
Poverty, Population, Inequality, and Development: the Historical Perspective

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The rich nation is the novelty, and the development that makes entire nations rich is itself the pivotal development of modern history

(Asa Briggs, British historian, 1963)

Abstract

Seen in historical perspective the main economic predicaments of the present world (such as poverty, inequality, backwardness) appear in a somewhat different light than in many current discussions, especially by sociologists, radical economists and political scientists. In the present paper the achievements of the modern age, and in particular of the post- World War II period, are considered in the perspective of economic and demographic history, and in their connection with the systems of production and of international relations. Some considerations concerning future possible developments conclude the paper.

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1. Introduction and outline

We live in a very unequal world plagued by poverty. Overall, economic progress is perceived as too slow, as the advance of “globalization” renders the inequalities and miseries of the world less tolerable than in the past. There is a widespread rejection in some quarters (radical economists, sociologists, and political scientists in particular) of the economic institutions of the modern world (identified under the garb of “capitalism” and “globalization”).¹ However, from the perspective of economic history the present state of the world appears in a different light. A rather uncontroversial fact is that never in the history of mankind have there been so many paupers as in the present times. But the basic reason for this is that never have there been so many people around. Indeed, never in the history of the world has the percentage of (absolutely) poor people been so low. Moreover, quite recently even the absolute number of the very poor has kept decreasing. Economic inequality in the world as a whole has probably never been so high, but the reason is not, as is sometimes hinted, that the lot of the poorer has worsened, but the dramatic, albeit unequally distributed, economic betterment of the many. At the same time the propensity towards economic inequality (as captured by the extraction ratio, defined below) has probably never been so low in historical times. The green revolution and technological progress have contributed to

¹ For a sympathetic survey of those opinions see Zolo (2007), and for a reference to other contributions in the same vein see McCloskey, 2009, pp. 33-34. For a confutation of all sort of widespread anti-globalization prejudices and conventional opinions see Bhagwati, 2004. For a forceful defence of capitalist globalization see Norberg (2003).

decisively overcome the Malthusian trap and to bring about an impressive demographic explosion. Indeed, never in the history of the world has economic and demographic growth been so rapid as after WWII, greatly favoured by the absence of major wars,² of the sort that were endemic in the past, and by the extraordinary expansion of international exchange. The price to pay has been the lingering of the world on the brink of a global nuclear catastrophe, as well as the freezing of frontiers and national aspirations (which have surged again with a vengeance after the end of the Cold War). But Malthusian traps, and different forces threatening the destabilization of relatively peaceful world coexistence (such as the inevitable diffusion of nuclear capabilities and the raise of nationalism in some quarters) are looming, with the potentiality of drawing the post-war period of overall peaceful economic and demographic growth eventually to a close.

2. Poverty

Historically world population has been increasing at a very slow pace, amounting to near stagnation, held in check by high mortality rates, especially of child mortality. Per capita incomes have been mostly at what we would regard utter poverty levels, and whenever they have increased they have done so at a very slow pace, amounting, in the very long run, to some small fraction of one percent yearly. Following the industrial revolution things have started radically to change. But never have world population and world income increased so tumultuously as after the Second World War; indeed, the explosion both in wealth and population in this post-war period has been an historical unicum. Scientifically speaking, from the perspective of the history of mankind the anomaly to be explained is not backwardness and poverty, but development and wealth. The brakes that in the previous epochs constrained the growth of world population, and which started to slacken following the Industrial Revolution,³ have been swept away by the progressive lengthening in life expectancy, leading to unprecedented demographic growth, which has been accompanied by unprecedented economic growth.

Still, a large part of humanity lives in appalling poverty conditions. Indeed, there has never been such a high number of poor people in the world as in the post WWII period. If conventionally (very conventionally, indeed) we define, following the World Bank, as (absolute) poverty a daily consumption of less than two dollars,⁴ their number

² This means all-out wars between major military powers. Of course there was no want of “minor” conflicts (for a list of them and an estimate of their presumed victims see Balint, 1996), but for relative intensity and proportion of victims in the global world population they were apparently of much lesser importance than in other epochs.

³ Or more exactly, following the scientific revolution of the sixteenth and seventeenth centuries that has led first to the Industrial Revolution and, subsequently, through the medical and public hygiene innovations it was able to conjure, to the Mortality Revolution of the second half of the nineteenth century and later, coinciding with the times of what has been dubbed the Second Industrial Revolution (cf. Easterlin, 1996, pp. 7-9, 23-29, 69 f.).

⁴ In the text we use the colloquially usual distinction of 1 and 2 dollars a day. Recently the World Bank has updated its definitions following a revised and extended appraisal of PPP exchange rates. The data in the tables 1 and 2 are according to the new definition. We shall deal with these issues in the next section.

in 2005 is estimated at 2.560 billion, more than the entire world population in 1950.⁵ The number of extreme poor consuming less than one dollar a day in 2005 is reckoned to have been higher than 1.1 billion, about the same as the entire world population in 1820 (which may be conventionally taken as the year of the coming of age of the Industrial Revolution in the UK and the start of its spreading abroad); the number of the extreme poor in previous years is estimated to have been even higher, about 1.9 billion around 1980 (before the recent tumultuous growth of the economy of China). Most of them are concentrated in third world countries, but a few millions are living in (and a number of them leaving from) Eastern Europe and Central Asia (the so called transition countries).⁶ See the data in the tables 1 and 2:

Table 1. Number of people living with less than 2\$ a day (millions)

Region	1981	2005
East Asia & Pacific	1,278	728
of which China	972	473
Europe & Central Asia ^a	35	41
Latin America & Caribbean	89	94
Middle East & North Africa	46	51
South Asia	799	1,09
Sub-Saharan Africa	291	555
Total	2538	2560
Excluding China	1,566	2,142

Source: World Bank (2009), table 2.8, P.70. ^a 66 in 1999.

2.1 Poverty and transition

It is notable that the number of the poor in transition countries as a whole has reached a peak in 1999, just a visible sign of the hardship engendered by the transition process during the nineties, but since then it has started to decrease. The same applies to the percentage of the poor in the population.⁷ The dynamics of the poverty rates is just a manifestation of the overall costs of transition, as borne out by the dynamics of national income and, in the case of the former USSR, of vital statistics (see tables 5, 7 and 9 below). The psychological hardship of the new poor in transition countries could have been made worse “by the drop from earlier achieved levels and expectations, and the loss of security” (Nutti, 2009). But in comparison to the countries where poverty was

⁵ See table 1. We refer to the World Bank data as the most authoritative, even by no means uncontroversial, source. The accuracy of World Bank data is challenged in particular by Bhalla (2002) who estimates a significantly lower number of absolute poor and a much faster decrease in poverty in the two decades of accelerated globalization, between 1980 and 2000.

⁶ The data in the fourth row of the two tables below refer to Europe and Central Asia, but the poor in the area are essentially concentrated in the transition countries of Eastern Europe (including South-Eastern Europe) and of the former Soviet Union.

⁷ Cf. World Bank (2009), p. 70.

more permanent and more widespread the new poor in transition countries could benefit of the household goods accumulated in the past and of a better chance to be helped by better off friends and relatives.

Table 2. Number of people living with less than 1.25\$ a day (millions)

Region	1981	2005
East Asia & Pacific	1072	316
China	835	208
Europe & Central Asia ^a	7	17
Latin America & Caribbean	47	45
Middle East & North Africa	14	11
South Asia	548	596
Sub-Saharan Africa	211	388
Total	1,898	1,373
Excluding China	1063	877

Source: as in the table above. ^a24 in 1999

2.2 The world poor as a percentage

But on the whole the share of the poor in the human population has never been so low. According to the historical estimates reported in Bourguignon and Morrison (2002, pp. 731-732), and taking into account the number of conventional poor people in 2005, estimated by the World Bank (2009), as well as the estimate of the size of world population in 2005, reported in table 3, the share of world population living in poverty diminishes from 94,4% in 1820 to 39% in 2005, that of those living in extreme poverty from 83,9 in 1820 down to 21% in 2005. In the end, taking into account the fact that in the period the share of the poor has greatly diminished, the fundamental explanation of why there are so many poor people in the world is that there are so many people around. Indeed, human population has increased steadily and dramatically in the last two centuries, and in particular in the last few decades. Some relevant data are reported in table 3.⁸ To grasp the extent of the dramatic acceleration of population growth in recent times one may notice that the increase in population in the ten years between 1995 and 2005 (796 million) is more or less the same as that in the 10,000 years or so from the start of the agricultural revolution till the dawn of the industrial revolution (for which we may conventionally take the year 1750). Looking at the first lines of the table, comparing them with the last ones, one is forced to come to terms with the fact that the

⁸ The data from 1800 in Europe and from 1900 in the other continents are regarded, by and large, to have a fair degree of reliability. The data concerning the previous years are just estimates or, even, more or less wild guesses. They should be considered to give an order of magnitude, rather than provide reliable data with any degree of precision (on this see Caldwell and Schindlmayr, 2002). Indeed, this applies even more to the estimates concerning national income in the tables that follow.

momentous historical events of our distant past, recollected and magnified in history books, involved such comparatively insignificant numbers of people.

