

Rapid change and mortality crises¹

by

Giovanni Andrea Cornia²
University of Florence

I. Introduction: is social change accelerating?

The post World War II period, and particularly the last two decades, have been characterized by rapid change in most social, political and economic areas. Far from witnessing ‘the end of history’ predicted by Frances Fukuyama, the last twenty years have seen an acceleration of change in most areas.

To start with, there has been a major paradigmatic shift towards the liberalisation of domestic markets and the globalisation of the world economy. This shift has taken place through a massive application of structural adjustment programs that limited the role of the state in the economy, privatised state assets and liberalized labour and product markets in most developed and developing countries and, since 1989, in the former socialist economies. While in China and Vietnam, transition reforms were implemented in a gradualist fashion, in the former Soviet Bloc they were carried out in an accelerated fashion that simultaneously entailed a swift redefinition of national borders, the introduction of new political institutions, a radical reorientation of the economy and the adaptation of a disoriented population to an entirely new way of life. Considerable, if less dramatic, liberalisation was introduced also in the labour markets of advanced economies such as Japan, South Korea and Italy that, as a result of these policies, experienced greater employment informalisation and instability, faster turnover, longer search times and a shorter duration of each employment spell. Second, the last decade witnessed also a rapid globalisation of the world economy and, in particular, an explosion of cross-border trade and financial transactions. All in all, these changes seem to have generated not only some efficiency gains but also growing instability as shown by the rise in the cases of currency, stock market and banking crises (Caprio and Klingebiel 1996).

Second, the last two decades recorded extremely fast progress in the field of information and communication technology, biotechnology and pharmacology. The price of a memory chip fell 1200 times between 1975 and 1990 alone (Pohjola 2001) while progress in biotechnology (even leaving aside the controversial GMOs) raised markedly farm yields. Meanwhile, the deciphering of the DNA allowed developing a new range of ‘target drugs’ that enhanced perceptibly the treatment of incurable diseases. While, most of these changes had favourable effects on growth, well-being and longevity, their short-term effects were far from clear. For instance, progress in the field of information and telecommunication eliminated millions of jobs and exported many more.

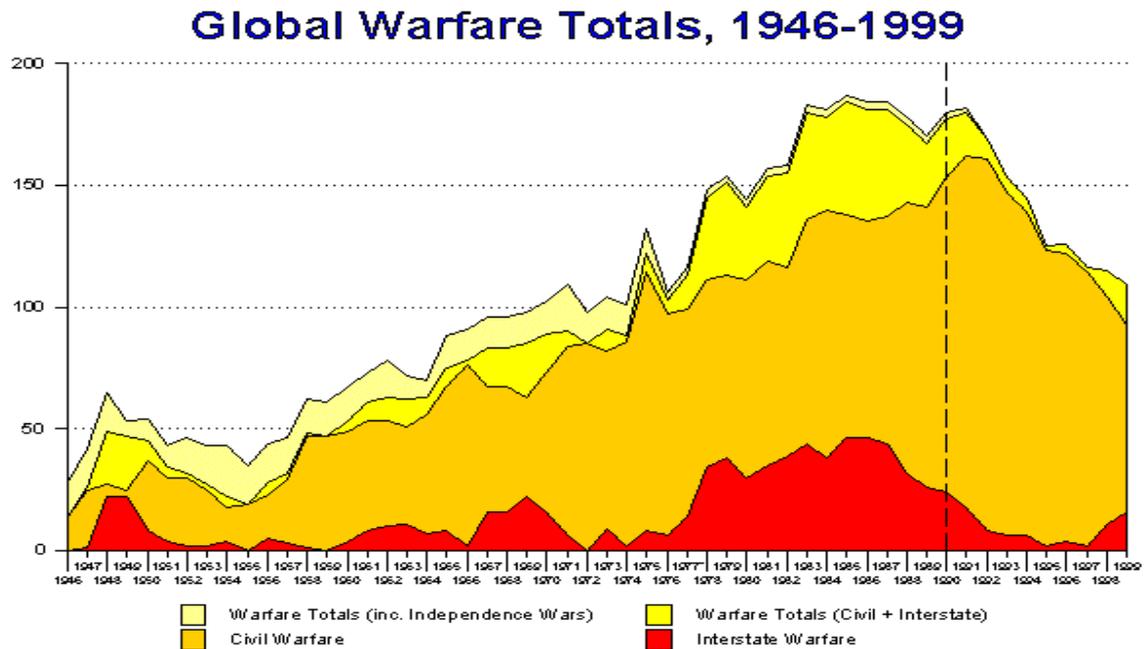
Third, political systems witnessed rapid change too. Following the downfall of socialism, the number of countries embracing some kind of political democracy literally skyrocketed. Gone

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are therefore the systems based on feudal, military or neo-colonial institutions. These favourable developments were however at times accompanied by a surge in other forms of social instability, as vividly illustrated by the rise in crime rates in Russia and South Africa and – more worryingly – in the number of local conflicts and humanitarian crises (Figure 1). The world became also increasingly mono-polar and politically integrated a fact that helped intensifying the recourse to smart international sanctions (e.g. against Cuba, Haiti and Iraq) and of peacekeeping and peacemaking missions.

Figure 1. Trends in the number of wars by type



Finally, demography has also been a source of important change. While the population declined in Europe, it continued increasing at a rapid rate in Africa, the Middle East and parts of South Asia. These and other imbalances, as well as the reduced cost of information and migration, fed sustained South-North and South-South legal migration, as well as the emergence of a massive illegal migration. Growing international migration was accompanied by massive regional and rural-urban migration in the developing and transitional countries, as symbolized by the acceleration in the rate of growth of slums in most Third World cities or by the emergence of an ‘urban floating population’ of 120 million tolerated internal migrants providing cheap labour to the construction and service sector of urban China.

On current trends, rapid change is likely to intensify in the future. Indeed, new epochal transformations are already on the horizon. For instance, the entry of China into the WTO and its further integration in the world economy are very likely to lead over the next 16 years to a worldwide inter-sectoral reallocation of some 500 million workers, owing to the massive expulsion of Chinese farmers from agriculture and a similar loss of employment in manufacturing firms in many middle and high-income countries exposed to the Chinese competition. Second, global financial markets seem poised to continue expanding despite their high volatility. Meanwhile, the birth of the Euro and the EU enlargement are likely to produce considerable effects in Europe and its main economic partners. Finally, the aging and demographic decline in the Old Continent will likely lead to an intensification of world

migration in the years ahead, regardless of the migration policies that will be adopted in the countries of origin and destination. Rapid change – in other words – is not over and, indeed, it may intensify in the years ahead.

In principle, most of the changes alluded to above had the potential for improving political freedom, living standards and health conditions. Yet, some of these changes took place in an abrupt and uncontrolled way. For this reason, they weakened the collective and individual ability to adjust harmoniously to the new situations and to enjoy the potential benefits of all these changes. The difficulties to foresee, understand and harness ‘unmanaged change in situation of institutional weakness’ thus entailed considerable health costs, including in terms of higher child, adult and elderly mortality. In addition, even when the overall health impact of rapid change turned out to be favourable, a rise in social stratification reduced the relative health gains of marginal groups with low levels of education, a limited capacity to participate in new economic and political institutions or living in remote areas. The combination of rapid change and social segmentation therefore often led to a highly skewed distribution of the health gains generated by the new changes.

In view of all this, section 2 discusses ten historical and current episodes of rapid change that – despite their inherently positive nature and the favourable expectations that surrounded their introduction – generated large social costs and a rise in death rates. Finally, section 3 delineates a tentative theory of how unmanaged change may affect human well-being.

2. A tentative taxonomy of mortality increases triggered by rapid change

This section analyses ten examples of past or current cases of social change referring to different countries and situations. Their common denominator is that, in all of them, health status deteriorated perceptibly, and at times catastrophically, following the introduction of supposedly favourable changes leading to more democracy, more rational economic policies, migration to richer areas and so on. The paper ignores those negative events such as recessions, wars and disasters that are indeed expected to worsen health status among the population affected. The main aim of this review is thus to understand for which reasons and through which pathways health deteriorated in spite of the favourable effects expected from the changes introduced. Tentatively, one could identify four types of situations:

2.1 Favourable political changes and rising mortality

Rising stress and worsening mortality have been observed in countries that introduced inherently positive political reforms such as the freeing of the slaves in the USA, the transition out of *apartheid* in South Africa, the move to political democracy in the former socialist countries and the imposition of smart sanctions aiming at weakening the grip on power by oppressive regimes while containing their negative effect on the population.

