Uneven Global Growth

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How have population growth and standards of living evolved over the past few decades and in what way has the world population put a strain on the natural resources of the earth? In what way were these developments different for the poor and the rich and for the inhabitants of urban and rural areas of the world? What has the role of governments been? Where, how and why does redistribution of wealth sometimes occur? On the basis of these questions, this chapter will outline the socio-economic developments that have taken place in the world since 1945.

Demographic patterns and development

Ongoing population growth?

Rapid global population growth is a recent phenomenon. For many thousands of years the population of the earth grew only very slowly, growth accelerating occasionally only to slow down again. From the early eighteenth century onwards, a remarkable acceleration of that growth took place. Around 1800 the first billion was reached, to be followed by the second just over a hundred years later. By 1950 another billion had been added, and in the subsequent fifty years world population doubled to six billion. It is expected that the nine billion mark will have been reached by 2050. The increase in population is mainly due to a lower mortality rate. More children have had the chance to become adults.

The eighteenth-century population growth started more or less at the same time in India and China, and Western Europe soon followed suit. Several interrelated factors led to this increase. In the northern hemisphere the climate became a little milder during this period, resulting in increased agricultural output. In addition, the food supply situation in large parts of Europe and India improved due to the introduction of the potato. In northwest Europe potatoes increasingly became the food of the masses, who were therefore less dependent on relatively expensive cereals. Potatoes yielded more nutrition per hectare than cereals and also contained a lot of vitamin C. In China and other parts of the Far East the price of staple foods dropped due to the introduction of rice varieties which could be harvested twice a year. Because of the improved food supply, children and adults were less susceptible to various diseases, and mortality was reduced.

Better connections between production areas and urban consumption centres strengthened this positive effect. Raw materials and agricultural products could be obtained more cheaply from further away. Due to ongoing changes in farming such as seed improvement, specialization, the use of fertilizer (including chemical fertilizer), an increase in scale and intensification, productivity per hectare continued to rise in the nineteenth and twentieth centuries. In Europe this process coincided with urbanization and industrialization, and not long after the same trend set in in North America, China and India.

The developments in the cities were of crucial importance to the drop in mortality. The improved food supply was not the only factor. Due to the high population density and poor hygiene, in general mortality in the cities was higher than in rural areas. Epidemics of dysentery, cholera and other diseases such as smallpox and tuberculosis regularly took their toll in the cities. From the last decades of the nineteenth century onwards, urban mortality in Europe decreased, mainly thanks to the installation of drinking water pipes and separate sewer systems for wastewater. This improvement in public hygiene was usually preceded by a period in which people's personal hygiene also improved. People became more aware of the connections between disease and potential pathogens. In the twentieth century a further drop in mortality was attained through the dissemination of medical knowledge. Combating infectious diseases became more effective through vaccinations and, after 1945, through the administration of penicillin.

These effects were not limited to Europe and the cities in North America and Asia. Even in remote areas of sub-Saharan Africa, India, South America and China more food, vaccination and antibiotics became available after 1945, often as a temporary result of aid programmes. Worldwide, the greater availability of food, better hygiene and more medical care led to less severe epidemics and a sharp fall in infant and child mortality, and therefore in many cases to an explosive population increase, so that between 1950 and 2000 the total number of people on earth doubled.

However, the growth of the world population does not seem to be a trend that will continue forever. A few decades after the drop in mortality rates, in many countries the birth rate also started to decrease. This trend first appeared in countries in north-west Europe, but in the twentieth century elsewhere too. In these areas the population no longer increased at the same rapid pace, but became more or less stable, and in some countries a decrease in population is certainly not out of the question. This change from high birth and death rates to low birth and death rates is known as the *demographic transition*. The drop in the mortality rate referred to above is the first phase of this transition.

The drop in the birth rate which is the next phase is explained by several different factors. In places where the chances of survival for young children have been permanently improved, in other words, where infant and child mortality has clearly decreased, parents will realize that a big family is not an economic necessity to ensure they will be provided for in old age. In Europe in the nineteenth century the desire to limit the size of families was strengthened by government measures which reduced child labour and encouraged education for children. Due to these policies, children generated less income and became more of a financial burden. Since 1945 this has been the case in many more countries, with the exception of certain rural areas in Africa, Asia and South America. However, even in these places education is starting to take hold, although it is certainly not always compulsory.

In Asia, Latin America and Africa urbanization and education are also contributing in another way to a drop in the birth rate. The traditional rural values associated with children and fertility are becoming difficult to maintain in urban areas, where a bigger family is not only more expensive than in the country, but also less desirable because of the additional opportunities available in the city. Educated working women in cities in particular are having fewer children. This is not only the case in the Western world, but everywhere. Increasing literacy of girls and women and their inclusion in the work force mean that having children is less taken for granted. Women broaden their horizons through education and because of the years they spend at school they also marry later. Educated working women no longer derive their status only from motherhood and the number of children they have. Their work makes them more independent, both economically and socially, and they develop new relationships in addition to those of their family and relatives.

These four trends – the diminished importance of children in relation to care for the elderly, the increased costs of education for children, the improved education of girls and the greater economic opportunities for women – are the key underlying factors responsible for the decline of the birth rate. They provide the motivation for birth control for women and men.

The desire to have fewer children led to family planning. Initially this was achieved through sexual abstinence or coitus interruptus. In the nineteenth century there were few other ways to prevent conception. Contraceptives only became available on a larger scale in the second half of the twentieth century – first the diaphragm, the condom and sterilization, and after 1960 the contraceptive pill. In the early twenty-first century there is a strong link between birth control and the availability of contraceptives. In places where few contraceptives are available, the birth rate is clearly higher. Here, too, cities with a wider range of medical facilities contribute to the decrease of the birth rate.

Economic effects of the demographic transition

A steady decline in the birth rate has significant consequences. When the process begins, for a few decades major positive economic effects can be expected. This is due to the changing distribution of age groups in the population. Because of the decreasing number of births, the proportion of very young and dependent individuals in the population is reduced, while at the same time the proportion of adults – the economically active group – increases. Due to this reduction of the number of children in the population, there is a – temporary – chance to spend more money not only on consumer goods, but also on education, better health care and possibly pensions. Healthier and better educated people are more productive and often have higher incomes. In turn, they stimulate the demand for products and this contributes to economic growth. Once this process has got underway, it can reinforce itself. In Asia and South America over the past few decades this self-reinforcing process has contributed, as a 'demographic dividend', to economic prosperity.

It is hoped that over the coming decades a similar positive impact will be seen in Africa. However, the situation in Africa is more complex than in Asia and South America. Africa has a relatively young population which is rapidly becoming urbanized. Moreover, in recent decades a drop in the birth rate has been seen in most African countries. However, in contrast to this positive development there are the explosive consequences of the HIV/AIDS epidemic which has been raging in sub-Saharan Africa since the late 1970s and which mainly affects young adults. This cancels out the results achieved in combating infectious diseases such as tuberculosis.

Because of the demographic transition, social relationships between age groups in the population change. When the birth rate remains low for 50 years or more and people become older on average, we see not only a reduced number of children in the population – resulting in a demographic dividend – but eventually also an increase in the number of older people. The consequence of this is that a larger group of older people are no longer economically active, that is, they no longer contribute to production. The effects of this trend can be seen not only in most Western countries, but now also in countries such as China and India. In Western Europe in particular this shift in age distribution is causing an increase in the non-working, dependent population. While this leads to higher costs for personal care and health care, in Europe these elderly people do continue to be consumers at a normal level. The fact that until now they have had reasonable spending power is due to the pension schemes developed in these countries during the twentieth century.

The pensions are paid for by the government from taxes or via banks and insurance companies from the interest on savings and insurance premiums. In many Western countries a mixed system arose in the twentieth century which entailed the pensions being financed by collective and private schemes. However, because of the changing age distribution in the population it is becoming more difficult to pay for the pensions of the growing group of older people from the taxes paid by the shrinking group of working people. This is why in many countries the way in which pensions are financed is under discussion. It is expected that a change in financing alone will never be enough to cover the future costs of the ageing population. Raising workforce productivity and increasing the group of economically active people – by encouraging participation in the workforce by women and by older people themselves or through labour migration – will also have to contribute.

The distribution of age groups in China is a particular problem. Demographic trends in China in the twentieth century show erratic fluctuations. After 1945 a decline in mortality set in, soon followed by a drop in the birth rate. Between 1958 and 1962 this trend was severely disrupted by the Chinese Communist Party's 'Great Leap Forward' – an attempt to accelerate industrialization in the cities and enforce collectivization in rural areas. This programme and the great famine it led to cost many lives – the estimates range from 35 to 45 million – but this was offset in the 1960s by a huge baby boom. From the 1970s onwards the birth rate dropped again, a trend reinforced since 1979 by the one-child policy. Parents were discouraged from having more than one child by the imposition of a tax on having more children. A woman was allowed to give birth to two children only in exceptional circumstances. The one-child policy was very effective and at present the demographic dividend referred to earlier is contributing significantly to the high economic growth in China.

However, in the longer term this Chinese demographic trend also leads to problems. In the generations born after 1980 there is a considerable imbalance between boys and girls, because the one-child policy led to a surplus of boys (due to the rural custom of aborting unwanted girl babies). In the longer term this has serious consequences for the marriage prospects of Chinese men. A second problem has to do with the proportions of the age groups. Because of the smaller number of young people, care for the older generations is becoming problematic. Given the limited old age pension schemes, parents and grandparents are supported mainly by their children and grandchildren. In Chinese society this second problem is known as the 'four-two-one problem'. Four grandparents share one grandchild, who is responsible for caring for them. But it is precisely these younger generations who have left the countryside and moved to the cities on the east coast where employment opportunities are better, so that care for the elderly has become very difficult.