Table 3 Human population in the course of history (in millions)

8000 BC	5
1000 BC	50
500 BC	100
1 AD	231
1000	268
1500	438
1600	556
1700	603
1750	790
1800	980
1820	1,041
1870	1,271
1913	1,791
1950	2,535
1960	3,032
1970	3,699
1980	4,451
1990	5,295
1995	5,719
2001	6,148
2005	6,515
2010	6,815 April 2010, as projected according to the World population clock

The sources of the data are as follows: 8000 BC, Haub, 1995, p. 5, quoted in US Census Bureau (2007a); 1000 and 500 BC, McEvedy and Jones, 1978, pp. 342-351, quoted in US Census Bureau (2007a); 1-1700 and 1820-1913, Maddison (2006), p. 636; 1750 and 1800, United Nations, 1999; 1950-2005, United Nations, 2008, with the exception of 2001, taken from US Census Bureau 2007b.

2.3 The evaluation of poverty

Of course the above depends crucially on the definition of the poor. Here we use the World Bank definition, whereby the poor are defined in terms of absolute purchasing power, establishing “a realistic lower bound for the minimum ... level of consumption to meet basic human needs” (World Bank, 2008, p. 2). This may not well

correspond to a subjective, socially and environmentally conditioned, definition of poverty, in the sense of deprivation (see on this point, in particular, Kenny, 2006).⁹

Subjective deprivation may be a function of achieved living standards, and increasing expectations, while relative poverty depends on distribution. Subjective poverty depends on habits and aspirations, where the latter increase with the diffusion, facilitated by the means of mass communication, of the consumption models of the better off. Notwithstanding all these complex qualitative aspects of poverty, without a common quantitative measure one could hardly make intertemporal comparisons. Of course, in making them one should ideally go into detail as to the specific relevant circumstances of the various cases (possibly extending the narrative to the whole range of Sen's capabilities). Here we may be content to note that the trends in average incomes are corroborated by comparable trends in vital statistics such as in particular life expectancy (see tables 7 and 9 below), which refer to important qualitative aspects of living standards.

How are the poverty benchmarks of the World Bank at 1\$ a day and 2\$ a day determined? Basically the first refers to the average national poverty level of a set of the poorest countries of the world, and the second to the average national poverty level of the developing countries as a whole. Recently the World Bank has revalued the dimension of world poverty, following a new expanded data base of household income and expenditure surveys, and a new comprehensive assessment of PPP (Purchasing Power Parity) exchange rates. In particular the internal price level in a number of poor countries has turned out to be higher than previously understood, and thus the purchasing power of international dollars lower. A reason advanced is that the lower quality of goods consumed by the poor in poorer countries was not sufficiently accounted for.¹⁰ A new extreme poverty benchmark level has been set at 1.25 US\$ of 2005 international purchasing power, and the new poverty level at 2 US\$ of 2005 international purchasing power. According to the new criteria extreme poverty is more widespread than according to the old. However the dynamic aspect of world poverty has remained qualitatively the same, since even with the new estimates "over 15 years global poverty fell by an average of 1 percentage point a year" (World Bank, 2008, p.1). "Global poverty measured at the \$1.25 a day line has been decreasing since the 1980s. The number of people living in extreme poverty fell from 1.9 billion in 1981 to 1.8 billion in 1990 to about 1.4 billion in 2005" (*ibidem*, p. 10). The criteria used for defining extreme poverty according to the new benchmarks are still the same as before—"the poverty line typical of the poorest countries of the world" establishing "a realistic lower bound for the minimum... level of consumption to meet basic human needs" (*ibidem*, pp. 1-2). In particular, "the new extreme poverty line is set at \$1.25 a day in 2005 PPP

⁹ Kenny emphasizes the negative impact of increasing expectations and new consumer goods on welfare or happiness. But happiness is a rather subjective matter, well expressed by the Italian poet Metastasio: "Se a ciascun l'interno affanno si leggesse in fronte scritto, quanti mai, che invidia fanno, ci farebbero pietà?" ("If everybody's internal pain were written on his forehead, many who are envied now, would be pitied instead.") As economists, we may content ourselves of dealing with per capita incomes, but with many caveats, among others of the kind argued by Kenny. On happiness and economic growth see also Easterlin, 1996, pp. 131-144

¹⁰ Cf. World Bank, 2008, pp. 3,8.

terms, which represents the mean of the poverty lines found in the poorest 15 countries ranked by per capita consumption” (ibidem, p. 22). In turn \$2 a day in 2005 PPP terms represents the median poverty line for the developing countries of the world (ibidem, p. 10).

3. An unequal world

While a considerable share of world population still lives in poverty, world income and wealth are very unequally distributed. A recent research by *Wider*, the ONU economic research centre on poverty and development¹¹ (Davis et al., 2006a), shows the extent of world inequality in the distribution of personal wealth:¹²

Considering all the data in PPP\$ (Purchasing Power Parity Dollars) terms the 24 richer OECD countries own 64% of world private wealth, with only 15% of world population, and a per capita wealth of 114,000 PPP\$. The 64 poorest countries with 40% of world population own 8% of world personal wealth, with a per capita wealth of 5000 PPP\$.¹³ In 2000 the 1% richest adults owned the 32% of overall private wealth¹⁴; the poorest 50%, 4% .¹⁵ The Gini index of inequality of overall world wealth distribution is given as 80 in PPP\$ terms¹⁶, 89 calculated using current exchange rates, the same as that of a group of 10, where a single person has 1000, and the remaining nine 1 each.¹⁷

Income is distributed less unequally than wealth, but still in a markedly unequal way. According to most estimates, reported in Milanovic (2006, p. 8), the Gini coefficient of world income distribution is around 65% in the contemporary world.¹⁸ To make a comparison, the Gini index of the distribution of family incomes of Italy is reported (in CIA, 2009) as 32, of the USA 45, of Sweden 23. The state where the Gini index appears to be highest is Namibia with 71, but perhaps only because in other, even more unequal less developed countries endowed with plenty of natural resources no statistical data allowing its calculation are available.¹⁹

¹¹ World Institute for Development Economics Research: <http://www.wider.unu.edu>.

¹² Where personal wealth is defined as “the value of physical and financial assets less liabilities” (Davies et al., 2006a, p. 1). The data refer to the year 2000. For a detailed explanation of the methods used in the inquiry one may refer to the above source.

¹³ Ibidem, Table 8.

¹⁴ “37% reside in the US, 27% in Japan” (Davies et al., 2006b).

¹⁵ Davies et al., 2006a, Table 10, and Table 11a.

¹⁶ Ibidem, Table 12.

¹⁷ Davies et al., 2006b, p. 9.

¹⁸ The paper by Milanovic contains an interesting critical review of the different methodological approaches used to get those values. The subsequent estimates by Baten et al. (2009) present more or less the same results.

¹⁹ Such as Equatorial Guinea that has a per capita income higher than Germany or the UK (CIA 2010), but where the great bulk of the population allegedly lives in desperate conditions (cf. “Playboy waits for his African throne”, *Sunday Times*, 3/9/2006, available at: <http://www.timesonline.co.uk/tol/news/world/article626511.ece>).

3.1 Inequality between nations and inequality inside nations

Looking back at history it appears that in the past (before the “great divergence”²⁰) income differences inside nations were relatively more relevant than nowadays in the determination of global inequality. In the pre-industrial world more than half of global income inequality could have been due to inequality in income distribution **inside** nations, while today the prevailing component, about 70%, is deemed to be due to differences in average per-capita incomes **between** nations (Milanovic, 2006, p. 9). On the other hand in more recent times the weight of the inside nations component seems to have somewhat increased, but the trend is not uniform in the different regions of the world.²¹

Table 4. Poverty and income distribution in recent world history

year	Gini coefficient of world income distribution	Percentage of the population living in poverty	Percentage of the population living in extreme poverty
1820	0.500	94.4	83.9
1850	0.532	92.5	81.5
1870	0.560	89.6	75.4
1890	0.588	85.7	71.7
1910	0.610	82.4	65.6
1929	0.616	75.9	56.3
1950	0.640	71.9	54.8
1960	0.635	64.3	44
1970	0.650	60.1	35.6
1980	0.657	55	31.5
1992	0.657	51.3	23.7
2001	0.657 (0.699) ^a	44	18

Data taken from Bourguignon and Morrison (2002, p. 731); the percentages of the two right cells of the last row are calculated from population data in table 3 and World Bank poverty data according to the older 1\$ - 2\$ methodology (which is used by Bourguignon and Morrison). ^aCalculation from 2002 World Income Distribution Database in Milanovic (28/12/2007); the figure between brackets is calculated using the recently revised set of PPP\$ exchange rates.