There are a few broad reasons for the observed deteriorations. First, greater “political democracy” in itself cannot help improving health status if “economic democracy” does not improve in parallel with it or, worse, if the economic base of the disenfranchised populations deteriorates. Second, “political freedom” may not lead to “political stability”. In shallow democracies lacking a well developed network of civil society organisations (associations, NGO’s, churches, trade unions, producers associations and self governing bodies) for the formation and channelling of consensus, political liberalisation can polarize the political competition along ethnic, religious or class lines with the result of raising political instability and – in extreme cases – the risk of conflict, as observed in some new democracies of Africa

and the former Soviet Union. Third, the intended outcomes of political reforms may backfire because of their poor design or because their implementation was hampered by unexpected shocks.

(i) Rising mortality among the former black slaves in the USA, 1850-1880. A clear example of the negative impact of a positive political change is offered by the abolition of slavery in the United States (Meeker 1976). Life expectancy at birth for the blacks declined sharply between the last decade of slavery (1850-60) and 1880 due to rising incidence of infectious and nutritionally related diseases. The primary reason of this rise in death rates was not so much a change in disease patterns or medical practices, but the disruptions in social organization and living conditions associated with the abolition of slavery. During the slavery, the health and nutrition of the slaves depended on their owners, who had an economic interest in keeping them in good health. The health and nutrition of the freed blacks, in contrast, were influenced negatively by their inability to obtain medical care from a non-existent public health system or from costly private providers. Declines in health status were also due to negative changes in housing conditions and the inability of the freed slaves to obtain land, a fact that reduced their agricultural output and food intake. Most of them had in fact to survive by selling their labour as casual workers.

Thus, while the abolition of slavery was a noble and idealistic decision, freeing the slaves without simultaneously ensuring them minimum income-earning opportunities and access to basic services turned out to be the cause of avoidable health deteriorations.

(ii) Rising violence during the South African transition to democracy, 1989-2004. South Africa's transition from a supremacist and oppressive regime to a multiparty 'rainbow' democracy was not an easy one. The country experienced two different, if interconnected, transitions. The first was from *Apartheid* to democracy, the second from an inward-looking to a neo-liberal market economy.

As noted by Marais (2001, cited in Desmond and Boyce 2003), the political transition began in the late Seventies-early Eighties, with the introduction of a few political adjustments motivated by the poor performance of the country and the desire of raising an abysmally low supply of skilled African workers whose shortage was seen as a key factor limiting growth potential and domestic demand. The subsequent years (1982-7) saw the creation of the first political organisations, the dismantling of 'petty *Apartheid*' and the creation of a tri-cameral parliament. Despite these concessions, political violence intensified. The state responded declaring in 1986 the state of emergency, handing over power to the security establishment (Barbarin et al 1999) and launching urban renewal programs in townships characterized by high political volatility. This response raised the death rates among both the Blacks and to a lesser extent the Whites. By the early 1990s, political negotiation and compromise started prevailing, leading to the 1994 elections that sanctioned the end of *Apartheid*.

The newly acquired political freedom was accompanied by considerable hesitation about the choice of policies in the field of nationalisation, land reform, fiscal policy, tax restraint and FDI. In the end, the government adopted an orthodox stance giving priority to economic growth, relying on the 'trickle down' to reduce poverty and emphasizing the provision of urban basic services. The neo-liberal nature of economic policies became clearer with the adoption in 1996 of the Growth Employment and Redistribution (GEAR) program that focused mainly on private investment-led growth, with no explicit targets for the reduction of poverty and inequality.

The restoration of democracy, end of sanctions and election of a government committed to social change were expected to affect positively growth, poverty reduction and health status. However the existing data do not easily permit to trace the health impact of the transition due to long standing registration problems and, more recently, the blurring effect of HIV-AIDS. Be as it may, the available evidence suggests that – on balance - the political reforms did not improve health status. Three factors may explain this unexpected outcome:

- *Rising poverty*. Economic performance improved only modestly in relation to the turbulent years of 1987-90. Per capita income growth was negative over the entire 1990-5 period and turned barely positive since 1996. Meanwhile income inequality worsened (Table 1; see also Jenkins and Thomas 2004). As a result poverty increased, with negative effects on health. This disappointing performance can, at least in part, be attributed to the legacy of *Apartheid*. Yet, the key issue is that while GEAR improved the macro fundamentals it failed to create jobs (Streak, 2004; Terreblanche, 2002). As a result, poverty and inequality therefore continued to increase, if at a slower pace, in the second part of the 1990s.

Table 1. Income distribution changes in South Africa, 1991-2001

Households	Share of total income			Changes	
	1991	1996	2001	1991-1996	1996-2001
Bottom two quintiles	3.8	3.4	3.3	-11.0	-3.0
Third quintile	7.6	7.4	7.3	-0.3	-0.1
Fourth quintile	17.6	17.4	17.2	-0.1	-0.2
Top quintile	71.0	71.8	72.2	1.1	0.6

Source: Adapted from Terreblanche (2002), p33, cited in Desmond and Boyce (2003).

Public policy deliberately aimed at improving social conditions. Government spending on health, welfare, education and housing rose from around 50 percent of non-interest expenditure in 1990/1 to an average of 60 percent between 1995 and 2002 (Desmond and Boyce 2003). Free health care was made available to pregnant women and small children, a school-feeding scheme was started, health care was decentralized and a programme of clinic building and renovation was initiated. Though hampered by limited capacity and expenditure constraints, these programme were expected to start reversing long-standing health inequities. Likewise, the reform of the welfare system was expected to impact positively health, but in the end only 20 percent of the poor received a grant owing to limited capacity and fiscal austerity (Streak, 2004). Another priority of the new government was to increase access to water, sanitation and electricity and as a result the availability of piped water rose from 78 to 83 percent between 1995 and 1999 (Desmond and Boyce 2003). Despite these improvements, the country experienced two cholera epidemics since 1994, possibly because the program did not reach the ultra poor or because consumption remained low because of high costs and distance.

With the removal of influx control, migration to already overcrowded townships rose sharply due to lack of employment opportunities and violence in rural areas. The new government embarked on a massive low-cost housing program that produced over a million new homes since 1994, with the result of raising the share of families living in formal housing. For a variety of reasons, however, the share of households living in informal housing rose from 7 to 12 percent during the same period, thus offsetting the impact of the program in reducing the spread of TB, pneumonia and HIV.

- *Rising crime rate.* A second pathway through which the transition affected health status was via a surge in violent deaths and political assassinations that increased sharply over 1987-1990 to subside from the early 1990s. As a result, the cases of political violence in urban areas fell from 2500 in 1990 to less than 500 in 1994 (Barbarin et al 1999). Yet, the fall in political violence appears to have been accompanied by a rise in criminal violence (*ibid.*).

The political transition occurred in an environment of widespread violence, easy access to weapons, little confidence in an ill-equipped police force and weak capacity of the criminal justice system. During the *Apartheid* years, civil disobedience, boycotts, and even political violence were considered by most legitimate tools of political struggle. In turn, the state responded to these acts in an even more brutal way. All this contributed to the creation of a culture in which violence is the main tool for resolving all political and personal disputes.

The longer term impact of all this was a sharp rise in criminal activity and violent deaths between 1987 and 1990 and after 1990. Between 1980 and 1990, the murder rate rose by 32 percent, rape by 24 and burglary by 31 (Shaw, 1996). In turn, over 1990-4, the number of murders fell from 16000 cases in 1990 to close to 15000 in 1994, as the fall in political assassinations was almost completely offset by a rise in criminal ones. In addition, other crimes continued to increase, with assault climbing by 18 percent, rape by 42, robbery by 40 and burglary by 20 (*ibid.*). By 1996, hospital records showed a daily average of two and a half thousand South Africans received treatment for stabbings, assaults and shootings. Data for 1994-1997 from two key districts confirm the trend towards falling political brutality but rising criminal violence (Table 2). Finally, Barbarin et al, (1998) argue that the fear of being attacked while at home or in the street has risen for all ethnic groups, and that fear- and stress-related mortality may be another channel through which the transition affects health.