In countries like China an ageing population can become a huge problem. If the government wants to prevent this, it has a number of policy options. It can invest more in training and technology so that workforce productivity increases further, or it can take measures to increase the proportion of the population in employment. This can be done in two ways – by encouraging migration or by a pro-natalist policy. The latter is now evident in China's most rural, sparsely populated and ageing regions, where the one-child policy is being toned down by the government. Recently measures have also been taken in various other countries to make it easier for mothers to combine work with child care.

In the coming decades labour migration may also become an important factor in alleviating the consequences of ageing in countries with low birth rates. The lack of people in the productive life stage can be offset by immigrants, for example from Africa, Asia and South America. It is expected that by 2050, 30% of the Western European population will be 70 or older. In North America that percentage will be slightly lower, and in the rest of the continents the figure will be about 15%. In Africa and South America there will be a relatively high number of young people; it is expected that by 2050 40% of the population in those continents will be under 20. The economic importance of migration is evident.

Migration and transnational relations

In the twentieth century millions of people moved to the cities, across continents and oceans, more than ever before. The migration of Europeans to the United States, Canada and Australia, which involved at least 20 million, is well known. The migration of Chinese people in particular to southern and northern parts of Asia was of a similar magnitude. In addition, many Chinese people migrated to the west coast of the United States. The Indian migration to the western and eastern countries around the Indian Ocean was not much smaller than the Chinese migration. Soon after the Second World War another 10 million Europeans left – this time mainly for Canada, Australia and Latin America. People from rural areas in Europe looked for work in agriculture in these countries. Jews who had survived the Holocaust left Europe for Israel or the United States. These migrants assessed their chances – however varied they might be – of a good life to be greater in the destination country than in the country of departure. When the push and pull factors were weighed up, the decision was made to migrate.

In the nineteenth and the first half of the twentieth century a considerable proportion of migration was intertwined with the development of colonial empires. In addition to traders and colonial officers, farmers and labourers also moved to the colonies. However, after 1945 many colonies declared independence and the colonial empires crumbled rapidly. As a consequence of this, a substantial number of Europeans returned from Asia and Africa to their countries of origin or migrated again, to a new destination such as South Africa or Australia.

Decolonization also triggered another form of migration. Before 1945 a large number of the native elite in colonized countries were educated in the colonizing country, euphemistically referred to as the 'mother country'. Often it was this same elite who played a leading role in the new countries in Asia and Africa after decolonization. During the decolonization process large groups also settled in the country of the former colonizer. They were still seeking education and training there, in some cases a place in the labour market (pull factor) or a safe haven (push factor). The latter was sometimes a reaction to the fact that in some of these new states ethnic minorities suffered persecution or discrimination, for instance because they had collaborated with the former colonial powers. This is what happened to Chinese people in South-East Asia, Indians and Pakistanis on the African east coast and Moluccans in Indonesia. Elsewhere people clashed with each other after decolonization for religious reasons, such as Hindus and Muslims in India and Pakistan, or the random nature of the old colonial borders led to conflict.

In the 1960s the European economies were growing rapidly, which meant that taking in migrants was not a problem – on the contrary. Because there was a high demand for workers, most Western European countries actively recruited new workers – 'guest workers' – in southern Europe, Turkey and northern Africa. This was a specific type of transnational labour migration, often starting with six-month or one-year contracts which eventually became more permanent in nature. The migrants were prepared to do unattractive work for wages that were good in comparison with the wage levels in their countries of origin. A large proportion of their earnings were sent to those home countries and these remittances contributed to economic growth there. From 1980 to 2000 labour migration in Europe clearly became more permanent through family reunification: the guest workers, most of whom were men, had their wives and children join them or married a woman from their country of origin and then started a family in the European country.

In the early twenty-first century this migration became increasingly transnational. The remittances of money to the home countries continued and due to a multitude of new means of communication and the reduction in travel costs, permanent settlement became more diffuse than had previously been the case, in the twentieth century. Many migrants still felt the need to maintain their ties with their countries of birth. This was evident from the travel undertaken for holidays or visiting family, and the choice of marriage partners from the country of origin. Many older migrants also went back to their countries of birth to spend the last years of their lives there. This desire was evident both among Mediterranean migrants who came to Europe and among migrants who had left Europe soon after the Second World War. Migrants often maintain relationships between several areas and are usually transnational in their cultural attitudes.

Labour migration was by no means restricted to the industrialized countries of Europe and North America. In fact, it is something that all rapidly growing economies have faced and are facing today. For example, the Arab states which experienced a strong economic boom from the 1970s onwards welcomed men and women to their labour market for work in construction and for domestic help. These migrants came from other Asian countries where the average wage level was lower. In Gulf states such as Kuwait, and the United Arab Emirates (Qatar, Dubai and Bahrain) the number of international migrants is now higher than the original local population.

Wars between countries and domestic conflicts increase migration incidentally and temporarily. Refugees leave conflict zones, often developing specific forms of migration which are much smaller in volume than labour migration. After the Vietnam

War (1945-1975) and the establishment of a Communist regime in that country, an estimated one million Vietnamese people took to the sea in small fishing boats in search of a safe haven. According to the UN refugee organization, about a third of them perished at sea. The survivors were picked up by Western ships and from 1970 to 1980 were usually able to settle in the country in which the ship was registered. Other boat refugees came from Sri Lanka or Cuba, and after 2000 from North Africa. Thousands of people left conflict zones in cars or trucks or by plane in search of a safe and better place. Just like any other type of migration, this form also had its travel agents and specialized transport entrepreneurs. One special feature is that as a rule refugees have to travel part of the way in secret, which entails additional risks for those involved. Occasionally the United Nations (the UNHCR) has arranged large-scale relief operations for refugees in the region of the conflict zone. Examples of this are the extensive camps in Saudi Arabia with Iraqi refugees after the First Gulf War (1991-1994) and those in Chad (from 2004 onwards) in connection with the conflict in Sudan.

Shorter travel times and cheaper transport have made the world smaller for all travellers. Whereas before 1950 most long-distance travel was still by train or ship, at speeds of no more than 100 km per hour, after 1950 propeller planes flew twice as fast, and modern jet planes reach speeds of 800 to 1000 km per hour. Between 1970 and 2010 the number of air passengers grew by a factor of six. In the 1990s deregulation of the air transport industry gave budget airlines access to airports. The frequency of long-distance travel increased dramatically. The speed and intensity of telecommunications have also grown rapidly. The first transatlantic submarine telephone cables date from 1955. More connections with greater capacity soon followed. The first transatlantic fibre optic cable was laid in 1988, instantly increasing capacity tenfold. Since then the growth of telephone and data traffic has accelerated considerably due to digitization and the wider range of satellite connections available. Satellite TV channels and the computer and mobile telephone networks established in the 1990s made a major contribution to this. With these faster connections distances have not disappeared, but they have become much easier and cheaper to manage. As a result, transnational relations have become an important and universal phenomenon.

The earth's capacity to feed us all

The debate on the issue of whether the earth is overpopulated or when it will reach that point is one that flares up regularly. Population density, population pressure and overpopulation are different concepts, but they are closely related. It is not only the number of people that is important, but also their location and their lifestyle. The earth's capacity to feed people is the determining factor, but this varies from place to place and through time. Several different concepts are used in this discussion. They can help us to understand the evolution of the debate.

Population density is often expressed in numbers of people per square kilometre (km^2); this measure relates the number of inhabitants to the available physical surface of an area. In older literature high population density is used as a measure for overpopulation. The concept assumes that production, including food production, is mainly domestic and that there is a closed rural economy. Applied to recent data, this sometimes leads to surprising results. In 2009 the population density in Macau was 21,500 per km^2. In this special administrative region on the coast of China (close to and comparable with Hong Kong and at least as full of buildings), the population density was the highest in the world. At that point, the population density in Bangladesh, a much bigger country, was 1083 per km^2 and in the Netherlands 397 per km^2, approximately the same as in the East African country Rwanda. This comparison shows that Macau is the most densely populated region and perhaps suggests that it is overpopulated, more so than Bangladesh or Rwanda, but actually the concept says nothing about the economic potential of the region.

In Macau much more food and other products are available on average per inhabitant than in Bangladesh or Rwanda, and even more than in the Netherlands. In this article we will express this as the gross domestic product (GDP). This is the value of all goods and services produced by a country in a year, approximately the same as the national income. In Macau the GDP per inhabitant was USD 49,400. In Bangladesh this figure was USD 1500, in Rwanda a little less – USD 1022 – and in the Netherlands USD 40,850 (World Bank figures, 2010). From this perspective Macau is not overpopulated, because – in this case – the food needed can be imported. In other words, a comparison of population pressure using GDP per capita also takes the productivity of the economy into account. This provides a greater understanding of the availability of all the resources produced and available in the economy. This measure focuses mainly on the level of economic production in relation to the size of the population. Unfortunately it does not provide information about whether or not the inhabitants have equal access to prosperity.

The 'ecological footprint' expresses the relationship between consumption and the use of land more precisely. This measure is based on the idea that for the production of food and raw materials a population not only uses the surface of its own country, but also imports products from elsewhere in the world and that the earth's surface is also used to process the waste produced – such as greenhouse gases like CO_2. The ecological footprint shows the impact a society or a group of people with a certain lifestyle makes on the sustainable carrying capacity of the earth. This is expressed in 'global hectares' per person (gha per capita). The figure varies per period, per country and even per individual. At present mankind would live in an ecologically sustainable balance with the earth if 1.8 gha per capita were used. Some countries use far less than this, but others use far more. On average, the ecological footprint is approximately 2.7 gha per capita, which is more than the earth can handle in the long term. So in fact we have ecological overpopulation.