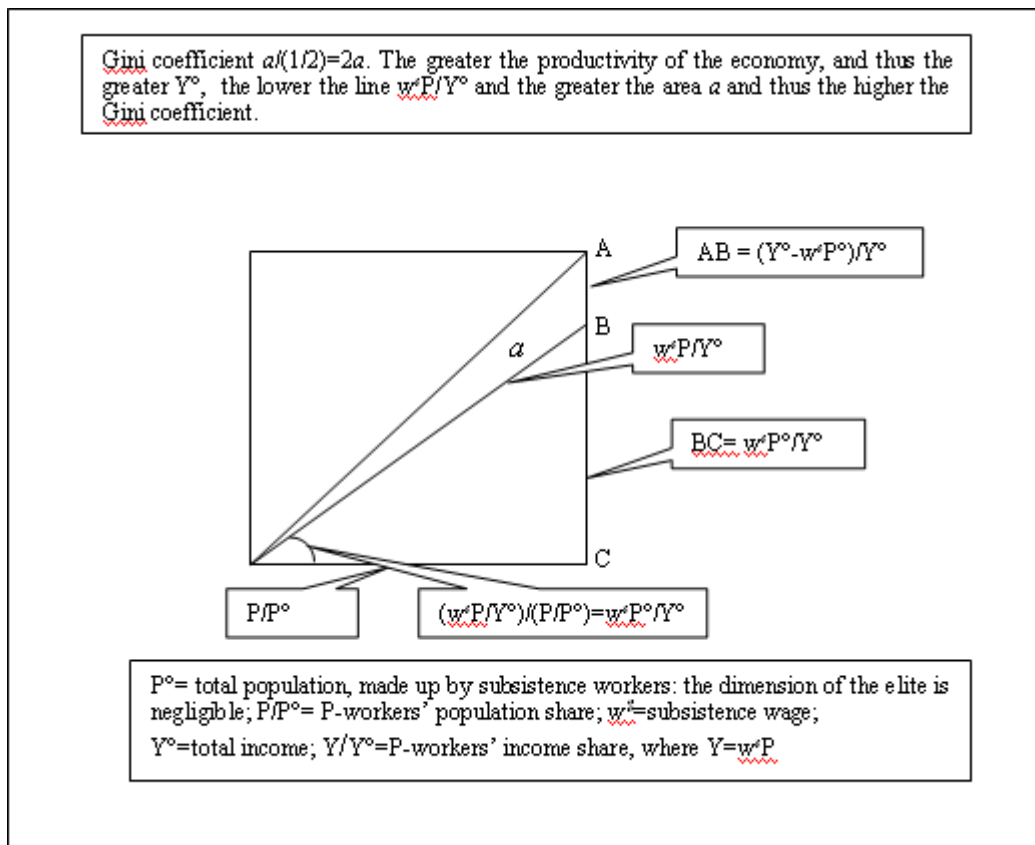
The greater growth rate of less developed countries as a whole should be a factor leading to the reduction of the between nations component, while increased inequality inside developed countries is a factor contributing to the increased inside world inequality component. According to the data reported in Bourguignon and Morrison (2002, p. 731) there has been an increase through time in the world Gini coefficient, from 50 in 1820 up to the present values (see table 4). Values for so far away periods seem to be rather speculative estimates, even more daring than the speculative estimates

²⁰ Cf. Pomeranz, 2000.

²¹ Cf. Nel, 2006, p. 697I; IMF, 2007, pp. 138 f.

needed to arrive at an aggregate measure for the contemporary world as a whole.²² But it seems plausible that income inequality should have been lower in the past, owing to the fact that the great bulk of the population was living close to subsistence level, and given the low overall average per capita incomes. In a recent paper Milanovic (2009) revises the estimates of Bourguignon and Morrison, arriving at some interesting quantitative conclusions: The global Gini coefficient for 1820 is reduced to 43. The Gini coefficient measuring inequality between nations (where individual incomes inside any given nation are taken as equal to the average value) rises from 15 to 32 between 1820 and 1870, increasing up to 55-60 in the after WWII period, showing some reduction in the last twenty years due to the economic progress of China and India, in particular. Between 1820 and the present times, the between countries component of the global world inequality index rises from 35 to 80-85 percent.

Fig. 1 The maximum possible Gini coefficient as a function of average income



4. Poverty, inequality, and maximum potential inequality

According to table 4, while world income inequality, as measured by the Gini coefficient, has steadily increased since 1820 (an increase of the coefficient between

²² And indeed the methodological approach of the two authors appears to be particularly rough. See on this regard Milanovic, 2009, pp. 2-3; Baten et al., 2009. On the other hand the results of the latter study, pursued through an alternative, but also rough, methodological approach confirm on the whole Bourguignon and Morrison's results.

31% and 40%, according to the two different estimates of the 2001 value), the proportion of paupers in the world has steadily decreased. Under primitive conditions, when per capita incomes are close to the subsistence level, the amount of surplus the economy can produce above physical subsistence level is limited. This limits the percentage of national income that can be appropriated by the elite, and thus the maximum level of the inequality measure (such as the Gini coefficient or the Theil index) that can be possibly achieved, assuming an elite dimensionally nought in relation to the whole population (see fig. 1). As per capita levels increase, this leads to an increase in the percentage of the national income that can be accounted for as surplus above subsistence, and to an increase in the maximum achievable inequality, as measured, say, by the maximum Gini coefficient compatible with the maintenance of the mass of the population at the physical subsistence level,²³ and thus with the minimal condition ensuring persistence in its actual dimensions of the given society over time.²⁴ Thus we may consider as a true measure of the extent of inequality achieved by a given society not the inequality index (such as the Gini coefficient) *per se*, but the percentage achieved of the maximum inequality index compatible with a given per capita income level. According to the definition in Milanovic (2009) and Milanovic et al. (2007), this is the inequality extraction ratio (from now on *ier*). With the increase in world per capita income following the industrial revolution the maximum possible inequality index, which may be measured in terms of Gini coefficient or of Theil index, progressively increases. According to Milanovic (2009, p. 18) the maximum possible world Gini coefficient increases from 56 in 1820 to 95 in 2005. As we have seen from the Bourguignon-Morrison (henceforward BM) data the actual world Gini coefficient has increased, but at a lower rate than the maximum possible Gini coefficient. Taking the data of table 4 this means that the inequality extraction ratio decreases from $50/56=89\%$ in 1820 to $66/95=70\%$ or to $70/95=74\%$ (in case of the higher Gini estimate) in 2005. However, Milanovic (2009) estimates the Gini coefficient in 1820 to the lower level of 43, and this leads to a much lower reduction in the extraction ratio between 1820 and 2005, from $43/56=77\%$ to 74 or 70%. In terms of the Theil index, however, the reduction in *ier* is much more relevant, halving from 70 in 1820 to 35% in 2005 (p. 18). Even the almost invariant Gini extraction ratios of the latter estimate however hide quite a deep change: while the inequality extraction ratio inside nations has on average strongly decreased, the between nations component of inequality, and of the inequality extraction ratio, has markedly increased. We can arrive therefore at the

²³ As Milanovic (2004, p. 24) puts it: "Average income levels also set an upper boundary on inequality. ... As societies develop, income inequality has the 'space' to grow simply because there is a surplus which can be appropriated or redistributed among members of the society."

²⁴ In a Malthusian perspective the population itself can be seen as a function of the overall income that is allocated in supplying subsistences. By given resources and technology, whenever decreasing returns set in there are two conflicting effects of population increase on the size of surplus: 1. by any given per capita surplus, more people bring in more total extractable surplus; 2. but more people reduce per capita surplus. If the relationship is perceived, it can affect, in theory at least, the extraction and population policy of the elite, since under pre-industrial circumstances more extraction can bring about a population reduction, less extraction an increase. It can be easily seen in this respect that in the long run the size of the population that allows the maximum surplus extraction is when the marginal productivity of labour is equal to the subsistence wage, while the maximum possible population is when there is no surplus at all and per capita income is equal to the subsistence wage.

conclusion, on the basis of the degree of the decrease of inequality extraction ratio inside nations, that on the whole the propensity towards inequality has very much decreased, and the responsibility for the increased world inequality between 1820 and present times is entirely of the “great divergence”, the dramatic increase in the well being of the economically more advanced countries. The overall trend towards the decrease of the extraction ratio inside nations could have been a consequence of the changed nature of political and economic institutions and of greater economic and social complexity, both causes and consequences of modern economic growth.

Table 5. Yearly average rates of population growth 1-2007 (in percentages)

	1-1000	1000-1500	1500-1820	1820-1870	1870-1913	1913-1950	1950-1973	1973-2001	2001-2007
Western Europe	0.06	0.16	0.26	0.69	0.77	0.42	0.71	0.32	0.26
Eastern Europe	0.03	0.15	0.31	0.77	0.92	0.26	1.01	0.32	-0.03
Former USSR	0.06	0.17	0.37	0.97	1.33	0.38	1.44	0.54	-0.15
Western offshoots ^{a)}	0.05	0.07	0.44	2.86	2.07	1.25	1.54	1.09	0.94
Latin America	0.07	0.09	0.07	1.25	1.63	1.96	2.73	1.96	1.3
Japan	0.09	0.14	0.22	0.21	0.95	1.32	1.14	0.55	0.06
Total Asia excl. Japan	0.00	0.09	0.29	0.15	0.55	0.92	2.19	1.80	1.29
Africa	0.07	0.07	0.15	0.40	0.75	1.64	2.37	2.69	2.36
World	0.01	0.10	0.27	0.40	0.80	0.93	1.93	1.62	1.20

Source of the data of the last column; at <http://www.census.gov/cgi-bin/ipc/aggen>; the remaining data are taken from Maddison (2006), p. 637. ^{a)}USA, Canada, New Zealand, Australia.