Table 2. Crime rates (per million) in two South African Locations, 1994-1997

	1994	1995	1996	1997	%change 1997/1994
Gauteng					
Personal crimes	153.1	160.5	160.6	160.9	5.0
Property crimes	334.6	344.2	337.9	339.7	1.5
Sexual crimes	12.4	13.8	14.9	14.6	17.9
Public violence	0.33	0.31	0.19	1.33	0.0
Soweto					
Personal crimes	142.3	140.4	139.5	145.4	1.5
Property crimes	125.4	118.2	124.2	133.1	6.4
Sexual crimes	15.8	17.4	18.2	17.4	10.4
Public violence	0.69	0.22	0.15	0.17	-75.7

Source: Barbarin et al (1999)

- *HIV/AIDS and the transition.* Over the last 15 years South Africa's biggest health problem has been an uncontrollable epidemics of HIV-AIDS. There is no doubt that the epidemic would have occurred regardless of the transition, but the latter may have accelerated its diffusion. The removal of influx control, political violence and reforms-induced urbanisation increased mobility within the country, thus facilitating the spread of the epidemic. Second, the increase in rape associated with political violence may have fuelled infections. Third, the inefficient management of the health care system during the reform process reduced the quality of medical assistance and may have contributed driving up the rates of infection

(Desmond and Boyce, 2003). Fourth, by attracting most of the public attention, the transition inadvertently contributed to a neglect of the disease and of the initial signs of its diffusion.

While the overall effect of the transition was certainly positive, path dependence and poorly designed economic policies did not allow achieving better health outcomes. In turn, fiscal restraint prevented the full benefit of changed expenditure priorities being realised. Therefore, while if compared to no action, health outcomes have most likely been better because of the transition, they are quite possibly not what they could have been.

(iii) the imposition of sanctions on Cuba, 1992 to date. The US embargo against Cuba was introduced in 1961 and is the longest-lasting embargo in modern history (Garfield and Santana, 1997). At the beginning, the embargo had a limited impact on the living standards of the population because most Cuban trade was with the Soviet Bloc, because of the assistance provided by the Soviet Union and because of egalitarian policies in the allocation of scarce food and medicines. Indeed between 1961 and 1991 health status and other social indices improved steadily and significantly. The dissolution of the Soviet Union and the COMECON and the cancellation of Soviet aid greatly weakened the Cuban economy, whose GDP declined by 35 percent between 1989 and 1993.

The impact of the 1992 Cuban Democracy Act, that made the US embargo substantially more stringent, has therefore to be seen against this background. Prior to the tightening of the embargo, about half of the proteins and calories for human consumption were imported. With the drop in imports, only about 1200 calories per capita were provided by the low-cost rationed distribution. The nutritional situation thus continued to worsen until 1994 when private agricultural markets were allowed to operate. In addition, the vulnerable groups were covered by targeted rations and other nutritional measures, and by some international food aid. The policy of prioritising the needs of children, however, raised the nutritional deficit among adult men. However, also the proportion of newborns weighing less than 2500 grams rose from 7.3 in 1989 to 9.0 percent in 1993, reversing in this way a 10 years of gradual progress in this area. Undernutrition was also one of the main factors in an epidemic of optic neuropathy that affected more than 51.000 people since 1992.

The economic decline of the 1990s caused also a fall in the availability of materials and products needed to ensure clean water. From 1990 to 1994, the share of the population with domestic water connections declined for the first time from 83 to 81 percent in urban areas and from 30 to 24 percent in rural areas. As a result, mortality from diarrhoeal diseases per 100.000 people rose from 2.7 in 1989 to 6.8 in 1993. International donations and imports made up subsequently for the deficit in chlorine production and in 1995 87 percent of the municipal water systems were chlorinated.

Poor nutrition and deteriorating housing and sanitary conditions led to a rise in the incidence of tuberculosis, from 5.5 per thousand to 15.3 per thousand in 1994 while the shortage of TB drugs raised by 48 percent the number of TB related deaths over 1992-3. Likewise, over 1989-93 deaths due to infectious and parasitic diseases rose by 67 percent and those by influenza and pneumonia by 77 percent.

Lack of fats formerly imported from the Soviet Union resulted in severe shortages of soap products and in a surge in pediculosis and scabies. Soap substitutes made with caustic soda and other chemicals and stored with improper labelling caused a surge in unintentional

poisoning. Reductions in public transport due to lack of spare parts induced a 28 percent fall in motor vehicle-related deaths while bicycle-related deaths rose by 78 percent. Overall, mortality per 1000 inhabitants rose from 6.4 to 7.2 over 1989-94, entailing some 7500 excess deaths concentrated almost entirely in the population of over 65 years of age. In all other groups, mortality rates remained stable or declined. By 1994, however, the deteriorating social conditions began affecting other age groups as well. And in 1995 infant mortality rose slightly due a greater incidence of diarrhoea and respiratory problems.

Garfield and Santana (1997) conclude noting that while some of the mortality changes and health problems described above were caused by the economic crisis of 1989-92, the 1992 tightening of the embargo sharply aggravated the situation. Imports of key medical or other items became impossible and required much higher shipping charges while foreign suppliers were strongly discouraged to deliver any good to Cuba. While the health impact was limited by the priority assigned to the protection of children and women, the embargo hit a new vulnerable group of adult men and the elderly. The lesson here is that the political sanctions were quite inefficient as they did not manage to weaken the Castro regime while imposing a considerable – and possibly unwanted – health cost on the elderly population of Cuba.

2.2 Market reforms and health crises

In some cases, the introduction of economic reforms generated negative health outcomes. A first explanation of this unexpected trend is that reforms were applied under “conditions of incomplete markets and institutions”. Another explanation focuses instead on the problems caused by “incomplete reforms” as the changes introduced were only a subset of those that needed to be introduced. This means that each reform taken alone does not necessarily generate improvements that depend on simultaneous changes in many areas. A third explanation concentrates on the “sequencing problem” that arises when reforms are introduced in the wrong order. This problem is well-known in macroeconomics (when, for instance, the liberalisation of capital movements takes place before macroeconomic stabilization is achieved) or in transition economics (when price liberalisation and privatisation were introduced before competition reforms were introduced). A final explanation focuses on the workers’ and entrepreneurs’ “inability to adjust” to sudden and unanticipated changes in economic circumstances.

(i) growth, autarchy and mortality in Nazi Germany, 1932-1938. During the 1930s Germany experienced an all-but-unknown, and yet substantial, increase in the mortality rate of almost every age group (Baten and Wagner, n.d.). The standardized death rate fell from 100 in 1928 to 93 in 1932 (the last year before the Nazi takeover) but then rose gradually to 102 by 1936 to remain at 101 in 1937 and 1938. While infant mortality declined over 1932-7, that of children of 1-5 years of age rose moderately and that of children 5-15 markedly (Table 3). The mortality increase was too substantial to be explained by racial prosecution alone and, in any case, the impact of anti-Semitic measures became particularly evident only after the 1938 tightening of racial laws. The mortality surge was particularly evident for infectious, parasitic and nutrition-related diseases, as well as for circulatory and respiratory diseases (especially pneumonia) and violent causes.

Table 3. Standardized death rates for all causes for selected age groups, Germany 1932-7

Age group	1932 death rate (per 1000)	1937 death rate (per 1000)	Percentage change 1932-7
0-1	79.18	64.36	-18.7
1-5	4.50	4.65	3.3
5-15	1.40	1.59	13.6

15-30	2.66	2.61	- 1.9
30-45	3.98	4.02	1.0
45-60	10.39	10.54	1.4
60+	53.63	55.25	3.0

Source: Baten and Wagner (n.d.)

Though over 1933-37 GDP grew officially by 55 percent, aggregate consumption rose by only 19 percent as a large share of the new output was appropriated by the regime to finance an expensive rearmament campaign and the strengthening of the state. Even such lower increase in aggregate consumption should have led to better living standards and health status for most of the population. This increase in average consumption was accompanied, however, by a drop in the disposable income of low-income groups. At the same time, however, overall employment rose. All in all, while the private consumption of the low-income groups did not rise as fast as aggregate consumption, there is no evidence that it declined to an extent such as to cause the deterioration in health status mentioned above.

A second explanation of the deterioration in health status focuses on the decline in leisure time and increased work effort. While during the Weimar Republic the trend was towards a shorter working week, over 1933-1938 this increased by 3.4 hours. Work intensity rose as well. Authors cited in Baten and Wagner (n.d.) attribute to rising work exertion and the related surge in workplace accidents and sick-leaves among workers most of the rise in mortality over 1932-7. Yet, even this factor cannot explain fully the mortality changes reported in Table 3, as the age group whose mortality rose the most was that of children 5-15 years of age, while that of people of working age rose less or remained unaltered. One needs therefore to focus on additional explanations.

One of this is that the government expenditures on rearmament increased at the expense of other expenditures, public health included. While the number of doctor per person remained broadly constant (but declined when the Jewish doctors were revoked their license) and while the Nazi regime reduced considerably infant mortality, the success in dealing with mortality among older children was much smaller, particularly for infectious diseases.