Table 1: Ecological footprint

A few regions with their average ecological footprints (gha per capita 2005 and 2008)

Regions and countries	2005	2008
North America	9.2	7.12
Europe (EU)	4.7	4.72
Europe (non-EU)	3.5	4.05
Latin America	2.4	2.70
Western Asia and Middle East	2.3	2.47
Far East and Oceania	1.6	1.63
China	2.1	2.13
Japan	4.9	4.17
Africa	1.4	1.45
World total	2.7	2.70
Sustainability norm	*1.8*	*1.80*

Source: *Living Planet Report,* 2008 and 2012

The ecological footprint as a measure was introduced into the debate in 1992 and since then cautious estimates have also been made about the past. It has become clear that since the 1970s mankind as a whole has been consuming more raw materials, reserves and energy annually than the earth can replenish in the same time. In other words, in recent decades people have been using up the reserves built up by the earth. In 2008 the average ecological footprint of the world population of almost 6.5 billion people was 2.7 gha per capita, whereas for 1960 this figure is estimated to have been 0.6. For sustainable production of what this number of people need, the earth would have to be one and a half its size. According to the measure of the ecological footprint, the earth has been overpopulated since 1970. If this trend continues unchanged, by 2050 the average footprint will be so big that more than two earths would be needed. If an intensive programme of change were implemented, a more ecologically sustainable situation could be attained by that year. This depends on demographic trends, individual consumption, waste production and the introduction of more sustainable technologies which increase the earth's productivity.

At present, many people do not notice the effects of global overpopulation. The negative consequences are not evident to everyone. What people do see are incidents and disasters which are often local or temporary phenomena and which seem to be caused by drought, floods or other natural disasters, but in which population growth is actually a major underlying factor. There are various theories about the role of population size, some of which were first formulated a long time ago.

A classic theory is that formulated by the British cleric and economist Thomas Robert Malthus in 1798. He viewed overpopulation as a recurring phenomenon throughout history. On the basis of estimates of population totals, he hypothesized that a population was always inclined to grow faster than the earth's capacity to feed it – the available resources. Population growth was always stopped by a ceiling of famine, war, disease and revolt. Malthus cited the late mediaeval plague epidemic – the Black Death – as a historic example. In the fourteenth century it reduced the European population, which had grown rapidly, by on average a third. The plague was preceded by a period of high food prices and regional famine, which meant that people had little resistance to disease. By drawing attention to those high prices, Malthus was linking the problem of overpopulation to poverty. He advocated that people unable to sustain a family should refrain from marriage and reproduction.

Trends in the twentieth century seemed to prove that Malthus was wrong. Never before had so many people lived on earth, and never before had so much food been produced. The productivity of agriculture and industry allows people on the planet to enjoy greater prosperity on average than ever before. But has the ceiling disappeared for good, or has it simply been raised to a different level? There have been warnings from many quarters about the imminent depletion of the earth's resources, the unprecedented size of humanity's ecological footprint and the negative effects of such high production and consumption levels on the environment. Every day hectares of irreplaceable primeval forest are cut down for food production, with our current energy consumption the reserves of fossil fuel will be depleted in a few decades, waste gases threaten our natural environment, and apart from all this there are still areas on earth where people are constantly faced with hunger.

In the 1950s and 1960s optimism prevailed regarding the earth's capacity. Technology seemed to have a solution to every problem. Around 1970 more criticism began to be heard. In 1972 the book *The Limits to Growth: A Report for the Club of Rome* by Dennis Meadows and colleagues appeared. They stated that population increase and economic growth could not continue at the same rate for more than a few decades. Then the fossil fuel reserves and the supplies of key raw materials would be depleted. This prediction was made on the basis of the knowledge about those reserves and about population growth available at the time. Moreover, they assumed a low impact of technology and high efficiency in the use of raw materials and energy. The message sounded alarming and was highlighted by the oil crises soon after, in 1973 and 1979. The quadrupling of oil prices in the 1970s made it clear to everyone how dependent the modern economy was on energy. However, it also soon became clear how resilient the economy was, when it revived. It turned out the predictions in the report were too gloomy. The reserves of raw materials were much larger than was assumed in the book; the growth of the economy and the population turned out to be smaller.

Twenty years later warnings were heard again about industrialization and global warming. Since the first systematic measurements around 1840, average temperatures on earth have been rising. To explain this, scientists have increasingly focused on the greater concentration of greenhouse gases in the atmosphere. Commissioned by the United Nations, a group of scientists gathered data about these gases, such as CO_2, methane and CFCs, and their effect on the atmosphere. Soon this group, the Intergovernmental Panel on Climate Change (IPCC) explicitly linked the increased use of fossil fuels, the emission of greenhouse gases (particularly CO_2) and deforestation with temperature rise in our modern industrial society. Although there are still doubts on certain points, since 1990 the IPCC has been recommending, with increasing emphasis, that CO_2 emissions should be reduced. All versions of the models predict that continued emissions of CO_2 will result in severe global warming, melting of the polar icecaps and rising sea levels. The increase in CO_2 emissions increases the ecological footprint significantly and threatens the earth's biocapacity.

In 1997 the IPCC's recommendations led to the Kyoto protocol, an agreement between countries which aimed to reduce, by 2012, the emission of greenhouse gases by 5.2% compared to the level in 1990. The targets vary per country, depending on economic strength, actual emissions and political willingness. Countries can attain their targets in different ways – by reducing emissions, by planting forests, or by buying emission rights from countries which have met their commitments. The Kyoto protocol was ratified by more than 170 countries, including Japan, the European Union, China and Russia, but not by the United States. During various subsequent conferences attempts were made to reach agreements for further reductions, up to the Rio+20 in 2012, but they had little success.

At present the IPCC conclusions represent scientific consensus. However, there is some political, economic and scientific scepticism regarding these findings and recommendations. These doubts are expressed in the general discussion of the data and models, and are fuelled by uncertainties about the development of the climate in the long term and debate about certain details. A few scientists, such as the Dane Björn Lomborg, argue that the warming is the consequence of fluctuations over millennia and that little can be done about it. He questions the impact of CO_2 emissions in this process. In his opinion, money spent on reducing carbon emissions would be better spent on resources to prepare humanity for a changing climate.

Economic patterns and trends

Increased productivity

The fact that the earth's capacity to feed us has become so great that over 7 billion people can live here is a result of the ongoing clearing of the last remnants of wilderness combined with a substantial increase in the productivity of the land used. The yields per hectare are much higher than in the past. Productivity across the whole spectrum has increased, due to more intensive and more efficient use of the production factors labour, land and capital. This, in turn, is the result of technologization and innovation. Almost constant intensive economic growth – better known as 'modern economic growth' – is the result.

Since the Second World War there has been significant technological development in all sectors of the economy, but with a great deal of regional variation and with a few innovations which had a major impact in a short time. A scarcity of certain raw materials and foods combined with a continuous high demand for arms stimulated innovation during the war, while after the war the knowledge gained was soon freely distributed in many parts of the world. For instance, the Marshall plan led to widespread dissemination of technological knowledge developed in the United States in Western Europe, but not in communist Eastern Europe. Transfer of the same kind of knowledge did take place in Japan and South Korea and in a few other areas in the Far East after 1945. It was not until the fall of the Berlin Wall in 1989 that the latest technologies penetrated into the Eastern European countries. Often knowledge transfer of this kind leads to a phase of rapid economic growth referred to as 'catching up'. The knowledge transfer led to good results mainly in areas where workers were educated well enough to be able to adopt the new technologies.

The term 'technological knowledge' should be construed broadly in this context and not restricted only to industry. Various innovations in agriculture increased yields per hectare spectacularly and reduced the contribution of labour in this economic sector. A common feature of these agricultural innovations was and is the ongoing application of scientific knowledge and the resulting use of chemicals. Some examples are the use of pesticides, the cultivation of new varieties of crops and of course the tractor.

The use of insecticides reduced insect damage to plants. After 1945 the insecticide DDT became very popular. DDT killed a broad spectrum of insects such as Colorado beetles, caterpillars, aphids and mosquitoes. This broad impact led to use of DDT on a large scale in agriculture, and also helped to combat insects which spread diseases among people, such as malaria and dengue fever. The American troops used DDT to tackle malaria mosquitoes during their advances in Italy and the Far East in 1944 and 1945. Even well into the 1960s DDT was considered to be 'of inestimable value' – until it was discovered that it was accumulating in the food chain and leading to the death of some species of birds and marine animals. Between 1970 and 2010 countries worldwide (with the exception of India) prohibited the use of DDT in agriculture. It continued to be used against malaria mosquitoes. Since 1980-1990 other, less destructive insecticides have come onto the market, some of which have natural origins and are more biodegradable.

New varieties of plants were developed by crossing different species. Scientific research in this area yielded important results in the twentieth century. In the 1940s and 50s American grain became stronger and more productive through combining it with grain species from Turkey and Japan. Crossing varieties of grain, maize, potatoes, sugar cane and other plants produced varieties which had properties better suited to certain environments and therefore had higher yields. This targeted plant breeding produced varieties that were drought resistant or that grew better in humid conditions or were particularly suitable for specific uses, such as potatoes for chips or for starch production. Around 1980, after the first unravelling of DNA, a new phase in plant breeding began. It was now possible to give plants – and later also animals – certain properties in a laboratory environment, through genetic engineering. This form of plant breeding is controversial, but has led to spectacular results with crops including maize and soy beans. For instance, genetically modified maize – known as Bt maize – is not attacked by corn borers, while some varieties of genetically modified soy beans are not affected by herbicides. Over the past few decades genetically modified plants have been cultivated on a large scale outside the European Union. This makes a significant contribution to world food production, but in some parts of the world has also increased the demand for 'organic food'.