5. The population explosion

In a secular (or rather millennial) perspective, before the Industrial Revolution population growth was held in check by high mortality rates, which were accompanying high birth rates. The source of high mortality rates in a classical Malthusian perspective could have been the limitation in the amount of available agricultural resources, either continuously, leading to poor nutrition (and therefore to higher morbidity and premature deaths), or episodically, through famines. But there were also other forces at play.²⁵ First of all very high rates of child mortality, either through systematic infanticide

²⁵ In Malthus' own words: “The positive checks to population are extremely various, and include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life. Under this head, therefore, may be enumerated all unwholesome occupations, severe labour and exposure to the seasons, extreme poverty, bad nursing of children, great towns,

(itself probably a function of available resources), especially of females, or as a consequences of neglect and of poor living, childbearing, and childrearing conditions. Second, possible neglect of the elders, the disabled and the infirm. Third the spread of epidemic diseases (which was favoured by overcrowding and poor living conditions in the cities of agricultural societies). Then, endemic warfare, between tribes, nations or individuals, leading to direct deaths, spread of disease,²⁶ as well as to misdirection and destruction of the resources otherwise available for survival.²⁷ Still, following the improvements of agricultural technology in particular, as well as the development of the trade economy and “Smithian” growth, there was some population growth at a very slow pace, slightly accelerating in time, as shown in table 5.²⁸ Later on, especially since the middle of the nineteenth century, the decrease in mortality rates that has followed with some delay the Industrial Revolution, a true “mortality revolution” “which has resulted in doubling or more of average life expectancy at birth”²⁹, has led to a much faster population growth. At the same time the demographic consequences of two world wars and related upheavals are shown in a temporary decrease of population growth rates. The post World War II period has seen an unprecedented population explosion, indeed the rate of growth of world population has never been so high as after WWII. There are some signs of abating however following increasing living standards and progresses in the technology of birth control, spreading from the more advanced countries to the lesser developed areas of the world, leading to a forecast of about 9.2 billion around the year 2050.³⁰

excesses of all kinds, the whole train of common diseases and epidemics, wars, plague, and famine.” Malthus 1826 [1798], I.II.9.

²⁶ Such as most famously in the case of the European Black Death of the half of the 14-th century, originating allegedly from the siege by the Mongol army (where the plague was endemic) of the Genoese trade city of Caffa in Crimea in 1447.

²⁷ According to Ember (1978) about 60% of the societies of hunter-gatherers of which there is documentation were recorded to be at war at least once every two years. Even more drastic is the picture traced by Keeley (1996) concerning the propensity to war and violence of ancient and modern pre-historical societies (pre-historical in the sense of “people without written history”). As to pre-industrial civilizations it is enough to recall European and world history (for instance, considering European history immediately preceding the Industrial Revolution, in the 16th century 95% of the time there were wars involving the major European powers, 94% in the 17th and 78% in the 18th century; see Eloranta, 2005). For a broad picture of the frequency of warfare in state and non-state societies see Keeley, *cit.*, pp. 32-33, and the literature quoted there. For the issue of population control in pre-industrial societies, with a survey of the relevant literature, see Caldwell and Caldwell (2003).

²⁸ The relation between population growth and agricultural technology was stressed by Boserup (1965), even if in Boserup’s work the causal relation was supposed to act in the contrary sense than the one implied above; the crucial element being the density of population affecting the length of fallows. However this could be really the case if a complete blueprint of alternative agricultural techniques were to exist at any given time, not if alternative agricultural techniques had to be discovered, or rediscovered, in a lengthy historical process. For a critical assessment of Boserup’s work, see Federico (2001). On the other hand Boserup’s argument could be reinterpreted as pointing towards endogenous technological progress in agriculture being stimulated by demographic conditions (see on this Cuffaro, 2001, pp. 67 f.).

²⁹ Easterlin, 1996, p. 1.

³⁰ Cf. United Nations, 2008.

Table 6. Average Life Expectancy for Groups A and B, 1000–1999 (years at birth; average for both sexes)

	1000	1820	1900	1950	1999
Group A	24	36	46	66	78
Group B	24	24	26	44	64
World	24	26	31	49	66

Source: Maddison (2006), p. 33. Group A: Western Europe, Western Offshoots (USA, Canada, Australia and New Zealand), and Japan. Group B is the rest of the world.

What have been the causes of the post World War II world population explosion? Essentially the reduction in mortality rates and the increase in life expectancy (see tables 6 and 7). The birth rate has on the whole decreased in the post-war period (see table 8), but the increase in life expectancy has been stronger: 17 years between 1950 to 1999 in the world as a whole, more or less the same as in the first half of the twentieth century, three times more than the increase of life expectancy in the crucial eighty years of the spread of the industrial revolution, from 1820 to 1900. One may also note that all the areas of the world have partaken in the great advance in life expectancy. Moreover, “differences in lifetime survival rates between rich and poor countries and between rich and poor individuals within countries were much higher two centuries ago than they are now”, and “over the past century, the life span gap between poor and rich countries has narrowed dramatically”.³¹ Yet, if one looks at more comprehensive data of vital statistics the differences between the different regions of the world are still staggering (see table 9). It is interesting to note, in order to understand what has been accomplished in the course of the very short historical span of two centuries, that the worst off in terms of life expectancy, the “Africans south of the Sahara survive a bit longer today ... (even including the impact of AIDS), than did the English in the early nineteenth century when they had the world’s longest life spans.”³² According to Bourguignon and Morrison (2002, p. 741) the inequality in world life expectancy started to decrease from the beginning of the second quarter of the 20-th century, while the inequality in per capita income distribution continued to increase. As to the population explosion in the post WWII period, one of the reasons lies in the impact of the Green Revolution in third world countries, such as Mexico and India, leading to a strong growth of agricultural production, adequate to feed a fast increasing world population.³³ But also the improvements in transportation have contributed to avoid major demographic

³¹ Milanovic et al., 2007, p. 28 and p. 24

³² Ibidem, p. 26.

³³ With the “Green Revolution” modern agricultural techniques and high productivity seeds were imported from the developed world into developing countries through organized efforts spurred first by the Rockefeller Foundation (starting from Mexico in 1944), to which the Ford Foundation later joined forces. The result was that “the adoption of High Yielding Varieties (HYVs) enormously increased the productivity of land and labor” (Federico, 2005, p. 214). For comprehensive statistical data on agricultural growth see ibidem, pp. 233 f. However in a number of areas, in particular in Africa, and Latin America, the methods of the Green Revolution have encountered fundamental organizational and environmental obstacles (on this see Cuffaro, 2001, chapters 5 and. 6, in particular pp. 117 f.). But taking into account the increasing integration of the world food market, productivity advances in some countries can have a favourable impact on the food balance of others through their effect on world prices, anyhow.

catastrophes due to starvation that would have negatively impacted on global population growth.³⁴

Table 7. Life expectancy at birth³⁵

	1820	1900	1950	2007
Italy	30	43	66	79.9
Western Europe	36	46	67	79.5
Eastern Europe				74.5
Russia	28	32	65	65.9
United States	39	47	68	78
Japan	34	44	61	82
Latin America	27	35	51	72.8
China	na	24	41	72,9
India	21	24	32	68.6
Asia	23	24	40	69
Africa	23	24	38	52,2
World	26	31	49	65.8
More developed countries				76.7
Less developed countries				64.6

Sources: Maddison, 2006, p. 32; for 2007 U.S. Census Bureau, International Data Base, at <http://www.census.gov/cgi-bin/ipc/idbagg>.

³⁴ The only globally relevant demographic catastrophe in the post War II period could have been a population deficit of an undetermined (and undeterminable) few tens of millions Chinese as a consequence of the famine following Mao's Great Leap Forward: "a dip in the growth rate from 1959-1960... was due to the Great Leap Forward in China. During that time, both natural disasters and decreased agricultural output in the wake of massive social reorganization caused China's death rate to rise sharply and its fertility rate to fall by almost half" (US Census Bureau, 18/7/2007; the dip could be graphically seen in the sudden fall in the line of the population growth rate reported in the site of the [World Population Clock](#)). According to Yao (1999) the demographic deficit in the three years 1959-61 was somewhat higher than 49 million, of which about 18.5 million extra deaths and the rest lost births. Not a big difference anyway to the size of world population at the time, of about 3 billion. For other estimates one could refer to the literature quoted by Yao, in particular Peng Xizhe (1987).

³⁵ The data concerning life expectancy in pre-modern and modern backward societies are affected by very high child mortality rates, while adult life expectancy can be much higher. For instance in a demographic regime such as in the Mopti district of Mali in 1957-58 with a total fertility rate (average number of live births per woman) of 7.5, life expectancy was 18, but life expectancy at 20 was 48, while in another instance, corresponding more or less to the demographic regime of 1650-1750 England, with fertility rate 4, life expectancy was 33, but life expectancy at 20 was 55 (Caldwell and Caldwell, 2003, p. 210).