A third factor was the shift to autarky, a decision entailed that substantial food imports be curtailed, particularly foods with a high protein and fat content. Indeed, it could be argued that the rearmament of Nazi Germany entailed a switch from the import of food to that of raw materials (iron) for rearmament. In addition, in order to marshal the support of the industrial workforce, the prices of many agricultural goods were kept low through administrative regulations, with the result of discouraging private trade and compressing trading profits. German farmers had to deliver a large quota of their output at artificially low prices to state parastatals dealing with the commercialisation of farm output. This discouraged production, raised the incentives to increase food self-consumption among farmers and increased black market operations. As a result of the policy of restricting the imports of protein-rich foods and of controlling the prices of several farm products, there was a distinct decline in average protein consumption per capita. The coastal areas – that were more dependent on protein imports - were the most affected. The urban areas also suffered perceptibly while the rural areas were little affected. The indicators of protein shortage by region tend to correlate strongly with the changes in mortality during the Nazi years.

(ii) the difficult economic and political transformation of the former socialist countries of Europe, 1989-2000. 1989 marked the onset of the epochal transformation of the former

socialist economies of Europe into liberal market democracies. While the months preceding the beginning of this historic event were characterized by widespread hopes for improvements in living standards, the subsequent years brought about an unprecedented fall in output and incomes, the rapid impoverishment of large sections of the population, rising inequality and widespread social dislocations. Over 1989 and 1996 alone, the number of poor and unemployed in the region rose respectively by 100 and 10 million while the crime rate tripled (UNICEF, 2000).

The impact of these developments was dramatic. With the exception of Slovenia, during the first reform years (1989-91) male life expectancy at birth fell in *all* European economies in transition. While in Central Europe male life expectancy started to recover in 1991-92, in the rest of the former Soviet bloc the fall continued until much later (Table 4). In 2000, male life expectancy was still lower than its 1989 level in eight of the 16 countries included in Table 4.

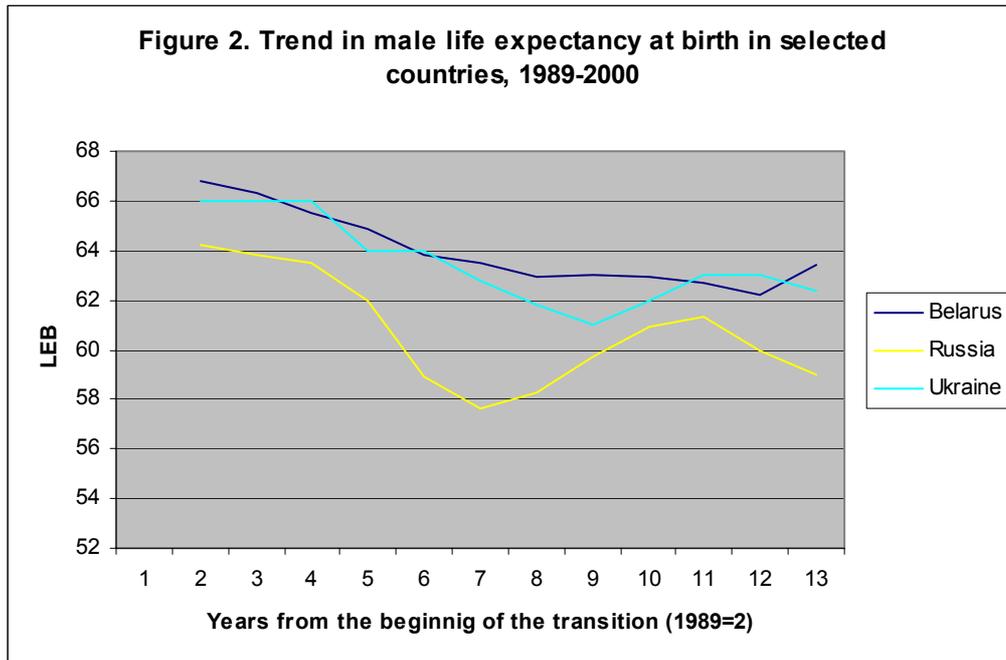
Table 4. Changes in life expectancy at birth in 16 transitional economies of Europe, 1989-2000

	Male Life Expectancy at Birth			Female Life Expectancy at Birth	
	Maximum LEB Loss since 1989	LEB Change, 1989-2000	LEB Change, 1989-91	Maximum LEB Loss/ Gain since 1989	LEB Change, 1989-2000
Czech R.	...	+3.5	-0.6	n.a.	+2.9
Slovakia	...	+2.3	-0.2	n.a.	+2.0
Poland	...	+3.0	-0.7	n.a.	+2.5
Hungary	...	+1.7	-0.4	n.a.	+1.8
Slovenia	n.a.	+3.1	+0.7	n.a.	+2.4
GDR	...	+0.7*	-0.9	n.a.	+2.0*
Bulgaria	-1.5 (1996)	-0.5	-0.6	-0.7 (1997)	+0.2
Romania	-1.3 (1997)	+0.5	0.0	n.a.	+1.8
Estonia	-4.0 (1994)	-0.6	-1.3	-1.6 (1994)	+1.4
Latvia	-4.5 (1994)	-0.4	-1.4	-2.3 (1994)	+0.8
Lithuania	-3.3 (1994)	+0.8	-0.6	-1.4 (1994)	+1.9
Belarus	-4.6 (1999)	-3.4	-0.3	-2.6 (1999)	-1.7
Moldova	-3.7 (1995)	-1.6	-1.2	-2.6 (1995)	-1.1
Russia	-6.6 (1994)	-5.2	-0.7	-3.3 (1994)	-2.3
Ukraine	-5.0 (1996)	-3.6	-2.0**	-2.3 (1995)	-1.4
Kazakstan	-5.5 (1995)	-4.1	-1.3	-3.6 (1995)	-1.8

Source: Author's elaboration on the MONEE database (www.unicef-icdc.org)

Notes: * 1989-95. ** 1991-92. '...' indicates that the maximum loss was that realized over the first two reform years. n.a. means that the country has recorded steady improvements throughout the transition.

Of particular concern is the situation of the Slavic countries of the former Soviet Union (Figure 2). In Belarus, male and female life expectancy at birth declined every year between 1989 and 1999. In the aftermath of the August 1998 financial crisis and devaluation of the rouble, Russia experienced a new reversal in the male life expectancy trend that, by late 2002, was still falling. Ukraine follows a broadly similar – if less pronounced - pattern.



Even in Central Europe, the loss of human life during the first reform years was non negligible. Relative to the death rates prevailing in 1989, the former GDR and Poland recorded about 6,000 and 8,400 ‘excess male deaths’ over 1990 and 1991, and Hungary registered 10,300 ‘excess male deaths’ over the 1990-93 period (UNICEF, 1994). After this initial surge, however, mortality rates declined steadily. As a result, over 1989-2000 these countries recorded 400.000 fewer deaths than expected on the basis of the standardized death rates prevailing in 1989. At the same time, the countries of Southern Eastern Europe and the former Soviet Union recorded over 4 million ‘excess deaths’ mostly caused by an epidemic of heart diseases, sudden deaths due to circulatory problems and strokes and violent causes that affected young (20-40 years) and mature (40-60 years) male adults.

The main factor in this unexpected mortality crisis was the acute psychosocial stress endured by much of the population during the difficult years of adjustment to a new political, economic and social order. Stress is a condition that arises when person have to adjust to new situations over which they have no control and for which there are no coping strategies. Stress is traditionally a key factor in ‘sudden deaths’, that is deaths due to heart problems and hypertension, alcohol psychosis, neurosis, homicide, suicide, accidental deaths, ulcers and cirrhosis of the liver, i.e. the main causes of mortality observed during the transition.

The stressors which correlated most closely with the observed mortality changes include ‘unexpected unattended unemployment’ and other adverse labour market changes such as the spread of unregulated labour markets and fast job turnover (Cornia and Panicià, 2000). Unemployment affected health through the loss of income, skills, cognitive abilities, motivation and self-respect, as well as because of rising anxiety about the future and an erosion of social norms that caused an increase in crime rates among the jobless (Sen 1997).