The tractor came to be used almost all over the world. The replacement of animal or man power in farming is of huge significance. Before 1920 most mechanization of agriculture was combined with the use of horses and mules. The new ploughs, mowers and harvesters introduced in the nineteenth century were drawn by these animals. This mechanization increased the speed of these operations and saved on labour. Since 1920, but particularly since 1950, animal traction has been replaced by tractors. Nearly all car factories produced tractors, but due – again – to the Marshall plan, the importation of American tractors increased rapidly after the Second World War. In comparison with horses, tractors are stronger, faster, more reliable, more flexible and cheaper to maintain. However, an important criterion is the scale of the operations: tractors are only cost effective in larger enterprises and when used frequently. This limits their use to those parts of the world where labour is relatively expensive and agriculture large-scale. At the same time, this explains why the tractor symbolizes the major changes in agriculture in America, Europe and in the steppes of Central Asia during the twentieth century.

Many examples of increased productivity can be found in industry. By definition industrialization involves the application of technology. Labour is replaced by machinery, so that more standard products can be manufactured faster. Usually the increase in productivity goes hand in hand with a greater consumption of energy (coal, oil and gas) to power the machinery. The energy intensity of industry has thus risen significantly worldwide. In the twentieth century another important factor was the distribution of cheap fossil fuels. Several shifts took place in this process. In the 1950s coal gave way nearly everywhere to petroleum, while in the late 1960s and early 1970s natural gas became increasingly popular as a source of energy, in addition to petroleum. The sharp increase in petroleum prices in the 1970s due to political shocks (the oil crises of 1973 and 1979) was a major impetus and highlighted the degree of dependence on this crucial raw material. Over the subsequent two decades attempts were made to spread the risks and to reduce dependence on oil or gas alone. Nuclear energy and solar and wind energy were regarded as additional sources of energy.

Concrete examples of the ongoing use of technology are the mechanization of the textile industry and the car industry. Even more fundamental was the introduction of welding in the metal industry, which led to a rapid increase in output per labourer and at the same time improved the quality of the products. Welding sheets of iron or steel together – which involves melting the metal – is faster and produces a better bond than the classic method of joining metal sheets by riveting, which was customary until 1942-1943. In the 1970s, classic mechanization was joined by automation. People started to have more and more components of the production process carried out by machines that were linked to each other, and increasingly the operation of those machines became 'process control'. From the 1980s onwards this was often done from behind computer screens, while computers ran the machines. Between 1990 and 2000 the increasing complexity of the processing industry, the growing trade flows, the intensification of transport and traffic, and the increased desire for information on the part of governments and citizens was manifested in a mushrooming network of computer connections which enhanced the control of administrative processes and led to numerous new economic services in the most urbanized parts of the world. At the same time, in the last thirty years of the twentieth century these innovations led to ongoing distribution of labour around the world.

Technology and efficiency lead to a rise in productivity. Part of this efficiency is derived from regional specialization. With optimal specialization, regions and countries produce mainly products and services they are good at. This leads to more and more trade and transport, globalization and interconnectedness. But while after 1945 globalization became a trend which no part of the world can escape, it has not led to fundamentally new relationships or to regional equality. This can be easily be made clear on the basis of worldwide trade figures. On its 60th anniversary in 2008, the World Trade Organization (WTO, formerly GATT) reported that since the end of the Second World War the volume of international trade increased 27-fold. This is almost three times as much as the total increase in global production. Trade makes a major contribution to the growth of prosperity. However, due to the increasing differences in value between raw materials and semi-finished products on the one hand and high-quality end products and services on the other, international trade perpetuates the existing unequal distribution in the world.

The share in world trade of areas such as Africa and Latin America is very limited, particularly in relation to their percentage of world population. As a major producer of the main fossil fuel, oil, the Middle East is not doing much better. Africa and to a slightly lesser extent Latin America supply mainly agricultural products and raw materials, and few industrial products or international services. Newcomers on this list are the successor states of the Soviet Union, which are condemned to a similar position until they strengthen their industrial production. Consequently, these areas profit less from the increasing volume of world trade. Only exports from Asia, with the three giant producers China, India and Japan, have increased in recent years. However, in spite of these shifts this inequality has actually existed since the seventeenth and eighteenth centuries.

Table 2. World trade and regional distribution (% of total value of goods), 2010

Regions:	Share of world trade				
to: from:		Asia	Europe	North America	rest of the world
Africa	3.5	0.8	1.2	0.6	1.5
Asia	32	16.6	5.5	5.5	4.4
CIS / Russia	4	0.6	2.1	0.2	1.1
Europe	38	3.5	26.9	2.8	4.8
Latin America	4	0.9	0.7	0.9	1.5
Middle East	6	3.2	0.7	0.5	1.6
North America	13	2.8	2.2	6.4	1.5
Total	100				

Note: The 'rest of the world' includes goods and services supplied to Africa, CIS/Russia, Latin America and the Middle East.

Source: World Trade Organization, *International Trade Statistics 2011*, Geneva, WTO (Table 1.4)

By far the biggest share in international trade, not only in volume, but above all in value, is concentrated in the more industrial countries in Europe (particularly Western Europe), North America and the Far East (see Table 2). Together they account for over 80% of global imports and exports. In other words, the majority of the world's population lives in regions which together account for less than one fifth of world trade, which means that the fruits of international trade have been and still are unequally distributed.

If we examine the actual trade flows, this inequality becomes even clearer. Western Europe and North America are still the biggest suppliers of goods and services, but to a large extent those goods and services are traded within these regions themselves. Europe tops the list in this respect, since over two thirds of its international trade takes place within its own region, but half of North America's trade is also conducted within its own region. This same proportion also applies to Asia, although the producers China, Japan and India trade to a greater extent with other regions. This is very different for Africa, Latin America and the Middle East, where 10% to 25% of the limited volume of trade takes place in the regions themselves.

This shows that even after the Second World War the old pattern remained more or less unchanged: the regions that are not or less industrially developed supply mainly agricultural products, raw materials, cheap semi-finished products and simple industrial products with low added value to the technologically more developed regions, where raw materials and semi-finished products are processed into high-quality industrial goods with high added value – and therefore high returns – of which then only a limited number find their way back to the less developed regions. As a result, the prosperity created from the original goods supplied circulates mainly in Western Europe, North America and also to an increasing extent in the Far East. Without cheap raw materials this would be impossible or much less possible. This is why an emerging producer like China is searching hard for raw material suppliers in the less developed regions and trying to bind them to itself.

The availability of a particular technology is important because it determines an economy's labour productivity and thereby also the proportion of GDP produced per hour worked per labourer. The higher the labour productivity (expressed in GDP per hour worked), the higher the national income and therefore also the higher the wealth per capita can be. Higher labour productivity can therefore result in lower labour input with the same income being earned; vice versa, a lower level of technology can also be partially compensated by a high labour input. An example of this is the Eastern European countries in their communist period.

Table 3. Labour productivity in GDP per hour in USD, 1990

	1950	1970	1990	2010
Countries:				
(West) Germany	4.36	13.87 (218%)	26.40 (90%)	30.23 (15%)
France	5.45	14.25 (161%)	27.17 (91%)	36.38 (34%)
Italy	3.98	12.64 (218%)	21.93 (73%)	25.34 (16%)
Hungary	3.18	5.28 (66%)	6.51 (23%)	10.70 (64%)
Japan	2.05	8.61 (320%)	17.81 (107%)	25.77 (45%)
Argentina	5.99	9.46 (58%)	9.36 (- 1%)	15.14 (65%)

Colombia	2.95	5.08 (72%)	7.29 (44%)	9.01 (24%)
United States	12,55	20.78 (66%)	27.79 (34%)	39.72 (42%)

Note: The increase in percentages in relation to the previous reference year is added in brackets.
Source: The Conference Board, *Total Economy Database*™, January 2012, http://www.conference-board.org/data/economydatabase/"

The importance of labour productivity is highlighted by Table 3, which shows the level and growth of labour productivity from 1950 onwards for individual countries. If there is one thing it makes clear, it is that catching up on a technology deficit is initially quite easy, but gradually becomes harder and harder. The reason for this is that the higher the level of technology becomes, the more will have to be invested to raise it even higher. These costs must be covered by the returns of existing production, and this requires savings, in other words reserves for R&D at the expense of immediate consumption of the revenue generated. However, this is not the only or even the key criterion. As experience with development aid has made clear, efficient use of a higher level of technology requires a social environment which is prepared for that technology and knows how to deal with it. Important elements of this are a certain level of education and the availability of technicians. The regions and countries where prosperity is lagging behind or even declining turn out to be precisely those regions and countries where these social conditions are largely absent. The growth of prosperity is not just a question of advances in production sectors, but also of social adaptation to the requirements of an industrial – or post-industrial – society, in other words an adaptation of living conditions.

A study by the American Pew Research Center shows that worldwide belief in the advantages of ongoing liberalization of world trade for prosperity in individual countries is greater than ever before. This is why even in times of disappointing economic development, such as the present crisis, the world clings to the idea that international trade should be as free as possible. This is a departure from past ideas about free trade. However, at the same time this study also shows that fear of the consequences of liberalization for local economies is also substantial and has perhaps even increased over the past decades. This fear is not limited to those countries which already have a weak international economic position: it is precisely in the more developed countries that fear of those consequences has increased. This is related to the rapid rise of potentially major industrial producers such as China and India and the realization that due to them international trade will undergo structural changes, which might lead to the traditionally wealthy countries losing their position of greater prosperity. This brings us to the topic of the development and distribution of wealth.