Table 8 Yearly births per 100 population³⁶

	1820	1900	1950	1999	2007
Italy	3.9	3.3	1.94	0.93	0.85
West European Average	3.74	3.08	1.83	1	1(EU)
East European Average					0.99 ^{a)}
United States	5.52	3.23	2.4	1.44	1.42
Japan	2.62	3.24	2.81	0.95	0.81
Russia	4.13	4.8	2.65	0.88	1.09
Latin American Average			4.19	2.51	
China		4.12	3.7	1.6	1.75
India		4.58	4.5	2.8	2.27
Asian Average (without Japan)			4.28	2.3	
African Average			4.92	3.9	3.8
World			3.74	2.3	2.02

Source: Maddison, p. 32 (some of the values refer to slightly different years: see the notes in the source); for the year 2007: CIA (2007), and, for the African average, PRB (2007). ^{a)} Simple average of 17 East-European countries, with values ranging from 0.88 (Bosnia) to 1.2 (Macedonia)

³⁶ The data reported in the World Factbook for 2007 range from 0.73 (Hong-Kong) to 5.0. It is notable that among the 223 countries whose data are reported, 9 of the first 10 positions belong to African countries.

Table 9. Some vital statistics from WHO, year 2005³⁷

	Life expectancy at birth		Healthy life expectancy at birth		Adult mortality rate ^{a)}		Under 5 mortality rate ^{b)}	Infant mortality rate ^{c)}	Neonatal mortality rate ^{d)}	Maternal mortality rate ^{e)}
Italy	78	84	71	75	89	46	4	4	3	5
USA	75	80	67	71	137	81	8	7	4	14
Japan	79	86	72	78	92	45	4	3	1	10
Russia	59	72	53	64	470	173	14	11	7	65
India	62	64	53	54	280	207	74	56	39	540
Brazil	68	75	57	62	225	118	33	28	13	260
China	71	74	63	65	155	98	27	23	18	56
South-East Asian Region	62	65	54	55	272	207	68	51	35	460
African Region	48	50	40	42	480	438	165	99	40	910
World	64	68	56	59	233	164	74	51	28	400
European Union	76	82						5		

Source: WHO, 2007; the last row from CIA (2007). For a definition of the different indicators and the methods used in their assessment, see WHO, *National Burden of Disease Studies: A Practical Guide*. Geneva; WHO, 2001. ^{a)}Probability of dying aged 15–60 years per 1000 population. ^{b)}Probability of dying aged < 5 years per 1000 live births. ^{c)}Per 1 000 live births. Mortality in the first year of life. ^{d)}Per 1 000 live births. Mortality in the first 28 days of life. ^{e)}Per 100,000 live births.

6. Maddison's statistical summing-up of world economic growth

Even in the poorest of continents, Africa, per capita income has strongly increased (about three times; an unprecedented performance) since the spreading to the whole world of the present mode of production that followed the industrial revolution (see table 10). This has taken place notwithstanding the rapid population growth, which in the post World War II years has become the highest in the world (2.69% yearly in the period 1973-2001, somewhat reduced to 2.36% lately; cf. table 5). According to Maddison's statistical account (somewhat daring, owing to the length of the historical period covered), per capita income has declined in Western Europe during the first 1000 years of our era, from 450 PPP\$ to 400 (where 400 apparently stays for the physical subsistence level), reaching a nadir around 600 AD, and then starting a very slow

³⁷ Some interesting extreme values (giving the existing range), from CIA *Factbook* (2007): Birth rate (births/1000) 50 (Niger)--7,34 (Hong-Kong); death rate (deaths/1000): 30.35 (Swaziland³⁷)--2.16 (United Arab Emirates); Infant Mortality Rate: 184.84 (Angola)--2.3 (Singapore); Life Expectancy at Birth: 83.52 (Andorra)--32.23 (Swaziland); Total Fertility Rate (children born/woman): 7.38 (Mali)--0.98 (Hong-Kong) (1.50 EU).

recovery.³⁸ In that period the rest of the world fared slightly better, per capita incomes being throughout the period somewhat higher in Africa, and in Asia, while the remaining regions were still at the low subsistence level. Five hundred years later the world as a whole had made some modest progress. Italy was by far the richest country but was stagnating until the Industrial Revolution (1820). The territories that were to become the Western Offshoots were the poorest, Africa was a little better, but had somewhat declined, stagnating until the colonial conquests of the nineteenth century, China had progressed to 600PP\$, staying at that level until 1820 and declining afterwards, Japan also had progressed somewhat. At the threshold of the Industrial Revolution, in 1700, the richest world country were the Netherlands, Western Europe was somewhat lower than 1000PPP\$ on average.³⁹

Table 10. World Per Capita GDP, Regional Averages, 1-2001 AD (1990 international Geary-Khamis dollars)⁴⁰

	1	1000	1500	1600	1700	1820	1870	1913	1950	1973	2001
Western Europe	450	400	771	890	998	1,204	1,960	3,458	4,579	11,416	19,256
Eastern Europe	400	400	496	548	606	683	937	1,695	2,111	4,988	6,027
Former USSR	400	400	499	552	610	688	943	1,488	2,841	6,059	4,626
Western Offshoots	400	400	400	400	476	1,202	2,419	5,233	9,268	16,179	26,943
Latin America	400	400	416	438	527	692	681	1,481	2,506	4,504	5,811
Japan	400	425	500	520	570	669	737	1,387	1,921	11,434	20,683
Asia (excl. Japan)	450	450	572	575	571	577	550	658	634	1,226	3,256
Africa	430	425	414	422	421	420	500	637	894	1,410	1,489
World	445	436	566	595	615	667	875	1,525	2,111	4,091	6,049

Source: Maddison, 2006, p. 642.

Since 1870 economic growth has been accompanied, wherever data are available, by a great reduction, in many cases almost a halving, of labour time (Maddison, 2006, p. 347). And hence by an enormous growth of hourly labour productivity (p. 351): notwithstanding the reduction in labour time, production per worker has greatly

³⁸ The data for the year 1 in Western Europe and Asia are considered implausibly low by Federico (2002, p. 115). Federico's viewpoint is consistent with Milanovic (December 2004) estimate of 840 (p. 22) or between 800 and 900 1990-PPP\$ (p. 23) as the average per capita income of the Roman empire at the times of Augustus. On Maddison's work see also Valli (2008).

³⁹ For the detailed country data one is referred to Maddison (2006, p. 639).

⁴⁰ For a definition of Geary-Khamis dollars cf. United Nations, 1992. It should be noted that taking Geary-Khamis dollars enhances the reported incomes in poorer nations because goods and services consumed by them are calculated at the international prices that are closer to those of the richer countries where services are relatively more expensive, and thus understates the income inequality between nations. This depends on the Gerschenkron effect, whereby the national income of a nation is enhanced if calculated at the prices prevailing somewhere else, because in a country relatively more of the goods that are relatively cheaper are consumed. Cf. Dowrick and Akmal, 2005, Milanovic 2005b, p. 125.

increased (about ten times since 1870 in Western Europe: Maddison, 2006, p. 349). Perusing the above data it becomes obvious that at the time Marx was writing *Das Kapital* no amount of redistribution could have ever brought about the dramatic improvement in the living standards of the masses that technical progress and development (“the development of productive forces”) would have brought about in less than a life-span. Thus Marx (1875) was right in downplaying the issue of distribution as such.⁴¹ Distribution may be important in the short-run for allowing some of the worse-off to improve their lot. In the long run for the worse off it is more important the relation between distribution, technical improvements, production and accumulation.

Table 11 Growth of Per Capita GDP by Major Regions, 0–1998 (annual average compound growth rate)

	0– 1000	1000– 1500	1500– 1600	1600– 1700	1700– 1820	1820– 1998
Western Europe	–0.01	0.13	0.14	0.15	0.15	1.51
Western Offshoots	0	0	0	0.17	0.78	1.75
Japan	0.01	0.03	0.03	0.09	0.13	1.93
Group A	–0.01	0.11	0.13	0.12	0.18	1.67
Latin America	0	0.01	0.09	0.19	0.19	1.22
Eastern Europe & former USSR	0	0.04	0.1	0.1	0.1	1.06
Asia (excluding Japan)	0	0.05	0.01	–0.01	0.01	0.92
Africa	–0.00	–0.01	0	0	0.04	0.67
Group B	–0.00	0.04	0.02	0	0.03	0.95
World	–0.00	0.05	0.05	–0.00	0.05	1.21

Source: Maddison (2006, pp. 30; 643)

⁴¹ As “it was in general a mistake to make a fuss about so-called distribution and put the principal stress on it.”