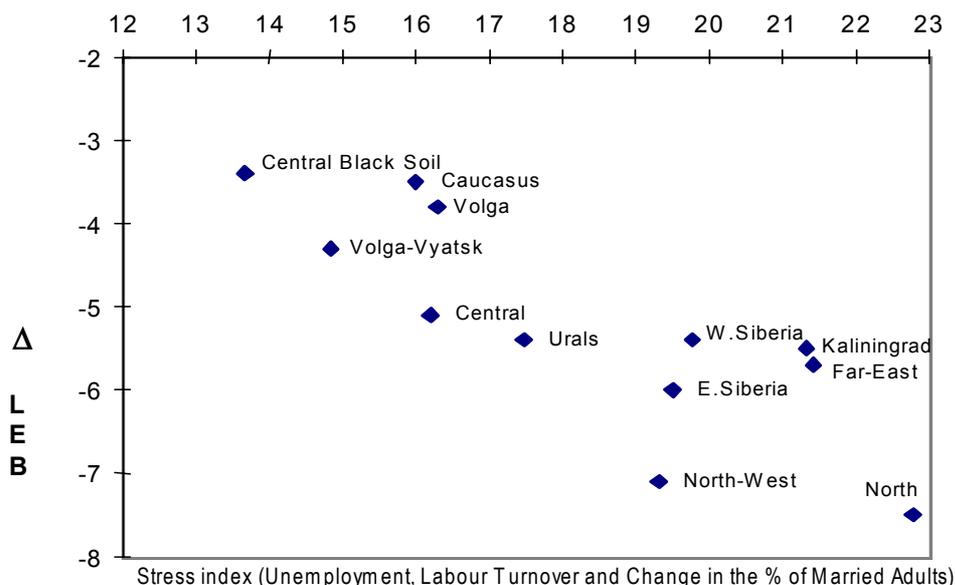
A second source of stress was a rise in ‘undeserved income inequality’, i.e. inequality unrelated to differences in talent, effort and human capital. In the economies of the former Soviet Union and South-eastern Europe, the Gini coefficient of income distribution rose by

an astounding 10-20 points and that of the asset distribution by even more. In these countries, mounting social stratification strengthened the ability of the new elites to resist taxation, thus reducing the ability of the state to provide law and order and social services. Second, high inequality eroded social cohesion, trust, mutual support and collective action, i.e. factors that enhance health status by promoting the diffusion of health information, exerting a control over deviant health-related behaviour and criminal activity and providing interpersonal help among community members. Initial regression analysis on the 12 Russian macroregions for 1989-94 (Cornia, 1996) suggests that a 20-point increase in the Gini coefficient reduced life expectancy at birth by 1.5 years, while a 10 per cent rise in unemployment reduced it by 3.5.

Erosion of the family and migration under difficult circumstances were additional sources of stress. The percentage of widows and widowers in the adult population rose, the crude marriage rate fell and the divorce rate edged upwards by 10-15 percent in Russia, Ukraine and Belarus, the countries with the highest mortality rises. These changes raised the number of people living in incomplete families who are more exposed to stress than people living in complete families. Finally, since 1989, nine million people seeking work or political asylum, fleeing conflicts or returning from abroad migrated within the CIS countries alone. For many of them, migration entailed considerable material hardship, disorientation and loss of control, breakdown of social relationships, redefinition of survival strategies, and housing problems.

The changes in stress factors described above often reinforced each other and interacted negatively with greater alcohol consumption and reduced access to health services. For instance, the faster than average rise in unemployment recorded between 1992 and 1994 in the northern part of Russia caused a high labour turnover, the spread of an unregulated grey economy, a surge in employment-related migration under difficult circumstances and a rise in family breakdowns. All these factors interacted with each other to cause a high level of stress and a considerable fall in life expectancy (Figure 3).

Figure 3. Changes in male life expectancy at birth in relation to a stress index summarizing changes in unemployment, labour turnover and family completeness, Russia, 1989-93



In conclusion, the peculiar pattern – by age, gender, education and skill level, location, cause

of death and time profile – of the mortality crisis of the 1990s suggests that the recent mortality upswing in the former Soviet bloc was mainly the result of a poorly managed ‘adjustment crisis’ where the interaction of changes in unemployment, inequality, distress migration and family breakdown caused a sharp rise in uncontrolled stress.

(iii) labour market and welfare reform, instability and suicide: the case of Japan and South Korea in the 1990s. During the first three decades of the post-World War II period Japan was universally considered a blueprint of full-employment and equitable growth. This trend was however reversed starting from the late 1980s, as inequality started rising and as rapid growth turned into a decade-long stagnation-cum-deflation.

Two of the measures introduced to revitalize the economy were a lifting of restrictions on competition and greater labour market flexibility. Companies were allowed to scrap the old lifetime employment system, with its age-based wage scales, in favour of a more flexible one rewarding productive workers. However, while these policies were expected to generate favourable supply effects, unemployment – unknown for decades – rose steadily from close to zero in the late 1980s to 5.4 percent in 2002. The impact was particularly severe, as the workers had not anticipated the possibility of losing their job and did not develop ahead of time insurance and survival strategies to face such eventuality. Also, the loss of employment was particularly shameful as cultural norms underscored the lifelong attachment of workers to a company, a fact that provided in the past considerable ‘structure and purpose’ in life.

The rise in inequality and, especially, in unemployment generated a visible health impact. While mortality rates for most causes – including for heart diseases – declined slowly or remained broadly unaltered, the number of suicides grew by almost 80 percent between 1990 and 2000 (The Economist, June 2002; Lamar 2000) with most of the rise taking place in the first five years. The number of suicides reached its maximum (over 33.000) in 1999 to fall to just over 30.000 in 2000. If one assumes a linear increase in their number over 1990-2000, the last decade witnessed 80.000 ‘excess suicide deaths’ in relation to 1990. The increase in suicides affected mostly the unemployed, entrepreneurs and managers of bankrupted companies (Lamar 2000). This tragic increase cannot be attributed to the material deprivation associated with loss of employment. Indeed, most of the affected people were covered by social safety nets that – together – with their personal savings would have avoided most of the material deprivations generally endured during periods of rising unemployment. The mortality increase was instead due to the stress caused by the inability to adjust to historically unknown events such as unemployment and bankruptcy and the sense of shame, dejection and stigma felt by those who lost their job and – with that – their role in society.

The case of South Korea exhibits some similarity to the Japanese one, though in this case the shock was more sudden and pronounced than in the case of Japan. South Korea suffered in fact a perceptible deterioration in health conditions in the wake of the financial crisis of September 1997. While the economy returned to its long-term growth path in less than two years, the distributive and health consequences of the crisis were nevertheless marked and may generate a health impact over the long term. To start with, because of the crisis and ensuing adjustment policies, 130.000 state workers were dismissed by the state agencies. In the private sector, 55 large companies and several medium sized ones were closed entailing a loss of about half a million jobs. The unemployment rate thus rose from 2 percent prior to the crisis to 7.6 percent in July 1998 and 8.4 in the first three months of 1999, to return to 4.6 by

2001. In addition, the share of part time and daily workers not covered by social insurance jumped from 42.5 to 52.5 percent between 1996 and 2000 and the wage spread by employment type widened (KLSI 2001). As a result, between 1996 and 1999, the labour share fell from 64 to 60 percent while the Gini coefficient of the distribution of earnings rose from 0.29 to 0.32. Job intensity increased too, and so did the number of work accidents (plus 8 percent over 1998-9), work-related deaths (ten percent increase over 1999-2000) and occupational ailments (18 percent increase between 1998 and 1999 alone). Finally, mortality by specific causes other than work-related shows an increase in deaths due to ischaemic diseases (that remained almost constant at 5 per 100.000 over 1992-6 but exceeded 10 per 100.000 in 2001) and in suicides that rose from 5 to 9 per 100.000 between 1996 and 1999 to decline in the subsequent two years. Mortality due to traffic accidents declined in line with the fall in GDP while that due to hypertension declined and that due to cerebrovascular diseases remained constant. In sum, while financial liberalisation may stimulate growth, it can also generate severe recessions and devastating health effects.

(iv) liberalization with inefficient markets and the rise of the suicide rate among cotton farmers in the Warangal District of Andhra Pradesh, 1997-2000. In spite of its recent success in diversifying her economy, India still depends on agriculture as the main source of livelihood for over 70 percent of her population. No surprise therefore that in the 1970s and 1980s, the years of the Green Revolution, policy making focused strongly on this sector. Indeed, the success in raising agricultural output and reducing rural poverty during the 1980s depended to a considerable extent on public support in the field of rural credit and inputs subsidies and on stable input and output prices.

However, following a severe macroeconomic crisis, in July 1991 the government introduced a new policy approach emphasizing the reduction of state controls and subsidies, the enlargement of the role of the market and greater integration with the global economy. Within this broad approach, the agricultural reforms emphasized a reduction in price support and input subsidies, the encouragement of subsistence farmers to enter input-intensive production for the domestic and international markets and the liberalization of imports and exports of agricultural commodities. In particular, subsidies on fertilizers, electricity, irrigation and credit were reduced, interest rates on farm loans liberalized, and rural banking privatised.