Standard of living

It seems a foregone conclusion that the size of a country's ecological footprint corresponds to that country's prosperity. Broadly speaking this is true, but the correlation is not perfect. There is another factor that affects the relationship, namely the way in which the production of goods and services leads to the ecological footprint. This is what we refer to as the technological level of production. It cannot be assumed that a higher level of technology automatically leads to more efficient use of the amounts of raw materials and energy consumed – the amounts expressed in the ecological footprint. What is discarded as waste in more technologically developed Western countries – but is actually part of the total production – can be reused in less technologically developed countries in a region like Africa. Part of the waste in Western countries cannot be used in an economically viable way in those countries themselves, whereas in Africa it can, because of the lower wages and less stringent legislation. We might therefore conclude that in these less developed countries the returns of the ecological footprint are used more efficiently than in technologically more highly developed countries.

Nevertheless, technology certainly is conducive to prosperity. The use of better techniques and tools leads to higher labour productivity, that is, higher production of goods – and services – per hour worked, and this is one of the factors that determines a country's prosperity. However, it obviously also matters how many hours people work. It turns out that in many technologically more highly developed countries, the number of hours worked is lower – often much lower – than in less developed countries. At present the number of hours worked in the Netherlands and Germany is on average between 1350 and 1450 hours per annum, in Brazil about 1850 and in Hong Kong and Singapore about 2300. These are big differences which can offset differences in labour productivity. It also matters what percentage of the population works, and this also varies from country to country. In the Netherlands, Germany, Brazil, Hong Kong and Japan approximately 50% of the population works, and in Singapore 60%. In countries such as the Congo and Ghana 35% to 45% work, though in these countries some people work in the informal sector and therefore do not show up in the figures.

The working part of the population earns the income on which the whole population must live. Exactly how much national income this generates therefore depends on a country's labour productivity, the percentage of the population that works and the number of hours worked. To make it possible to compare countries, prosperity is therefore often expressed in income per capita of the population. Of course there are also other ways, such as the Human Development Index (HDI), which also takes life expectancy, health care and education into account, but these methods are not yet suitable for international comparisons over a longer period. We will therefore use income per capita here to discuss global trends in prosperity since 1945.

This will give us an approximate idea of what the growth of the ecological footprint (the costs) has generated in prosperity (the benefits).

Undeniably, income per capita worldwide has grown, but this has not led to a more even distribution of global prosperity. On the contrary, at the beginning of the twenty-first century the differences between rich and poor countries were greater than halfway through the previous century (see Table 4). Note that we are referring to purchasing power, since the figures have been adjusted as much as possible for inflation. This purchasing power is measured across the whole population, that is, for both the generally wealthier urban population and the usually poorer rural population. It is also important that income inequality is sometimes very high in poorer countries in particular, so that large parts of the population, including those in the cities, have a much lower income than the national income per capita might suggest. As is also discussed elsewhere, in many big cities in poorer countries there is a sizeable informal economy where income is earned which is not included in the figures used here. A second consideration is that of course parts of the rural population have land at their disposal on which they can also grow food for their own consumption. If the yields of this land were taken into account, those households would also have a higher income than suggested by official statistics. However, the fact that in Africa and Asia famines regularly occur precisely in areas of this kind shows that we should not be overly optimistic about the beneficial effect of growing food for personal consumption on income as a whole. Evidently the margins are very small and the positive impact therefore limited.

Table 4. National income per capita, 1950 – 2010 (in USD at 1990)

	GDP	GDP	% growth	GDP	% growth	GDP	% growth
Regions	1950	1970		1990		2010	
Africa	703	1,084	+ 50	1,072	+ 0	1,310	+ 20
Asia	577	1,318	+ 130	2,324	+ 80	6,020	+ 160
Europe							
Western Europe	4,737	10,574	+ 120	16,562	+ 60	20,855	+ 30
Rest of Europe	2,603	5,197	+ 100	7,165	+ 40	8,286	+ 20
Latin America	2,415	3,735	+ 50	5,050	+ 40	7,167	+ 40
Middle East	1,735	5,106	+ 190	5,528	+10	5,550	+ 0
United States	9,561	10,767	+ 10	23,201	+ 120	30,654	+ 30

Note: Selected countries in Africa: Algeria, the Congo, Ethiopia, Mozambique; in Asia: Bangladesh, China, India, Japan; in Western Europe: Germany, France, Italy, United Kingdom; in Rest of Europe: Hungary, Romania, Russia; in Latin America: Argentina, Bolivia, Brazil, Colombia; in the Middle East: Iraq, Saudi Arabia. GDP indicates income per capita of the population.
Source: The Conference Board, *Total Economy Database*™, January 2012, http://www.conference-board.org/data/economydatabase/

From 1945 to 1970

It turns out that the observed growth of income over the past 50 years has not been consistent. Everywhere except in the United States the rise in prosperity was the highest in the two decades after the Second World War. This is hardly surprising, since in those decades in Europe and parts of Asia (including Japan) populations were engaged in both large-scale reconstruction and an economic catch-up. Reconstruction meant that the industrial production capacity of Western European countries such as Germany, France and Italy expanded very rapidly, so these countries could not only provide their own populations with goods again, but also partially reconquer lost markets outside Europe. The Marshall Plan assistance furnished by the United States played an important role, because this financial aid facilitated the reconstruction and made the importation of new American technology possible. Without this assistance post-war restoration would certainly have taken longer.

The United States also made funds and assistance available to Japan. In key industrial sectors this helped to close the gap in productivity between Japan and the United States and Europe, so that quite soon Japan was – again – able to become a formidable competitor on the Asian markets and the goods supplied were supplemented by products not previously manufactured by Japan, such as advanced electronics and cars. Partly thanks to this, as early as around 1970 Japan attained a level of prosperity comparable with that of Italy and not much lower than that of Germany – an impressive five-fold increase over twenty years.

In the rest of Asia growth of the average income was much more limited; countries such as India and Bangladesh experienced a growth of between 15% and 25% during those two decades. This was not bad considering that in those countries the population growth in those years was higher than average, but it was not enough to put these countries on the map. China, one of the poorest countries in this region in 1950, if not the poorest, was still poor around 1970 in spite of a growth of income per capita by almost 70%. In other countries in the region the growth of prosperity also varied, but on balance prosperity in Asia more than doubled.

Where Western Europe and Asia more than doubled their prosperity, Eastern European countries only just doubled theirs. Here too the damage done in the war was repaired, but unlike in Western Europe and parts of Asia it was much less the case that the technological level increased at the same time. However, regional collaboration with the Soviet Union in the Comecon did mean more opportunities for specialization and economies of scale than the separate countries could have achieved on their own. Although initially the differences in the technological levels between these three areas were limited, in Eastern Europe clearly a larger share of the growth in prosperity had to come from the deployment of more labour, particularly that of women.

In Latin America, Argentina in particular had benefited from the elimination of competition from countries at war as suppliers of agricultural products. As a result, around 1950 prosperity in this country was at a level exceeded only by that in the United States and the United Kingdom, also countries where the war had caused no or relatively little damage to production capacity. It was precisely in countries like this that the impact of recovery in Europe and Asia was felt, because these regions were again becoming international suppliers of agricultural and industrial products. Argentina was now faced with the disadvantages of an export sector based almost exclusively on agricultural products. With the recovery of the agricultural sector in Europe, prices for agricultural products fell relatively rapidly in comparison with those for industrial products. Since in the other countries in Latin America – with much lower prosperity than Argentina – exports also consisted mainly of farming products and raw materials, purchasing power grew by a comparatively meagre 50%.

In Africa prosperity grew by a similar percentage, but this continent started at a much lower level than Latin America did. Here too prices on the international market for agricultural products and raw materials played a limiting role. Moreover, the development of prosperity was severely impeded by the decolonization process. The many armed conflicts within and between the countries that accompanied this process were a major obstacle to economic development, while the outcomes of decolonization did not bring much improvement. Inadequate administrative systems, corruption, nepotism and clientelism are simply not conducive to attaining greater prosperity – at least, not for the masses. Another handicap was and still is the low level of education, something that most poor countries in Africa and Asia had in common. Nevertheless, Africa did benefit to some extent from the growing demand for raw materials and specific agricultural products.

As regards the global growth in prosperity during that period, the United States was the ugly duckling, with barely 10% growth in prosperity – an unprecedentedly low rate for this country. Of course the restructuring in the international markets played a role, because the relatively expensive American products were forced out of the market by cheaper European and Asian products. But this is not the only explanation. The American war effort was also supported by a huge input of labour which after the war returned to the pre-war level. The national income now had to be earned by fewer people. If labour productivity had remained the same, this would have led to a decline in income per capita. However, the United States managed to raise labour productivity significantly, though they did see their lead in this area diminish. Around 1970 prosperity in the United States was thus at a level similar to that in the wealthiest Western European countries.

The trends in the Middle East show a sharp contrast with the technology-driven trends in the United States. In the Middle East the growth in prosperity was higher than anywhere else during this period (+ 190%), but this had nothing to do with growing labour input, a higher level of technology or increased human capital: it was solely due to the rapidly growing demand for oil, the key source of energy for industrial production in the Western world and Japan. Only the oil-producing countries in the region benefited from this; very little changed in the level of prosperity of the non-oil producing countries. The unrest and threat of war associated with Israel and the Palestine problem certainly contributed to this.

From 1970 to 1990

Whereas from the end of the Second World War to the early 1970s economic growth substantially improved prosperity nearly everywhere, though not for everyone, the following period, until around 1990 was disappointing in a certain sense. It was not the case that prosperity no longer increased or even diminished, but the rate of growth dropped noticeably, except in the United States. In addition to the circumstances referred to above which had initially limited the growth in prosperity there, until the early 1970s another factor played a role. After the war the United States manifested itself as a world leader, also in the international economic arena. The economically strongest currency, the US dollar operated after the war as an international currency, which meant that the United States itself had only limited opportunities to stimulate its own economic growth through changes in the value of the dollar. The value of the dollar was more closely linked to economic developments outside the United States and the shifts there also curbed the growth of prosperity. In this respect the dismantling of what was known as the Bretton Woods system (1971) meant a boost for the American economy. From 1944 onwards the Bretton Woods system had provided a stable basis for the international currency trade, which had also benefited the United States; however, in the late 1960s this advantage for the United States had changed into a disadvantage, obstructing the country's export sector. This is why the post-war growth of prosperity in the United States took place mainly in the 1970s and to a slightly larger extent in the 1980s.