Table 12. Growth of Per Capita GDP by Major Region, 1820-2001 (annual average compound growth rate)

	1820–70	1870–1913	1913–50	1950–73	1973–2001
Western Europe	0.98	1.33	0.76	4.05	1.88
Eastern Europe	0.63	1.39	0.60	3.81	0.68
Former USSR	0.63	1.06	1.76	3.35	-0.96
Western Offshoots	1.41	1.81	1.56	2.45	1.84
Japan	0.19	1.48	0.88	8.06	2.14
Latin America	-0.03	1.82	1.43	2.58	1.84
Asia (excluding Japan)	-0.10	0.42	-0.10	2.91	3.55
Africa	0.35	0.57	0.92	2	0.19
World	0.54	1.30	0.88	2.92	1.41

Source: Maddison (2006, p. 643)

7. The very long perspective of the world economic history according to the Malthusian viewpoint

Fig. 2 The Malthusian trap (“world economic history in one picture”), according to Gregory Clark

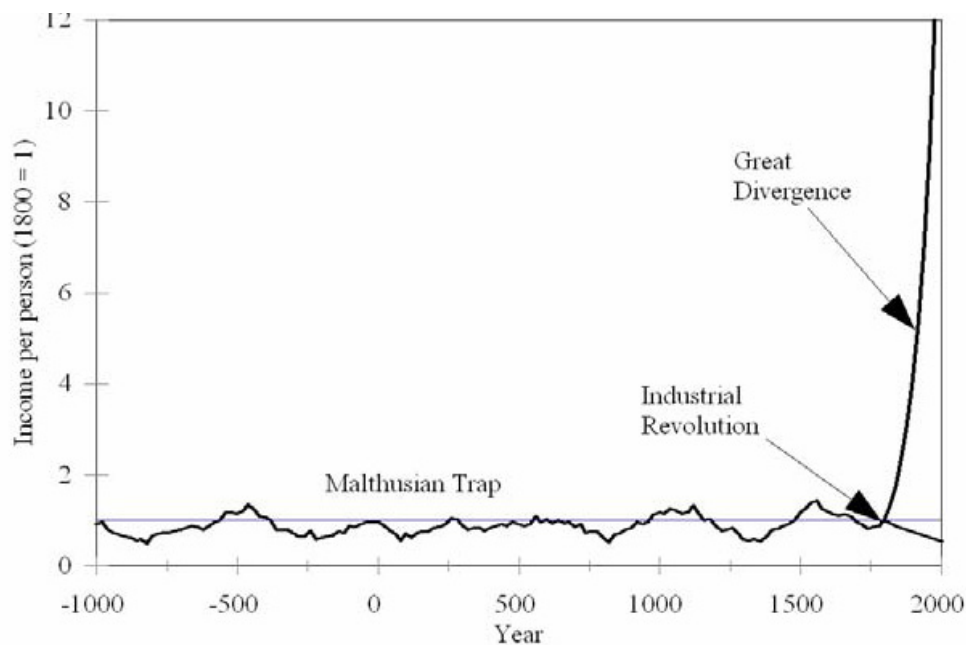


Fig. 1.1, p. 2 in Clark (2007). The graph is by no means accurate since even in the centuries preceding the industrial revolution there has been, according to Maddison data, some long-run per capita growth (see table 11).

A possible interpretation of available historical evidence is the Malthusian view. Up to the dawn of the industrial revolution the great majority of humans were on the brink between physical survival and starvation. In a very long perspective there was by

and large a Malthusian equilibrium between population and resources, with a very weak long run growth, amounting to near stagnation, of world population.⁴² Under such circumstances the distribution of income and wealth determines in the long run not the living standards of the masses but the size of the population: unequal distribution places in the hands of the privileged resources that could allow a larger population to subsist. At the same time the existence of privileged strata, which in the short run at least are somewhat out of the Malthusian trap, can affect the well being of the worst off through the externalities they generate. These could be negative (envy and the sense of relative deprivation) or positive (the hope, however slim, to be able to raise among the privileged, some identification with their interest and life experience, the possible cultural advantages that are mentioned below). Their relative impact may depend, among others, on the degree of mobility in the society concerned. Religion could surrogate mobility in this world with a belief in mobility in the afterworld. Even in the slave society of ancient Rome slaves could have some hope to be liberated, and even to become affluent or, in Christian times, to earn after death, like their rich masters, and even more than they, the Kingdom of Heaven. The existence of some strata able to enjoy a surplus over subsistence could have been an engine (however inefficient) of progress in living patterns, and an instrument for providing the resources for some to devote themselves to art, technology and science, with eventual long run benefits for average living standards, as well as cultural benefits for mankind.⁴³ Moreover if a priori, under the veil of ignorance, as in Rawls' paradigm, one had to choose between two different possible societies where to live, one with a smaller population in Malthusian demographic equilibrium with inequalities, and another one with larger population in Malthusian demographic equilibrium with lower or absent inequalities, it is not quite clear that the choice would have been for the second alternative, given that to the first one, unlike the second, is associated some probability of finding oneself better off, once the veil of ignorance is dispelled, than in the egalitarian Malthusian subsistence alternative. Aside from nurturing a ruling elite, other surplus utilizations were for collective purposes, such as building cathedrals or waging wars, the latter possibly being in itself one of the principal instruments, through their disruptive consequences, as well as the directly inflicted deaths, of population control. The working of Malthusian limits could have affected economic progress negatively, pushing living standards down; however greater population density could have led to more advanced production techniques and modes of organization, in particular through the division of labour and thereby specialisation and increasing returns to scale.⁴⁴ Moreover, even if the Malthusian

⁴² Clark's 2007 book is a recent representation of this viewpoint, which is however rather controversial (for a thorough critical review see Allen, 2008).

⁴³ In the modern world instead the production of cultural goods and of scientific and technical knowledge does not require the existence of a privileged elite identified by birth. It is organized, as any other branch of production, with the employment of professional workers, whose position in society is affected by the embodiment of huge investments in human capital, turning them in their turn in an elite of some sort. It concerns in many cases the production of intrinsic public goods, thus with a strong participation by the state. Thus it is enormously speedier and more efficient than as a by-product of the very existence of elites in older times, and this provides an explanation for the much stronger recent economic growth. It is mainly the product of the endeavour of the economically more advanced countries, but, owing to its intrinsic public good nature, all the world is able to benefit.

⁴⁴ In the development of agriculture this is stressed by Boserup (1965).

trap would have worked in the very long-run, in the shorter run there were long periods (such as after the Black Death) when population growth was compatible with some improvement in average living standards. Thus in the shorter run how wealth (land ownership in particular) was distributed would have made a great deal of difference for the well being of the bulk of the population. At the same time the pressure of population on resources could have been reduced by reducing the tendency to demographic growth, either by decreasing the birth rate or by increasing mortality. Historically speaking the increase of mortality and reduction in life expectancy would first of all be based on infanticide, but also on high propensity to accidental death in later ages.

7.1 The Malthusian mechanism under pre-agricultural conditions

In particular looser or absent organized political power under pre-agricultural conditions could have made life more precarious and insecure, leading to higher adult mortality, and lower pressure on resources, thus allowing higher living adult standards than in later, more densely populated, agricultural societies.⁴⁵ This could be the reason explaining the apparent paradox of the alleged lower living standards in agricultural in comparison to hunter-gatherers societies.⁴⁶ In the latter people appear on average to be better fed and enjoy much more leisure. This could be easily explained if we consider that in principle in hunter gathering nomadic societies to hunt and collect more does not help to prevent starvation in hard times, since what is above necessities cannot be hoarded. The bottleneck to survival would be the occasional times of scarcity. In times of abundance there is no point in hunting and foraging more than what is needed for comfortable survival, taking into account the relation between possible yield and effort, where the former is reduced by the habit of sharing (itself a product of the specific conditions of foraging societies). At the same time, if less is hunted or foraged now, some more may be available in the future, especially if the foragers are able to reduce competition through defence of the territory against other groups. Another method to provide for the future as a kind of insurance (because of the expectation of reciprocating) is the practice of the sharing through gifts, probably enhanced by the fact that whenever a good hunt occurs the excess over current consumption cannot be stored, and what can be stored cannot be easily defended if it arises the envy of the lesser fortunate. In turn this in primitive societies may weaken the incentive to work,⁴⁷ but at the same time can reduce the extent of the exploitation of natural resources, avoiding the “tragedy of the commons”. In agricultural societies it pays to labour all year along (even if with different intensity according to the seasons) in order to minimize the occurrence of starvation, since provisions can be carried on in time and improvements can durably increase the productive capabilities of the earth. So the harder and longer is labour the higher the probability of survival. In the end the numbers that a given territory can sustain are much higher with agriculture, but the living stiles possibly less pleasant. A possible basic Malthusian mechanism for controlling hunter-gatherers

⁴⁵ For the propensity to violence and warfare of primitive societies and the consequent high death toll in proportional terms see Keeley (1996), pp. 28-29; 83-112.

⁴⁶ On this see Ember (1978); Diamond (1987); Caldwell and Caldwell (2003).

⁴⁷ Cf. Kaplan, 2000.

populations can be the occurrence of the occasional lack of food bringing about starvation of an usually adequately fed population particularly subjected, because of the lack of carry-over, to the vagaries of environmental conditions.⁴⁸ The greater the population density and the higher the pressure on resources, the higher the probability of occasional starvation to occur. In addition, a reason put forward for explaining the alleged better living standards of hunter-gatherers in relation to agriculturalists is the lower population pressure due to the more limited fertility of the former, associated with their specific mobile life style.⁴⁹ During the Neolithic Demographic Transition, on the contrary, the apparent increase in fertility may be explained by the shift towards the sedentary life style of agriculturalists from the previous nomadic pattern of hunter-gatherers, and possibly by new opportunities for the earlier weaning of infants.⁵⁰

7.2 Hunter-gatherers and the Zen Economy

According to an austere vision of the pre-agricultural societies, hunter-gatherers were in a Zen economy,⁵¹ where, even if people were living in absolute poverty according to our metric, they were quite well off according to another, assumed Zen-like metric, where the defining condition is the abundance of leisure and the satisfaction of limited wants. Interestingly, this corresponds to the condition of foraging animals in the wild (see Winterhalder, 1993); in both cases life could be endowed with leisure but at the same time rather short and precarious. Aside from the issue of absolute poverty, hunter-gatherers societies could have been on the whole relatively egalitarian, so that in terms of relative poverty they were rich. On the other hand not all the hunter-gatherers societies were egalitarian, for instance there were complex ones where a hierarchical organization and even slavery were present (see Fitzhugh, 2003).

