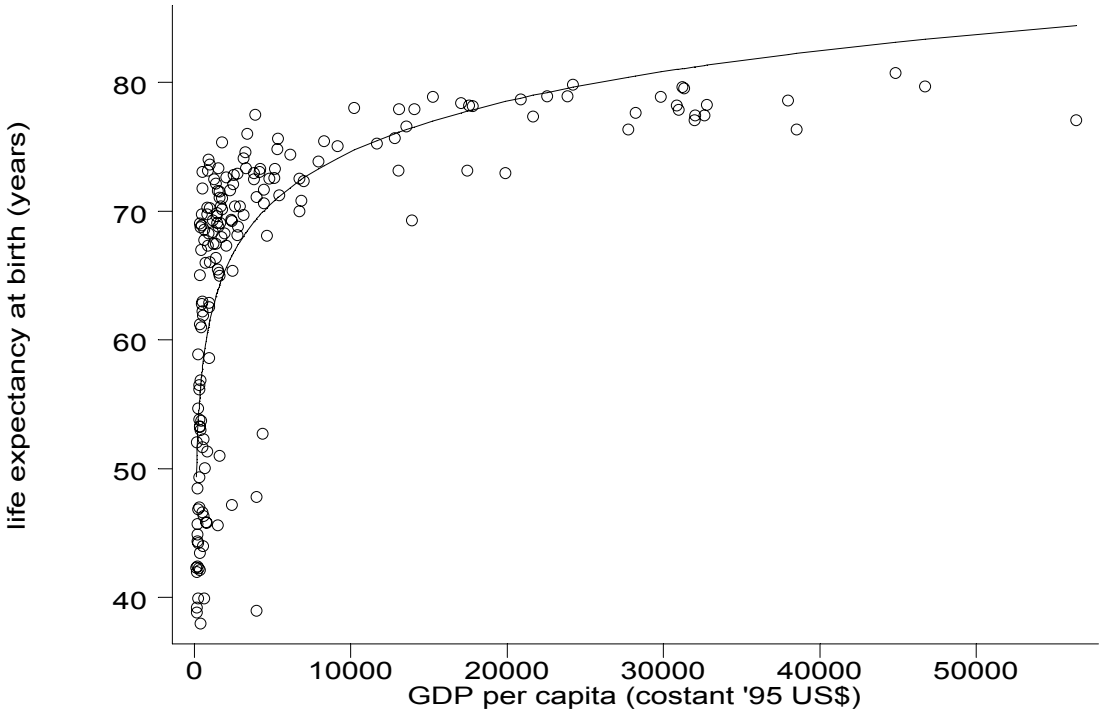

Figure 1: life expectancy and per capita GDP in 175 countries in 2000.

Source: authors' elaboration on World Bank data (World Bank, 2002)

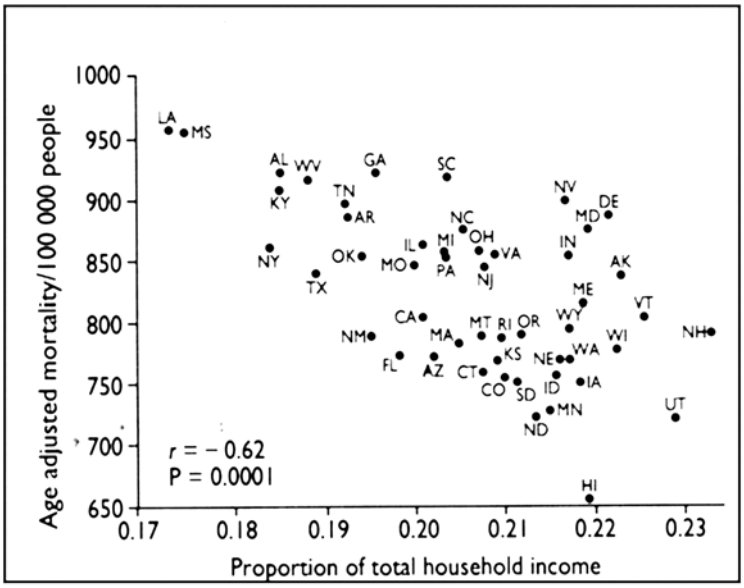

Figure 2: age adjusted mortality and income share received by the less well off 50% of the population in 1990 in the U.S.

Source: Kaplan et al. (1996)