But there is more. The collapse of the global Bretton Woods system led to a devaluation of the dollar. As a result revenue for the oil-producing countries, already limited due to the low oil price, dropped even further. In 1973 this prompted the OPEC – the organization of oil-producing countries – to announce a sudden sharp rise in the oil price. Oil had by then become the main source of energy for industrial production and this sudden increase in production costs impeded growth of prosperity, particularly in Western Europe. Other industrial producers were also affected, but in most cases to a lesser extent, either because they had oil reserves of their own (the United States) or because the price increases could be partially offset by economies of scale and technological improvements (Asia, and specifically Japan). It was no coincidence that growth in prosperity was the highest in these regions. Above all, the emerging economies in Asia, particularly Japan, were able to take advantage of the situation, because they could supply reasonably high-quality goods for relatively low prices. Japan not only strengthened its position in the Asian and African markets, but also gained a better position in the lucrative markets of the oil-producing countries. However, the appearance of Japanese goods on the European and American markets is particularly significant. In the 1970s Japanese cars, electronics, cameras and so forth arrived on the European market, never to leave again. Soon Japan, along with emerging countries such as South Korea and Taiwan, had become a major player on most global markets, which in terms of prosperity certainly benefited the inhabitants of the Far East, partly at the expense of growth in Western Europe.

In the meantime the first price increase by the oil-producing countries was followed by another sharp rise in the price of crude oil in 1979. Of course this second oil crisis reinforced the trends outlined above, but also skewed the distribution of income per capita between oil-producing and non-oil producing countries in the Middle East even further. This partially explains why the average purchasing power of the population in this region as a whole increased by only 10%. However, the main reason for the lagging growth in prosperity was the fact that in countries such as Saudi Arabia the population more than doubled. While the national income rose due to higher oil prices, with a growth in population like this the net increase in wealth was obviously very limited.

In many African and Latin American countries the population also grew rapidly in the 1970s and 1980s, although not as rapidly as in the Middle East. The impact on the growth of prosperity in these regions was also similar. African countries such as Congo and Mozambique were even worse off because there the average income per capacity decreased, in Congo by 30% and in Mozambique by as much as almost 40%. At that time a drop in the level of prosperity could also be observed in other African countries, where it had already been the lowest in the world. However, this was not only due to a disproportionate growth of the population, but also to a drop in the price of raw materials on the world market, which severely undermined national incomes. This stranglehold of frustrated growth of national income on the one hand and rapid population growth on the other means that the period between 1970 and 1990 will go down in history as the only post-war period to that point in which prosperity did not increase in all regions. The poorest region, Africa, suffered most from the trends in the international economy, but this was also due to its own high rate of population growth.

Latin America escaped this fate for a few reasons. Firstly, population growth, although high, was not as high as in Africa, and secondly, the drop in market prices for raw materials did not hit the Latin American countries as hard. By then some countries, such as Brazil, already had their own industrial production, which was limited but had a positive impact on national prosperity. Unlike in Africa, in this region prosperity increased on average by around 40%. However, this did not prevent the region from dropping even further behind most Western countries in terms of prosperity.

Around 1990 the Eastern European countries had a similar level of prosperity, but the reasons for this were completely different. They did not have high rates of population growth. In fact, in some countries, such as Hungary, population growth stagnated in the 1970s and 1980s. At the end of the period, especially, Eastern Europe was faced with the consequences of its lagging technological development. Income per capita was still rising, but once again this was mainly due to more labour input. This was in sharp contrast to Western Europe (and also the United States) where the number of hours worked was actually dropping.

From 1990 to 2010

Around the turn of the century it became increasingly apparent that global economic relations were shifting. Nearly everywhere economic growth and therefore also the increase in prosperity declined. The rise of countries such as India and China became very clear: it was there that the greatest economic growth and growth in prosperity took place – so great in fact that such rapid growth had never occurred there since the Second World War. In China this meant a real leap forward: because the population growth was zero, the entire economic growth went towards improvement in prosperity. In spite of the big differences between Chinese regions, national prosperity increased five-fold. Comparable economic growth in India did not lead to the same increase in prosperity there, because the rate of population growth was still quite high. Together the two countries now have 2.5 billion inhabitants -- almost a third of the world population – who are also sharing in the increasing prosperity. By now Japan and the urban economies of Hong Kong and Singapore have a level of prosperity that is on a par with that of Western Europe or even the United States. On the other hand, the level of prosperity in China and India is of course still limited, so that even with the recent rate of growth it will still take a few decades before the Far East overtakes the Western world as the most prosperous region. China, India and the smaller economies still have a long way to go.

If any countries can be seen as losers, they are mainly to be found in Europe and North America, where practically without exception growth in prosperity was lower than it had ever been since the war. While the United States still remains the most prosperous region in the world, it is a fact that its share in the global production of goods – the main source of growth in prosperity – is continuously decreasing. It is precisely this trend that offers emerging industrial powers new and better opportunities to sell their products on one of the biggest markets in the world. However, it is better not to speak of losers, since the populations of the Western countries have also benefited from the falling prices for many goods and from the growing market in the Far East for luxury products. For example, the German car industry is enjoying an explosion in the demand for their luxury models; the consequence is that China is now the main marketplace for the most expensive

German cars. It is no wonder that this industry is now working hard on new models, specifically intended for that market, which will not be for sale on the domestic market. In addition, the gradual shift of the largest part of production to the Far East also gives the Western world room to focus on developing new technology, although it is interesting that this process also seems to be underway in India and China themselves. Probably labour input will eventually decrease there too, as prosperity grows, something that also took place in the Western world. Higher labour productivity and the higher wages that go with it make it possible for people to earn an ample family income while working fewer hours.

The fall of the Wall in 1989 led to optimism about prospects for prosperity in the former Soviet areas. It was hoped that the introduction of a capitalist economy would result in rapid growth of prosperity, but in reality things were not so simple. The transition proved to take much longer than expected, and the returns were also disappointing. In the intervening period prosperity decreased rather than increased. The transition to a liberal economy was accompanied by a drop in the total labour input, which had previously been responsible for part of the increase in prosperity. In spite of this, prosperity increased in many former Eastern Bloc countries, indicating that in these countries a technological catch-up was also underway. Countries such as the Czech Republic and Hungary are helped in this by their pre-communist experience: the technological knowledge that is crucial to the catch-up was available in these countries to a greater extent than in, for example, Romania.

In the meantime changes have also taken place in several Latin American economies. Argentina invariably remained one of the most prosperous countries, but Brazil and Colombia now also began to manifest themselves as new industrial nations. In Brazil in particular the structural changes over the past decade have borne fruit. It is for good reasons that Brazil is included with Russia, India, China and South Africa in the BRICS countries, though it is not entirely clear – and the same applies to South Africa and Russia – whether this is a temporary upturn or the beginning of a systematic trend. In spite of these doubts, it is striking that the growth of income per capita between 1990 and 2010 was stronger in Latin America than in the United States and Europe, even though the rate of population growth remained the same.

In Africa population growth also remained high, so that in the poorest countries in particular prosperity declined even further. Congo, with an income per capita of less than USD 300 per annum, is right at the back of the queue. In the period between 1970 and 2010 prosperity dropped to around 30% of the original level, which was already very low. Congo has large reserves of raw materials, but instead of leading to a general increase in prosperity, they have led to continuous armed conflict. The same phenomenon can be seen to a much lesser extent in other poor African countries with reserves of raw materials. The fact that in spite of conflicts of this kind and a relatively high rate of population growth Africa as a whole still had a modest growth in prosperity from 1990 to 2010 is mainly due to North African countries and some East African countries such as Mozambique and Tanzania. Some Sahel countries also enjoyed a modest improvement in prosperity, but countries such as Congo, Niger and Ivory Coast in western Africa are still a major concern, and not only in relation to prosperity.

Again, the Middle East had on average practically no growth in prosperity, even though the oil dollars continued to flow into the region in generous measure. These oil dollars are scarcely used at all to develop industrial production or services. This lack of productive investment, coupled with a persistently high rate of population growth, explains why the substantial rise in oil prices is not converted into improved prosperity in this region, or only to a very low degree. The constant unrest in the area is of course also to blame. Some exceptions are small oil states such as Qatar and Kuwait, where attempts are being made to turn financial services into a new economic pillar.

Considering the above, we may conclude that the countries in North America and Western Europe still have the highest level of prosperity and that their advantage over the poorest countries in Africa in particular has increased. Between these two extremes it is above all Asian countries in the Far East – Japan in the lead, and in its wake Taiwan and South Korea, from the 1980s onwards followed by China and India – that have succeeded since the Second World War in working themselves upwards to the middle group. These countries have had a rate of growth in prosperity that was higher than that of the Western countries. In Latin America, also part of the middle group, the difference between their prosperity and that of North America and Europe clearly increased, but they seem to be recovering somewhat now that there is more political stability. Finally, in the Eastern European countries prosperity grew less rapidly than in other European countries, but nevertheless these countries have some of the highest levels of prosperity in the middle group.

Living conditions

Although the world as a whole has clearly become more prosperous, that does not mean that living conditions have become equal prosperous everywhere. At the end of the twentieth century progress could be seen in some areas, but remained absent in others. Table 5 gives a hint at where and why prosperity growth is lagging behind in important parts of the world. In less developed areas, population growth is and will remain above average, precisely because infant mortality has decreased and life expectancy has increased. In such a situation, relatively high economic growth is required to improve on average living conditions in a country. In this respect, progress is being made by improving the food situation and access to clean drinking water, although this has by no means been the case everywhere. The continued decline of illiteracy is also important and encouraging.