When markets are complete and function well, this kind of reforms can lead to a more profitable allocation of resources among crops, continuous adjustments to changing market opportunities, faster growth of agricultural incomes and better health for most rural dwellers. The impact of these reforms was however far less favourable, not so much because of the weakness of the safety nets established to deal with the transitory costs associated with the liberalisation of agriculture, but because of the inherent weakness of input and output markets in India and a surge in un-insured price volatility following the globalisation of agriculture.

One of the districts where such impact was most visible is the semi-arid and backward Warangal district of Andhra Pradesh that experienced a surge in suicides among small cotton farmers over 1998-2000 (Table 5). In particular, a study by Sudhakumari (2002) analysed the economic circumstances of the households of 50 randomly selected suicide victims who lived in 5 Mandals of Warangal. The study shows that 66 percent of the farmers who committed suicide had less than 40 years, an age group characterized by a low suicide rate, while 48 of

them were male, all were married and belonged to low-income families with limited resources and education. Indeed, 31 of them were illiterate, 44 belonged to backward communities or scheduled castes, 18 were landless leaseholders and 22 had less than 2 acres of land. These data point to a class of ill-trained and financed small farmers who entered commercial production without the support needed to deal with the complexity of the new productions, or adequate arrangements to withstand the problems caused by incomplete markets and volatile world markets.

Table 5. Suicide among cotton farmers in Andhra Pradesh since 1997

Year	Number of suicides in Warangal	Number of suicides in Andhra Pradesh	Percentage of deaths in Warangal
1997	16	28	57.0
1998	109	307	35.5
1999	71	211	33.6
2000	50	147	40.1
2001	31	89	34.8
2002	39	120	32.5

Source: based on State Crime Records Bureau, cited in Sudhakumari (2002)

What led to the increase in suicides? During the period under examination, Andhra Pradesh was affected by adverse weather and pest conditions that caused severe crop losses and could have – in principle - contributed to a surge in suicides. However, such problems were not new and did not cause any perceptible rise in suicides in the past. The cause of the crisis lies therefore elsewhere.

Also in Warangal, the drive to integrate subsistence farmers into the market economy entailed a considerable increase in the input-intensity of production, particularly in the case of cotton a crop that requires improved seeds, electricity, water, fuel, fertilizers and pesticides. Expectations of high world prices, encouragement to enter commercial farming by local government and distributors of seeds linked to a few multinationals convinced many small farmers to shift from low-risk/low-inputs subsistence crops to high-risk/high-cost export crops with potentially high-returns. As a result, the area under pulses fell, that under wheat and rice stagnated and that under commercial crops rose. For instance, 89 percent of the families of the 50 farmers who killed themselves grew only cotton.

Second, the change in crop mix and the subsidy cuts illustrated above caused a considerable shifts in the economic circumstances of small farmers. To start with, the input intensity of production rose in line with the shift to export crops (Table 6). As four-fifths of the cultivable land in the region needs irrigation, the shift to cotton induced a sharp increase in capital and recurrent costs for well irrigation. Dependence on purchased seeds increased as well, right after seed subsidies were withdrawn, a fact that caused a large rise in seeds costs for farmers.

Table 6. Average Cost of Cultivation in Andhra Pradesh, late 1990s, (rupees per acre)

Crop	Manure	Seeds	Fertilizer	Labour	Irrigation	Pesticide	Total
Cotton	1000	750	6000	1500	4000	6000	18250
Paddy	250	300	1500	1500	4000	1000	7050
Chilly	1000	500	4000	2500	4000	5000	17000
Maize	500	200	1000	1000	1500	500	4700

Source: Sudhakumari (2000)

Third, the purchase of growing amounts of inputs entailed a rise in the borrowing requirements of small farmers. While under normal market conditions the latter would have counted on a capillary banking system providing credit at competitive interest rates, the weakness of the local financial sector, the exclusion of a third of the deceased farmers from credit because they did not own the land they cultivated, the retrenchment of institutional credit and crisis of cooperative credit pushed the small farmers into the arms of moneylenders and pesticide dealers (Table 7) who charged interest rates ranging between 36 and 60 percent.

Table 7. Structure of the indebtedness of the farmers (Rupees)

Sources	Total amount borrowed	% of total borrowing
Commercial Bank	343,012	8
Co-operative Bank	214,382	5
Money Lender	1586,430	37
Pesticide Shop Owner	728,900	17
Middle Man	1200,542	28
Private Financial	85,753	2
Institutes/Friends/Relatives	128,629	3

Source: Sudhakumari (2000)

A fourth factor in the Warangal suicide crisis was the volatility of cotton prices. Trade liberalization exposed the Indian farmers to the vagaries of global commodity markets, without providing them with any mechanism (such as crop insurance or price stabilisation funds) to compensate them for swings in world prices and international competitiveness. While in 1994-5 the domestic price of cotton rose steeply, it then began to fall, against all expectations, since 1997 in line with the decline of world prices and the rise of cheap cotton imports. In addition, credit dependence on moneylenders and middlemen forced the indebted farmers to sell them most of their output at prices lower than those prevailing on local market. According to Sudhakumari (2002), government policies did not help either as they allowed the textile mills to import cheap cotton lint despite the existence of a growing domestic surplus. Thus, from the perspective of becoming a cotton exporter, the country became the importer of cotton produced in countries that subsidized its production and sale.

The withdrawal of input subsidies was a fifth source of economic stress. As noted, after the introduction of structural adjustment in 1991, the price of fertilizers doubled while subsidies to canal irrigation and electricity were cut. Public investment on irrigation fell to a minimum, unloading in this way the cost of irrigation on the farmer. A final factor was the failure of public extension services that, during the liberalization suffered a drop in the number of agricultural officers. Even though, the agriculture department was well aware that the red soils of Warangal were not suitable for cotton cultivation, they never advised the farmers to stop growing cotton or bothered to advise them about the proper amount and type of pesticides required per acre. As a result, 83 percent of the households interviewed in Warangal cultivated cotton on the basis of limited self knowledge or depended for new information on unscrupulous dealers of pesticides and seeds who often provided interested and inaccurate advice and sold low quality seeds and inputs.

The Warangal story shows that three interlinked factors – the instability of a globalized agriculture lacking any insurance or price stabilisation arrangement, declining state support to rural credit and agricultural extension, and the absence, inefficiency and interlocked-ness

of liberalized output and inputs markets - played a key role in raising indebtedness and economic desperation among cotton farmers, some of whom in the end committed suicide.

3.3 Migration, the supply of infrastructure and rising mortality

A third case in which potentially positive long term changes can lead to a worsening in health conditions concerns the acceleration of migration to urban areas. Over the short to medium term, uncontrolled migration has been shown it can cause a reduction in life expectancy. Indeed, while higher incomes per capita, improved access to public services and enhanced collective hygiene generally lessen mortality over the long term, the short-term effects can be quite negative. A first cause of this problem is the “rigid supply of social infrastructure”. While city-based industrialization offers more jobs and higher wages than in the countryside, the inability to expand rapidly water, sewerage and transport services, can raise the incidence of airborne, waterborne and infectious diseases in peripheries that have become reservoirs of various kinds of epidemics. A second cause concerns the equally “rigid supply of housing”. The result is overcrowding in low standard houses and barracks where bad hygienic conditions create an inviting milieu for tuberculosis and other infectious diseases. A third factor relates to “human behaviour”. Immigrants mostly come from rural societies with strong social control and opportunities for deviant behaviour or entertainment much fewer. Once in the cities, they can easily be lured into deviant activities or into the consumption of alcohol, drugs or other substances that increase the risk of the violent deaths.

(i) rapid urbanisation and mortality in 19th century Britain. An example of deterioration in mortality during a period of growth and overall improvement in living standards is that observed during the rapid industrial growth of the second and third-quarter of 19th century Britain (Szreter 1997). During this period, mortality deteriorated as a result of the disruptions caused by rapid urbanization, inadequate development of water and sanitation systems, residential segregation, and rising income and wealth inequality. While during the period of moderate growth of 1730-1820 nationwide life expectancy at birth rose from 32 to 40 years, between the 1820s and 1870s large industrial cities such as Manchester and Liverpool and small but fast growing towns experienced an upsurge in mortality. The rise in mortality was mainly due to the spread of infectious and waterborne diseases, particularly among the infants of new migrants who lived in quarters without safe water supply and adequate sanitation. As a result, life expectancy in these cities did not rise, and fell by about one year in some of them, despite a steady increase in urban wealth.