The myth of the "original affluent society" and of the extent of its leisure, as well as of its pretended favourable living conditions seemed very suitable for the 1968 cultural environment where it was conceived, a modern economic version of Rousseau "Noble Savage" utopia. In more recent times a more sober reappraisal has been put forward. Kaplan (2000), in considering the living standards of one of the surviving foraging populations (the !Kung San of Southern Africa), sees rather strange to qualify as affluent "a society with a 50 percent childhood mortality rate and a life expectancy at birth of about thirty years". To this it may be added the particularly high death toll (in relative terms) as a consequence of warfare in primitive societies.⁵² Part of the confusion may derive from the apparent better alimentary and health conditions shown by the bones of pre-historical hunter-gatherers in relation to those of pre-historical

⁴⁸ Cf. Kaplan, 2000, p. 311: "One of the perennial problems confronted by virtually all hunter-gatherers is not only the seasonal variation in resources, but more significantly the periodic failure of all major resources ... Unlike agriculturalists, foragers appear to be unable or unwilling to store resources in the good times to tide them over the bad times."

⁴⁹ Cf. Bocquet-Appel and Bahr-Yosef, 2008, p. 5.

⁵⁰ See Bocquet-Appel and Naji (2006). Of particular interest is the wide discussion of the whole issue, and of the specific findings of the authors, by other scholars at the end of the article.

⁵¹ Sahlins, 1968, p. 85.

⁵² See Keeley, 1996, pp. 88-94.

agriculturalists.⁵³ The inference of a worsening of material conditions (at least as far as alimentation is concerned) with the passage to agriculture are translated into the atemporal idea of the “original affluent society”, echoing the myth of an ancient blissful state of nature.

8. The take off from the Malthusian Trap, the Industrial Revolution, Socialism and Transition

Thus for almost the totality of human history poverty and starvation have been the rule, wealth and affluence a tiny exception in a sea of misery and precarious lives. Therefore the real historical singularity that must be explained is not poverty and backwardness, but development and wealth. The gigantic increase of population and wealth in the last two centuries, and the very rapid (historically speaking) decrease in the proportion of the poor have been the outcome of a mode of production characterized by the systematic application of scientific principles, and the organized pursuit of scientific and technological progress, dramatically improving the living prospects of billions of men and women, as a consequence of the basic “idea of the world as open to transformation by human intervention.”⁵⁴ Its ultimate sources may be found in the Renaissance and the Enlightenment, tied together by the Reformation’s critical discussion of traditional received faith. The previous period of “Smithian” growth based on division of labour, increasing returns and trade could have provided the basic economic and institutional background.⁵⁵

Until the Soviet Revolution this mode of production took the organizational form and vehicle of transmission of the internal and international capitalist market. This does not detract anything from the role performed by the state, in particular as provider of public goods and infrastructure, but the basic principle of the functioning of the economy was voluntary exchange. It is on the system of voluntary exchange, and the creation and expansion of markets, as made possible by the creation of a mercantile economy and the gradual establishment of the rule of law and clear attribution and protection of property rights, that the success of the Industrial Revolution and its aftermath can be attributed. In this may lie the difference with other environments of the past (such as historical China or the Arab world at its apogee) where scientific progress and innovation did not translate into sustained economic and technological progress. Real socialism can be seen just as a specific variety of this mode of production whereby the fundamental aspects are upheld through a sort of rough extension of the rational organizing principle to the whole of society, and accumulation and innovation are organized from the centre rather than having been the outcome of the working of market forces. Eventually this daring experiment did encounter a bitter dead end, but in

⁵³ Cf. for instance Cohen, 1991.

⁵⁴ Giddens and Pierson, 1998, p. 94.

⁵⁵ The fundamental reasons of the “European miracle” and the precise moment of the European economic take-off from other relatively advanced societies, such as in particular China, is a highly debated historical issue to which many huge tomes have been dedicated, since at least the issue was posed by Needham in the fifties. See for instance Jones (1981), Landes (1998), Pomeranz (2000). For a recent discussion of this issue, and a reference to the various viewpoints and bibliographical sources, see Wagener, 2009, and the thorough review article of Darwin (2008) by Adas (2009).

the process it has partaken both of the increase in population and of the increase in aggregate production. Its failure has been a comparative failure, but still its achievements in aggregate economic and overall vital statistical terms may be seen as substantial in relation to pre-industrial epochs. If we are willing to indulge a little bit in counterfactuals, suppose that real socialism had prevailed throughout the world by way of revolution and/or military conquest, destroying the international market system in the process. It is conceivable that after the initial disruptive consequences of the change of system some process of increasing world wealth and population would have persisted anyway, at very least by way of capital accumulation and technological diffusion in the lesser developed areas. Of course there is the issue as to the extent to which the survival of Soviet type socialism has been helped in practice by the contemporary existence of an international capitalist economy, from which to draw technology, as well as goods (such as foodstuffs) for whose production Soviet-type socialism was utterly dysfunctional, and by an international price system easing the difficult task of evaluating economic opportunities.⁵⁶ But let us abstract from the latter point. Would it have been enough to argue, after the suppression of capitalism, that no better system was possible and to ascribe to the very nature of real socialism the economic and demographic progresses? In this respect two viewpoints seem to be equally objectionable: that a really existing, and therefore highly imperfect, system of production must be rejected because its performance is seen as defective, and another abstractly implementable system (socialism vs. capitalism) should do necessarily better; as well the opposite contention that no better system of organization than the existing one (in our counterfactual example capitalism vs. Soviet-type socialism) is possible.⁵⁷

9. Post-war development and the Malthusian trap

As we have seen, a most remarkable fact is that world population and wealth have never grown so fast as in the post World War II period.⁵⁸ We have considered the possible causes: globalization (in particular the great intensification of international trade and investment), technical progress (and the progress of medicine), originating in the European countries and Anglo-European offshoots, and the absence of devastating conflicts at the global level (the world has been on the brink of a nuclear global disaster, but it has not fallen into the abyss, yet). The progresses in transportation and agriculture have been of particular importance for the provision of the basic means of survival; thanks to those progresses Woodruff's speculation in the sixties that "if we are to be guided simply by statistics, then in AD 2000—i. e. in the lifetime of our children—world population will have doubled and misery and starvation will stare mankind in the

⁵⁶ Soviet-type socialism appears to have been much less proficient than capitalism in the production of consumer goods in general and in the innovation of better consumer goods and better ways to satisfy consumer needs in particular. The only innovative consumer goods developed in the socialist camp that comes to my mind is Rubik's cube, in Hungary in the mid seventies. However Soviet-type socialism was by all accounts no inferior to western capitalism in the production and development of military hardware. It was much less efficient and much more profligate in its utilization of energy resources and raw materials (see on this Gomulka and Rostowski, 1988).

⁵⁷ Following Demsetz (1969) the first of the two views is dubbed as Nirvana fallacy.

⁵⁸ This is epitomized by the title of Easterlin 1996 book: *Growth Triumphant*.

face” (Woodruff, 1982[1966], p. 340) turned out to be correct only as far as population was concerned.⁵⁹

Notwithstanding the above successes, for the world as a whole the Malthusian trap is still lurking.⁶⁰ But rather than decreasing agricultural returns, as in the classical explanation, it may here be relevant the pressure on scarce natural resources,⁶¹ and in particular the threat against development and living standards of the possible “tragedies of the commons”, including climate change, consequence of increased production and population.⁶² The industrial and demographic developments that have accompanied the present relative prosperity have taken place at the cost of world’s commons, in particular at the cost of the decumulation in the span of two hundred years of huge reserves of fossil fuels, the leftovers of hundreds of millions of years of life on earth.⁶³ To this one may add the destruction of forests and pristine habitats, the pollution of air and water, and, last but not least, CO² emissions. The plunder has mostly taken place to the advantage of industrialized countries, and of countries provided with large reserves of raw materials (in particular hydrocarbons), appropriating the rents of their exploitation. But the overall balance for poorer and energy poor countries cannot be considered as negative, since in the process their average living standards (considering both per capita income and quality of vital statistics) have greatly improved all the same, as a consequence of the diffusion of the technological advances of the West. But, as more and more countries successfully pursue the type of industrialization and economic development that has made the West rich and better off the emerging economies, the pressure on world natural resources and the generation of obnoxious externalities are bound to increase, with potential destabilizing consequences on the economy and the peace of the world.