Table 5. Diverging trends in social conditions between North and South between 1960 and 2000

decreased differences:	***increased differences:***
life expectancy	average number of years of schooling
literacy	participation in higher education
nutritional level	number of academics and technicians
infant mortality	Telephones
access to clean water	radios

Source: UNDP, Human Development Report 1992, table 3.6; HDR 2007/2008, table 12, 13; HDR 2010, fig. 4.2.

However, not all trends are positive. The differences between North and South have increased in important respects. The number of years of schooling that the population has received is skewed even further. The continued inavailability of higher educated people –technical professions in particular- indicate that these countries will not be able to make a transition to a technologically higher production level in the near future. An increase in sophistication is an important condition for increasing the general level of prosperity when a country is simultaneously facing relatively large population growth. Another important handicap is the differing access to information. In the table this is presented as the availability of telephone and radio, but since the late noughts better represented as access to information and communication technology (ICT). Yet, that does not show the complete picture, as will be made clear in the following text.

Development and patterns of inequality

Uneven urbanization

In 2008, for the first time in human history, the majority of the world's population lived in cities. This was not so in 1950, when about two thirds of humanity still lived in the countryside. Yet urban living is now the norm for most people. Cities are visible centres of industry, trade, communication and other services. The expansion of the tertiary sector is a main driver for the recent urban growth. Cities are increasingly developing into hubs, forming links between its direct surroundings and the rest of the world

Cities are multifunctional centres, spatial hubs of economic and social activities. In the city almost all social functions are present and concentrated. A city performs these functions for its environment, consisting of countryside, villages and smaller cities. This is the catchment area or hinterland of a city. The city interacts, provides for and is partly defined by that area. The surpluses from the wider area are moved to the city; a surplus in the form of people (migrants), capital, and agricultural and industrial production. Here this surplus is either used or redistributed over the catchment area and/or exchanged with other cities. This relation is conceptualised as a network, cities function in a network of larger and smaller places. In this network there is a ranking, a hierarchy of larger and smaller places, or nodes. At the centre of this network of cities; are those with the largest catchment area, these are often also among the largest cities.

The level of importance of the urban catchment area is reflected in the functions and size of the city. Central to the network are state capitals and these are usually the largest cities. These metropoles often combine their administrative role with an economic one. Most of the time these are host to a wide variety of industries and trade functions, both for the local population and for the wider environment. One step down in the hierarchy are the governmental centres of large administrative districts, and cities that function as more limited commercial or industrial centres. They too may have grown to the size of a metropolis in recent decades. Smaller cities on the other hand lack the combination of administrative and economic centre. They tend to only provide one and not the other, and are thus lower in the hierarchy. As are the towns and villages that provide for a much smaller hinterland.

Modern cities are the economic engines of a country, their ability to heavily specialise as either a marketplace, an industrial city, a port or government centre stands at the root of their power. This means that a direct relationship between size and importance is not quite right. Economic power is not solely based on population size. Thus, in understanding modern cities, size and economic significance play a definitive role, much more so than their official legal or administrative status. The largest cities often consist of several administrative units. Some of these urban units have grown together and form an agglomeration. Such metropolises are areas such as the Randstad, the Ruhr area, Los Angeles, Paris or Seoul or Tokyo and their respective urbanised hinterlands. These groupings of different administrative districts tend to be referred to as the ' Greater Metropolitan Area'.

Many cities have a core that still bears the marks of the city's history. In Europe, this location is often occupied by a commercial centre, the shopping heart, sometimes in conjunction with an administrative and or religious core. moving out from this core we find ever more recently built residential areas, occasionally with parks in between. Around them a band of industry, manufacturing, office parks, warehouses, and trade areas or port complexes. More recent twentieth-century cities tend to be multi-centered, sometimes actually divided into zones with different identities or economic specialisation, often growing in a short space of time and frequently showing little top-down planning. Rarely are entire cities developed on the drawing board, although examples do exist (such as Brasilia in Brazil, which emerged between 1956 and 1960). Urban design does take place on a smaller scale, in city districts and in neighbourhoods and districts. This ´vacuum formed by the demise of blueprint-planning has been occupied primarily by the logic of the market. In practice, a sorting of functions, a concentration of activities in a part of the city, often results from differences in the price of land, whether or not supported or inhibited by attempts by local authorities to adjust developments through urban design.

In 1950, New York was the largest city in the world, with over 12 million inhabitants. Second was London with almost 9 million people. Tokyo had 7 million inhabitants and Paris 6 million. Three other cities had more than 5 million inhabitants. They were Shanghai, Moscow and Buenos Aires. Cities such as Chicago, Essen-Dortmund and Calcutta followed with just less than five million inhabitants. Eleven of the twenty largest cities in the world were then located in Europe and the United States, six in Asia and four in Latin America.

Sixty years later, the situation has changed dramatically. Of the twenty largest cities in the world, those with more than 10 million inhabitants, eleven were in Asia (Tokyo-Yokohama, Mumbai, Delhi, Calcutta, Shanghai, Jakarta, Dhaka, Osaka-Kobe-Kyoto, Karachi, Beijing and Metro-Manila), four in South America (Mexico City, São Paulo, Buenos Aires, Rio de Janeiro) and two in North America (New York, Los Angeles). Africa had two such cities (Cairo and Lagos) and Europe only one (Moscow). The largest city, Tokyo, is part of an urban agglomeration that was home to nearly 35 million people in 2010. The strongest urban growth - just like demographic growth - has therefore taken place in Asia, South America and Africa in recent decades, and not in Europe and North America.

In recent decades, some of the cities mentioned (e.g. London, Tokyo, New York, Shanghai) have formed their own global, transnational network together with others. High-quality goods and services (such as electronics, software and complex banking services), capital, information and highly educated professionals flow between these cities. They are part of the largest economies and are at the top of the global hierarchy of world cities. They are considered by authors on urban globalization as a new category, the global cities, to distinguish them from older world cities. These centres are home to the headquarters of global companies and their financial and business advisors. In the 1980s and 1990s Asian cities began to play an increasingly important role in this. From offices in these cities, companies are managed with a turnover of many billions. Here are the centres of the largest private economic powers. In these cities, global top incomes are earned and income inequality is more extreme than anywhere else.

Until the 1970s, many European and North American cities grew around and between industrial areas. The German Ruhr area, with cities such as Essen, Dortmund, Bochum and Gelschenkirchen, or the English Midlands around Birmingham, may be used as an example. These cities initially grew through employment in mining and steel mills. Alongside this growth supply industries and all kinds of services for the local population arose. In addition, care activities appeared for a wider area such as courts and universities. Much of the mining and steel processing has now disappeared. What remains are remnants of the former industry, for example the assembly plants and maintenance of certain types of cars, but the growth is taking place around new services. This type of industrial urban agglomeration is on decline in Europe, but has been increasingly developing in Asia since the end of the last century.

Since 1980, the economic base of many cities has shifted from the secondary (industrial) sector to the tertiary (service) sector. In Europe this was accompanied by a twofold process. On the one hand, there was an economic decline of former industrial areas with their working-class districts and, on the other hand, the construction of beautiful offices, renovation of characteristic buildings or even entire neighbourhoods and facilities for the arrival of a middle class and the wealthy. In the Ruhr area, for example, old industrial centres have been transformed into leading museums, high-tech office complexes and green oases. Such a development is referred to as "gentrification". This is an urban development that is not only aimed at a beautiful and attractive appearance, but also wants to provide a basis for economic renewal. This was also the focus of developments in Manchester and Liverpool, Dublin, Lyon and Tampere. The latter city, located in Finland, is a former textile centre where the Nokia factories now stand and where developments were guided by the concept of the "creative city". In this concept, the city is an attractive breeding ground for young highly educated talent. But in several European cities, the former industry and working-class districts wait as ‘brown fields’ or ‘rotten boroughs’ for renewal.

Since 1980, a special urban area has been developing near the Pearl River delta in Southeast China. Here, nine metropolises each with over a million inhabitants are located a few tens of kilometres apart. Between these cities are roads, railways and rivers, but also forests and fields with rural activities. The largest cities are the former British Hong Kong with more than 7 million, adjacent Shenzhen with 9 million and the provincial capital Guanzhou (Canton) with more than 10 million inhabitants. The former Portuguese trading post Macau, with a population of 5 million, is also part of this area. This delta of the Pearl River is comparable in surface area to the Dutch Randstad, but had approximately 50 million inhabitants in 2010, i.e. a density of 570 persons per km2. Between 1980 and 2010, the population has doubled due to migration. Since 1979, Special Economic Zones have existed in this area and have been freely linked with Hong Kong, which was under British control until 1997. For example, a market economy developed here with various types of companies: private, collective and state-owned. Foreign investment took place on a large scale and so millions of people settled in this area. With the rapprochement of Macau and Hong Kong with China and the economic boom between 1992-2008, the entire region gained momentum, particularly visible in major construction activities.

The Pearl River area is one of the world's most dynamic regions. It is home to many types of economic activity. Industry, the largest sector, is predominantly small-scale and fairly low-tech. This area is home to the headquarters of some of China's most important trading companies, textile producers and ICT companies, as well as some of the associated manufacturing companies. A significant part of the people work in the companies around it, mainly business and industrial suppliers. But between these cities there is also a remarkably large amount of intensive pig farming, rice farming, fishing and fruit growing, not only for consumption in the immediate vicinity, but also for export. In 2010, almost a quarter of the labour force here was still employed in agriculture, almost as much as in the service sector.