More generally, distress migrants – and especially their children - face greater mortality risks than people who remain in their community. In many countries, poor migrants often do not have the resources to access the rental market and – in the absence of (rare) public interventions in the housing sector – end up living in *barriadas*, slums and *bidonvilles* – i.e. locations that lack basic water, sanitation and power infrastructure. Indeed, because of the considerable costs and time required to develop basic urban infrastructure, a rapid surge in migration tends to be accompanied by overcrowding and poor sanitation and reduced access to potable water. In addition, distress migration entails considerable material hardship, disorientation and loss of control due to the inability to operate easily in new environments, breakdown of social relationships, redefinition of survival strategies and as a result of all this, greater stress. Unsurprisingly, in very many developing countries, while the IMR of urban areas is consistently lower than that rural ones, IMRs in slums – especially slums hosting new migrants - are higher than the average for rural areas.

The policy message of the study by Szreter is clear. While ‘governed migration’ has been shown to generate considerable welfare gains in both countries of origin and destination (Williamson 1996), both now as in 19th century Britain, sudden and uncontrolled surges in migration tend to generate considerable pressure on the urban infrastructure and rental prices, overcrowding and the risk of spreading infectious, water-borne and other ailments among both the migrant and local populations.

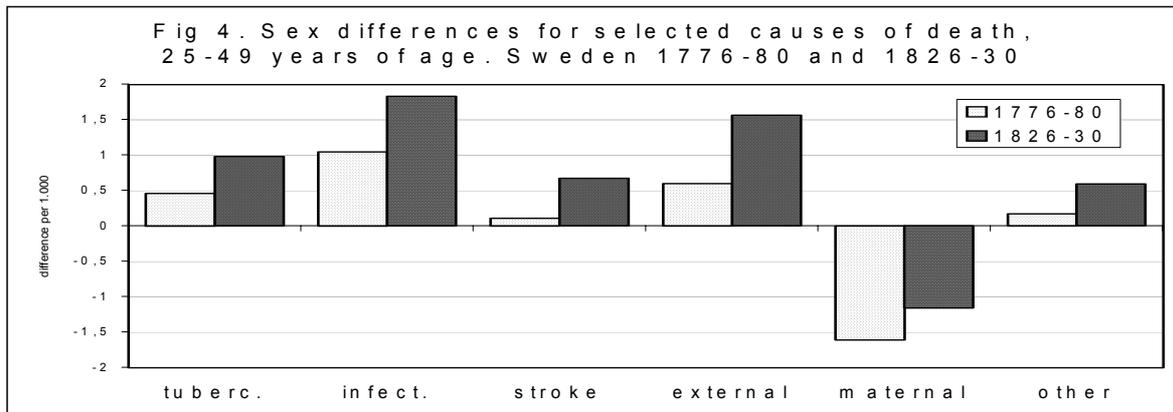
(ii) rising male mortality during the urbanisation of 1810-1850 in Sweden. Until the early nineteenth century, Sweden was an agrarian society dominated by Lutheran values where the church exerted a strong administrative and social control on rural folks (Sundin and Willer 2002). The transition from this pre-industrial society began with the slow urbanisation of the early 1800s, though this was not accompanied by any significant industrialization that took off only since 1849. Urbanisation gradually accelerated during the first half of the century to peak at around 1870. New farming techniques increased productivity in agriculture thus releasing part of the rural workforce that migrated to the cities to find jobs as servants, unskilled labourers, workers in small foundries or, after 1850, in sawmills and other industries.

This migration was accompanied by perceptible demographic and social changes. To start with, the difficulties encountered in finding steady jobs in the cities raised the average age of marriage among the lower classes as well as the illegitimacy rate, a trend made possible by the loosening up of social control and lack of stigmatisation. The crime rate rose too during the first half of the nineteenth century in parallel with growing social polarisation and alcohol consumption. Violations ranged from minor violence episodes, to aggression against members of the upper class, to theft and homicide.

Health status showed important changes during this period. However, while mortality among children and women declined, that among adult males rose or stagnated at high levels. IMR declined steadily from 190 per thousand in 1810 to 120 per thousand in 1860 (*ibid.*), thanks to rapid growth in food production, the spread of health infrastructure and improved urban sanitation (Edvinsson and Nielsson, n.d.). For instance, a growing number of district physicians and trained midwives offered greater curative care and actively promoted breast-feeding, modern childcare practices and child immunisation. In the cities, the decline in infant mortality was driven also by improvements in sewerage, garbage collection and protection of water sources (this point is however questioned by Edvinsson and Nilsson, n.d.). Mortality trend among young and middle age women followed a pattern similar to that of children, likely because of the general improvement of nutritional and sanitary conditions and the increase in the proportion of births assisted by trained midwives. For older women, however, mortality did not decline at the same pace, because of the material deprivation in which poor spinsters and widows had to live.

In contrast, mortality among men rose and remained at levels higher than that of 1800 until around 1840-50. This meant that the male to female mortality differentials – already high prior to 1810 - rose markedly during the first half of the nineteenth century (Figure 4). This is particularly evident in the case of single unskilled migrant workers. The biggest male-female differentials were recorded for deaths due to alcohol intoxication, accidents, violence, suicides and tuberculosis. This rise in mortality gap was due not so much to differences in income, as men’s salaries were generally higher than those of women, but rather to differences in lifestyles. Unmarried men were in fact more likely to adopt unhealthy

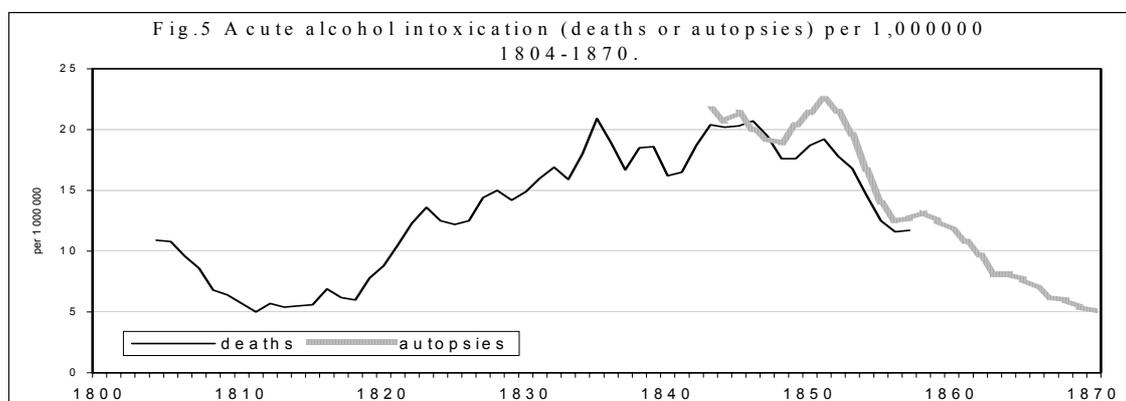
behaviour, while unmarried women internalised gender roles emphasizing a quieter conduct and participation in mutually supportive social networks.



Source: Sundin and Willer (2002)

Secularisation, greater anomia and the decline of other forms of social control accompanied the migration to the cities, thus leading to the adoption of more violent and risky lifestyles among men. In addition, the old norms of reciprocity and the survival strategies of the agrarian society no longer worked in the new locations. Finding oneself in a new milieu often generated a sense of being uprooted, especially for those lacking kin networks on which to rely in case of loss of employment, illness or other reason. Under these new circumstances, alcohol emerged as an important stress reliever.

Although there are no reliable data for the first half of the 19th century, several factors indicate there was a substantial increase in alcohol consumption during this period. For instance, registered deaths due to alcohol intoxication peaked in the 1840s (Figure 5). Contemporary estimates of alcohol consumption, and reports of county governors support this view. In towns, alcohol could be bought everywhere at low price and restrictions on production and sales were minimal. Certainly, the mortality impact of alcohol consumption was greater than that indicated by the registered cases of acute intoxication (Sundin and Willer 2002). Heavy drinking affected also nutritional status, housing conditions and hygiene. Even lung diseases, stroke, accidents and suicides were in part due to excessive drinking.



Source: Sundin and Willer (2002)

Another factor that contributed to the adverse mortality trend among adult males was the slow improvement of public sanitation. The development of public water and sewerage infrastructure in the new settlements inhabited by migrants lagged in fact behind the growth of cities and so contributed to a rise in deaths due to waterborne and airborne diseases.