10. The limits to population growth: natality, mortality, and catastrophes

Furthermore it is obvious that a demographic explosion such as that of the last decades cannot last forever. Carlo Cipolla (1974 [1962], p. 86) quotes “an exercise in astronomical arithmetics” by C.P. Putnam (the inventor of the world's first megawatt-

⁵⁹ For the remarkable performance of world agriculture in modern times, but especially in the post second world war years, when agricultural output growth was exceeding the most exceptional growth of population, see Federico (2005, p. 19). For the role of agriculture spearheading, alongside industry, modern economic growth, see Easterlin, 1996, p.5

⁶⁰ The extent to which the Malthusian trap is lurking is however controversial. For an optimistic viewpoint see Simon (1981). According to Simon “another birth means another mind that can help think up ways of using resources more efficiently” (Lee, 2008). On the opposite side there is a vast intellectual current renewing the Malthusian tradition, such as Garret Hardin, Albert Bartlett, Paul Ehrlich, and the Club of Rome.

⁶¹ Downplayed by Simon (1989), who optimistically sees in technological progress favoured by an increasing population the overall dominant factor.

⁶² According to a plausible view, very specialized life styles, such as in the contemporary world, increase population vulnerability to dramatic environmental changes; see Chu, 1998, pp. 193-194.

⁶³ In this perspective the long run survival and spreading to the rest of humanity of the high living standards of the most developed world crucially depend on the successful untapping of relatively clean and plentiful new sources of energy.

size wind turbine, installed in 1941)⁶⁴, according to which “if the [human] race had sprung from a couple living not long before agriculture was discovered—let us say 10,000 B.C.—and if its members had expanded at the rate of one per cent per year since then [which is lower than the present rate of growth of world population], the world population would form today a sphere of living flesh many thousand light years in diameter, and expanding with a radial velocity that, neglecting relativity, would be many times faster than light.”⁶⁵

A correction to demographic processes leading to world overpopulation (where obviously the concept of overpopulation is a hazy one and partly depends on values) could be found in a decreasing birth rate, as a by-product of per capita income growth, and in the extension of social security systems in the countries where the survival of the elderly is still dependent on family ties, as well as in the improvement and diffusion of the technology of birth control. Thus, according to Easterlin (1996), p. 112, “both theory and evidence indicate that the population explosion is a transient phase of contemporary development experience”, since in developing countries “the more rapid the Mortality Revolution, the more rapid is the transition to lower fertility”, replicating, albeit with different speed and modalities, the demographic transition of present developed countries. But can one really discount the possibility that the Mortality Revolution could intensify as a consequence of further medical discoveries after the transition to lower fertility is over, or that preferences regarding procreation could differ as a consequence of different cultural traditions in developing countries, and that preferences could change even in the developed world, altering the dynamic demographic balance? Indeed, there are signs that this may be the case and that the long-run relationship between development and fertility could be in reality j-shaped.⁶⁶ Neither preferences nor technology can really be considered as given in the long-run.

11. War, peace, the Bomb, and their economic consequences

Relative peace, maintained by the nuclear balance of terror, can be seen as a crucial factor for explaining Post-War II economic achievements. “Capitalist peace” whereby countries interact through mutually advantageous voluntary exchanges excluding wars of territorial aggrandizement, which were endemic in the not-distant past, is another.⁶⁷ Seen from the perspective of recent achievements, the game humanity played in the past, when conquest, plunder, territorial expansion and domination, slavery, torture and mass killings were respectable endeavours and part of the rules of the game, and mass murderers acquired the status of national heroes, still remembered and glorified in monuments and history books, has led on the whole to very poor

⁶⁴ Cf. Wikipedia’s entry “Smith-Putnam wind turbine” and the sources there provided.

⁶⁵ A more elementary calculation (2 multiplied by 1.01 elevated by 12000) would turn out an astronomical number of humans (1.4 multiplied by 10⁵²) Their annual increment would be a number with only two digits less. As argued by Albert A. Bartlett, “the greatest shortcoming of the human race is our inability to understand the exponential function” (<http://www.albartlett.org/>) and thus, in particular, the physical impossibility of exponential population growth in the very long-run.

⁶⁶ Cf. Myrskylä et al., 2009.

⁶⁷ On capitalist peace see Weede (1999), Gartzke (2005, 2007).

results, as measured at least in terms of demographic and economic growth. However the real extent to which wars were contributing to hold in check the progress of humanity is difficult to gauge.⁶⁸ A strict Malthusian could object that living standards and population would have been held in check by Malthusian factors anyway. On the other hand as an instrument of population control war was particularly wasteful. It produced destruction of capital, both physical and human (in particular the loss of adult males in their productive prime, whereas mortality from disease or starvation affected first of all the children and the elderly). It required huge resources that could be alternatively used for collective surplus creation (which could be employed for productivity enhancement: for instance irrigation works) or for demographic enlargement. The latter could have led to economic progress, in a Boserupian perspective, or through the cultural mechanisms argued by Julian Simon. Personal trade interrelations and useful personal contacts between the belligerents are disrupted by war, with negative consequences on the economic base, and demographic sustainability, of the parties concerned. According to the social-Darwinist vision, war is seen as an engine of natural selection of peoples and civilizations towards the progress of humanity.⁶⁹ But the selection provided by war has tended to bring to the fore populations and civilizations notable for their destructive and coercive power rather than for their peaceful civilized achievements. At the same time peaceful achievements could be dependent on the ability to organize and exert some degree of coercive power: a relatively complex societal organization, such as some ancient or modern empires, could be apt both to successfully wage wars and to peaceful and progressive purposes, as relative to the times. But this does not apply, in particular, to the fierce primitive hordes plundering and destroying ancient civilizations and complexly organized states. Here too the picture could change, once the hordes are settled and organize an empire on a territory that may profit of the relative stability provided by the rulers (such as in the notable case of the Pax Mongolica), at least until the next run of invasions, massacres and destruction, in an endless Penelopian weaving and destroying the thread of civilization. Whatever the reasons, until recent times the progress of humanity, both in terms of population and of productive achievements, has been so slow as to amount, in our present perception of time, to stagnation, with long spans of regression.⁷⁰ The first millennium of the vulgar era was for Europe, from the economic viewpoint, a lost millennium: the decadence and fall of the Roman Empire and the dislocations following the barbaric invasions left Europe worse off in the year 1000, at the dawn of the new Christian nations, than at the time of the birth of Jesus Christ. Real sustained progress, meaning a substantial overcoming of the Malthusian trap (or anyway, whatever the interpretation, of the near long run stagnation, according to a modern perspective, in

⁶⁸ For a quantitative assessment of the negative impact of war on growth in modern times, see Milanovic (2005a).

⁶⁹ Cf. Mueller, 2009, p. 7.

⁷⁰ An exception could have occurred during the Neolithic Demographic Transition when, according to some, population growth rates of 1% and more could have taken place for a sustained span of time (see Gary Warrick's comment in Bocquet-Appel and Najit, 2006, p. 355; Bellwood and Oxenham, 2008, p. 22). With no improvement of living standards, however: as we have already mentioned the common opinion is that actually living standard were lower than under the previous pre-agricultural societies, because of longer work hours, less satisfactory nutrition, greater morbidity as a consequence of higher population density.

world population and per capita incomes), had to wait until the Industrial Revolution gradually spread all over the world. But it has been the peace period after the Second World War (localized conflicts notwithstanding) that has been accompanied by the greatest acceleration in the speed of demographic and economic advance the world has ever known in its history.

12. Conclusion

Our generation has had the privilege of living in a very special period in the history of mankind. Never in history have material conditions progressed at the rate to which we have become used to in the post-war years, never have the different parts of the globe and the different populations become so close, and world population increased at a faster rate. Never have overall vital statistics improved in such a substantial way. Still, an important part of humanity lives precarious lives under appalling conditions of absolute poverty, but its relative share, and in more recent times even its absolute numbers, have steadily decreased. In the continuation, and possibly the intensification, of this process may lie the hope of eventually overcoming world poverty (at least in absolute terms). At the basis of these achievements there has been a system of production and of organization (whatever its specific variations in the different countries and the different times) that has put to the fore the systematic pursuit of technical progress, and its utilization in all aspects of economic life, while providing the drive and the incentives to do so. A contributing factor accompanying the greatest increase of population and living standards that the world has historically known has been the intensification and acceleration of world economic and non-economic exchange, which is usually referred to as globalization. In a world characterized by “capitalist peace” and by the refusal of the autarchic tendencies of a recent past, when autarchy was preparing the ground to a disastrous world war, any country is able to take advantage of the others through mutually beneficial voluntary exchanges rather than through conquest and exploitation. No alternative better foundation of international economic relations has to date been credibly proposed. But this same system has also brought about the utilization of technical progress for making increasingly more destructive the technology of warfare. For the first time in history mankind has produced the military technology that has the potential to lead to its own demise. The danger of global thermonuclear warfare has kept the world by and large at relative peace for more than sixty years, quite an unprecedented achievement that has much contributed to the overall positive economic and demographic results. But even if the danger appears to have decreased with the end of the Cold War, the potential for large scale destruction remains, and may increase with the spreading of nuclear technology in presence of persisting or even increasing nationalistic drives, such as by resurging old imperial powers. The increasing perception, favoured by globalization, of the inequalities and injustices of the world economic order, together with the disruption of ancient life styles and privileges, and the recurring scourge of nationalism may put future economic progress in jeopardy. Large scale nuclear warfare is always a possibility, especially with the inevitable proliferation of nuclear capabilities, with enormous risks for the survival of humanity, even short of Dr. Strangelove’s Doomsday Machine. As always has been the case in history, prosperity and economic progress are by no means foregone conclusions.

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