2.4 Contact and contagion between heterogeneous populations

Another case in which mortality has been shown to increase is on occasion of the contact between highly heterogeneous populations, as in the case of the colonisation of Latin America by the Spaniards during which at least 8.4 million Indios perished mainly because of the introduction of new pathologies such as smallpox, measles, typhus and tuberculosis (Livi Bacci 2004) unknown until then in the region. In all these cases, the main cause of the increase in mortality is the difference in epidemiological characteristics of the populations that enter into contact, though economic and political mechanisms can play an important role as well.

(i) the socio-environmental crisis recorded during the construction of the Panama Canal in the 1880s. The demographic crisis that hit Panama City on occasion of the construction of the Panama Canal is a good example of the economic, social and environmental imbalance generated by the massive influx of workers in various parts of the country, including in its rainforest. The arrival of the French Canal Company was expected to generate a favourable impact on employment, growth and health. However, in reality, such project led to speculative increases in rents and food prices and so made the life of poor Panamanians more difficult (Jackson et al., n.d.). In addition, the intrusion into Panama's rain forest upset the delicate balance between urban and forest disease pools.

An analysis of the deaths registers of two parishes shows marked demographic shifts between the 1880s and 1890s as well as sharp class differentials in mortality between the poor parish of Santa Ana and the better off one of La Merced. Between 1884-9 (the period of the first attempt to build the canal by the French Canal Company) and 1889-93 (years in which the project was abandoned and mortality returned to its normal level), death rates dropped to a third of their level, i.e. from 38 to 13 per thousand in La Merced and from 66 to 28 in the poor neighbourhood of Santa Ana. Several diseases contributed to the rise in mortality among the residents of the two neighbourhoods over 1884-9. Yet, malaria, yellow fever, dysentery (associated to overcrowding and polluted water) and tuberculosis (most prevalent among the poor) were the main causes. The increase in mortality affected all population groups – both indigenous and foreign workers. Age wise, children were the group most affected.

How did the construction of the Canal cause such a health crisis? The influx of thousand of West Indian workers caused overcrowding and severe sanitation problems in the urban areas of the city. Overcrowding facilitated the spread of contagious diseases, while the deterioration of drainage and garbage collection created numerous locations for mosquitoes to breed. Since these were the main vector for malaria and yellow fever, the incidence of both maladies rose sharply in urban areas. But mortality rose as sharply in the work camps along the Canal route, if for a different reason. Indeed, thousands of workers came into contact with a mosquito unique to the rainforest and endemic in wild primates living in it. Such mosquito acted as the main vector of yellow fever, thus sharply increasing the contagion in the work camps.

With the suspension of the construction of the Canal and the exodus of the workers the mortality crisis abated. The resumption of the construction of the Canal by the USA government in 1903 was not followed by a mortality crisis like that of the 1880s. The US government had learned the public health lesson of the first attempt and instituted large-scale public health measures to eliminate the threat of yellow fever and other tropical diseases so as to be able to continue the construction of the Canal to its completion. President Roosevelt dispatched a public health team with the brief of eliminating the mosquitoes carrying yellow fever and malaria. This was achieved by eliminating any body of standing water (such as water tanks and cisterns), by increasing the supply of running water and through the introduction of other public health measures such as fumigation, garbage collection, and so on that led, among other things, to the eradication of yellow fever from the area.

3. Conclusions: towards a theory of the health impact of rapid change

This paper has argued that:

(i) profound social changes such as those observed on occasion of political or economic transitions have immediate and profound effects on the health of large parts of the population. The analysis of past and current cases of social change confirms that this has often caused not only long-term favourable effects but also considerable social dislocations and severe mortality crises over the short and medium term.

(ii) the mortality crises that followed episodes of rapid social change or epochal transitions affected different social classes, though in the majority of the cases the low income groups were most affected. Among the latter one can include the immigrants (as in the case of urbanizing Britain and Sweden), canal workers and low income dwellers exposed to problems of overcrowding, inadequate housing and sanitation (on occasion of the construction of the Panama Canal), newly unemployed workers with low education, living in incomplete families and from a minority background (in Japan, Korea and several Eastern European economies in transition), illiterate cotton farmers (in Andhra Pradesh) and low income pensioners (in Cuba). In some cases, (as in Panama, Japan or South Africa) the crisis affected as well part of the middle and upper class, indicating that while these crises may hit particularly hard the lower strata, the better off social groups cannot consider themselves immune from this problem. The evidence suggests as well that the strongest the initial stratification, the highest the likelihood that the low-income groups were affected more than proportionately, leading in this way to a widening of health inequality.

(iii) the mortality crises reviewed in this paper have generally affected two well-defined age-gender groups, i.e. adult males and children. The studies on Andhra Pradesh, Sweden, South Africa and Eastern Europe show that adult males are especially vulnerable to stress-related mortality, their greater vulnerability being due to differences in behaviours and gender roles rather than biology. The mortality crises hit also some of the biologically vulnerable groups, such as infants and children, especially when the main causes of death were infectious, nutritionally related, respiratory and waterborne diseases. Only in a few cases – as in case of the trade embargo against Cuba – there is evidence that the elderly were the group most affected.

(iv) There appears to be four broad pathways through which social change can affect adversely health status, i.e.: (a) due to the unexpected effect of political transitions carried out in the absence of adequate administrative, legal and redistributive institutions and a

modicum of economic democracy; (b) through increased geographical mobility combined with the inelastic supply of public infrastructure and housing leading to overcrowding, deteriorations in environmental conditions and the rise of infectious and social diseases, (c) via the introduction of economic reforms under conditions of incomplete markets and missing institutions and (d) due to the contact of different pools of disease.

(v) While the pathways through which rapid change impact the mortality for infectious and poverty-related diseases are well known, less is known about the economic and social factors that raise stress levels among populations affected by rapid change. Such factors (such as rising unemployment in Russia and Japan, or fear of violence in South Africa) are generally unexpected as they have never been experienced before or as people have only generic expectations about the probability of their occurrence. Unexpected events cannot be insured against or prevented through structural interventions. At time, social change is also sudden (as in the Korean crisis of 1997), a fact that compresses the response time available to society and communities to introduce counter-measures to offset its impact. The policy response to the Asian crisis in Korea for instance was sub optimal as the suddenness of the shock made that the relief programs were introduced only with considerable delays.

Because of people's inability to prepare for and deal with it, rapid change can increase the real or perceived sense of uncertainty about the future, the fear about one's own security, the perceived risk associated to human activities, the sense of loss of control and self confidence and psycho-social stress. Breakdown in social networks and lack of institutional responses and practicable coping strategies tend to aggravate the situation. In addition, growing uncertainty has well-known economic effects including an increase in the riskiness of investment, a rise in interest rates, and higher saving propensities and risk aversion, i.e. changes that depress the current levels of investment and production.

Fourth, rapid change – may increase sectoral and spatial mobility and organisational change, increasing in this way anomy and eroding social capital, sense of community participation and ability to undertake collective action. In times of rapid change, old rules, norms, and institutions no longer function as efficiently as they did before. Informal institutions - such as voluntary associations, social networks, the family and other primary groups – are weakened with nefarious effects for social stability and security.

(vi) The nature and breadth of public response to the crisis induced by rapid change varied sharply. Yet, little is known on why some societies respond in a collective fashion to the dislocations caused by social change while others do not. Social stratification as well as political ideology affected the willingness and ability of governments to respond to the health crises once these have exploded. For instance, in highly egalitarian Cuba, public policy deliberately aimed at containing the health impact of the recession and embargo. In Nazi Germany, public policy was ambivalent as it placed a strong emphasis on the well being of infants and mothers but not on that of older children. In turn, in the highly polarized Southern States of the USA, the health and nutrition problems faced by the disenfranchised slaves took very long to be solved, as the collective response was almost non-existent. Likewise, in the highly unequal economies in transition of the former Soviet Union and South Africa, the recent crises were broadly ignored by the national authorities. One of the possible explanations of such attitude is that the new elites basically are not concerned by a crisis that mostly hit an economically marginal and politically unorganised group of marginal people with low education and skills, no jobs, low incomes and limited political representation.

(vii) This paper has also argued that the acceleration of change observed over the last two decades is likely to continue in the years ahead. In view of this, the lessons of recent or past cases of political, economic and social upheaval constitute a valuable tool for the understanding of the potential health impact of those changes that are already on the horizon (as the massive transformation that has just begun in China) or are likely to emerge (as mass migration towards Western Europe) in the near. It is thus essential that the policy makers analyses systematically the evidence on the health impact of past institutional changes. Only this can constitute an efficient guide to a policy making that aims at preventing important dislocations during this era of ‘rapid and accelerating change’.

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