Social inequalities are sharper in these major cities than elsewhere in the world and have widened since 1960. Wealthy residents meet in spacious and leafy neighbourhoods, while flats and slums are home to an ever-growing group of poorer urban dwellers. Compared to a rural environment, a city has many rich and middle incomes, but also a large group of poor people. After 1980, an "informal economy" of low-paid, poorly protected and often uninsured, part-time workers grew in most major cities. They work in construction, as a courier or taxi driver, cleaner, telephone operator or in small sewing workshops and the catering industry. The growth of this unregulated labour market is clearly visible in cities such as Tokyo, Hong Kong, Guanzhou, Shanghai, New York, Paris and London. In the latter city, the sector partly coincides with the former government services that were privatized in the 1980s. In Japan and China, this part of the labour market mainly consists of day labourers. Everywhere this informal economy is mainly filled by migrants. These are blacks and Mexicans in the big cities in the United States, West Indians, Asians and Africans in Paris and London and (illegal) migrants from the countryside in the major cities of Japan and China. Here too, a lot of migration is semi-permanent.

The spatial concentration in and around the cities has a counterpart in the rural environment. The population density is decreasing here, especially in areas with a low birth rate. The population of such rural areas is declining, with mainly the young and young adults leaving. For those who stayed behind, socio-cultural problems arise due to the narrowing of a consumer base for all kinds of facilities. However, in agricultural areas that deal with high population pressure, the emigration provides better opportunities. In this regard, there is great regional diversity between the Western world and the rural areas of Latin America, Asia and Africa.

In Western Europe, employment in the agricultural sector already declined before the Second World War. The higher productivity of agriculture was a result of mechanization and was accompanied by a shrinking demand for labour in agricultural areas. Between 1950 and 1970 this process was accelerated by further innovation in connection with the policy of the European Economic Community, which was aimed at economies of scale in agriculture. This policy accelerated in states that became members after 1973. In Europe and the United States, agricultural mechanization and the departure of the rural population went hand in hand. It is sometimes difficult to determine what the driving force was: did mechanization make workers superfluous or did people move to the cities to improve wages in other sectors and did this promote mechanization?

In former Eastern European countries, such as East Germany, Czechoslovakia, the Soviet Union and Poland, a similar urbanization and rural depopulation took place during the planned industrialization between 1945 and 1989, sometimes under strong government coercion. Large and medium-sized cities in particular grew thanks to their proximity to industry. Elsewhere in the planned economies, a significant portion of rural habitation remained intact and attached to large collective farms. This was also the case in China until the mid-1980s. Ever since the economic and political liberalization there has been more migration away from rural areas on the one hand, as well as a flourishing of small agricultural family farms, which can produce in the vicinity of the major cities and cater to the local urban market and use their specialisation to export.

All over the world, employment is concentrated in urban centres. The largest of these cities have become hubs in global networks. In 2010, geographical distances within these networks are cheaper and faster to bridge than in 1980 and much easier than in 1950. But the social differences between people have certainly not diminished.

Unequal wealth

Not only do income differences between countries exist, as expressed in the average National Income per inhabitant, there is also income inequality within countries. Social inequality usually stems from differences in labour market opportunities. Most people receive their income in exchange for work and wages differ widely between economic sectors. In the agricultural sector, wages are generally lower than in industry and here on average lower than in the tertiary sector. The difference between sectors is explained by the (assumed) high added value that industry and services provide to a product. But within sectors, wages often depend on education and experience, as well as the size and market position of the company.

In the 1950s, the authoritative American economist Simon Kuznets formulated a hypothesis about the development of income differentials under the influence of rapid economic growth. He hypothesized that during a period of industrialization in a country, income disparities would temporarily increase. When the majority of the working population was no longer employed in the agricultural sector but in the industrial or service sector, the differences in income would decrease again. This relationship is called the inverted U-curve and it becomes visible in the comparison of countries. The shape arises from the higher productivity of the new economic activities and the high initial profits that successful innovative entrepreneurs achieve. Think of Bill Gates, the founder of Microsoft, Li Ka Shing, the successful businessman from the Pearl River Delta, or Ingvar Kamprad, the inventor of IKEA, or more recent Jack Ma, the successful founder of Alibaba. Their activities have brought companies to the top of the world and have now been at the top of the Fortune or Forbes lists of the world's richest people for years.

This idea Kuznets presents does deserve an asterisk. Laissez-faire optimists saw (and see) a reassuring law in it. Some of them believe that the link between strong economic growth and temporarily greater income inequality also applies to the current era of globalization. Critics point out that income inequality does not diminish by itself. The influence of the trade union movement and governments on the elimination of income inequality is of great importance.

The moderating influence of trade unions on income inequalities within countries is precipitated on discussions about working conditions and the (latent) social pressure exerted by these unions. In most European countries there exist workers councils or other co-determination structures at company level. Consultation between national organizations of employers and employees, with possibly also the central government, is less common. This is called the Scandinavian model and is also common in Germany, Belgium and the Netherlands in addition to Scandinavia itself. However unions are losing ground almost everywhere. Over the past fifty years, especially since 1989, the degree of organization has decreased from approximately 60% to 30% or 25%. In certain sectors, such as industry, transport and among civil servants, membership remained relatively high. The declining development of union membership is explained by the contraction of industrial sectors in which the trade union movement has traditionally been strong and by the increase in part-time or flexible contracts in recent decades. Employees in these types of jobs, often young people, are less likely to become union members.

In some Western European countries (such as France) trade union membership remains relatively high. Here the trade union movement also influences central government policy and is involved in the organization of the welfare state. In Central and Eastern Europe, most trade unions were part of the regime and membership was mandatory, at least until 1989. Since then, new unions have been formed in most of these countries, in some cases alternative unions already existed alongside the official unions during the 1980s (e.g. Solidarność in Poland). During the accession process to the European Union, around 2000-2007, forms of co-determination structures arose that closely resemble those in the other European countries.

In the United States, Australia and Canada, the significance of the trade union movement is limited to just a few sectors. In Asia, unions developed as marginal political organizations because of the restrictions imposed by governments. Only at a practical company level are unions of importance here as employee representation. Remarkably, the trade unions in Japan and Korea serve the conflict-avoidance present in the corporate culture more than we see elsewhere. However, the situation is different in Latin America. Here the unions played an important political role in the successful fight against dictatorial regimes in the 1970s to 1990s. This sign of strength has lingered. Democratization brought a strong social position for the trade unions, but not always accompanied by a strong social policy. In Africa, too, trade unions have played a major role in the fight against authoritarian regimes, such as the fall of the South African apartheid regime in 1990.

But in all these countries, trade unions are affected in their position by general socio-economic development, the shift between economic sectors, flexible contracts and the associated lower degree of organisation among young people in particular. The question is what this means for the development of wages. Wages are not necessarily lower in countries with a weak trade union movement. However, the differences in pay between economic sectors are larger. Wages in the large, export-oriented companies tend to on average be higher than those in smaller, nationally-oriented companies. In the process of globalization, in which export-oriented companies have grown and become more important since 1990, income disparities have increased accordingly. This is especially visible in countries where the trade union movement only plays a marginal role. In addition, in most African countries the government hardly pursues any social policy. Income from taxes on, for example, the export of commodities, such as gold and oil, is limited in most states and benefits a small elite. Much of the social and medical care in Africa has been provided externally by aid organizations over the past sixty years, without the national government developing a sense of responsibility for this. This is often seen as a characteristic of the world's poorest countries.

The global comparison between poor and rich countries lacks a good scale for expressing incomes. Not every person has an income in flat currency and what might buy a lot in one country may be worth little in another. Self-sufficient farmers, i.e. farmers without or with a low income, can very well lead lives outside of poverty; workers who work at an irregular schedule and receive wages over that work, on the other hand, may fall short. To compare rich and poor countries, the (gross or net) National Income (NI) per capita is a widely used statistical measure. But this measure has drawbacks: the NI does not take into account the distribution of income within the country and also says little about the standard of living of the inhabitants. For example, it does not provide insight into social and medical indicators that can help determine the perceived prosperity and well-being.

One measure that offers more insight is the Human Development Index (HDI). This composite figure, used by the United Nations since 1990, weighs not only National Income per capita but also includes the average life expectancy at birth and the degree of literacy of the population, plus the proportion of the population receiving more than primary education. The strength of the HDI is in it being a composite. That strength does come with a downside. Though it covers more data, at the same time it makes interpretation of the figure more difficult. The various dimensions of social inequality between countries and their inhabitants are swept into one heap by the index. Let's take a look at the indicators. As explained, GDP is an indication of a country's realized wealth. Life expectancy indicates health and perhaps also health care. The education of the population gives an impression of the inhabitant's chances at self-development, and also carries an importance for country's chances at economic growth. Here data on investments and perhaps birth rates should also be used (which is currently not the case). Obviously there is a strong correlation between HDI and GDP. If we create a list of the countries with the highest or lowest HDI and another of the richest and poorest countries in 1975, 1995 or 2010, then the big similarities between the two become apparent. Only one country changes places, but the group as a whole hardly changes. The diversity is somewhat greater in the middle bracket.

World Bank 2010 surveys of countries with a low GDP of $400 or less and low HDI show a list of 13 countries: Afghanistan, Central African Republic, Niger, Rwanda, Sierra Leone, Eritrea, Ethiopia, Guinea-Bissau, Liberia, Malawi, Somalia, Democratic Republic of Congo and Burundi. All but one African countries. Eleven countries are doing a fraction "better" with an estimated GDP of $ 500. Seven of these countries are in Africa, the others in Asia. Problems are piling up in all these countries. There is little stability, poor governance and either there is a threat of, there is currently or there was a recent civil war. That means few opportunities for economic growth as long as more confidence cannot be created. Of course, estimates of GDP or HDI of countries in such circumstances are not really reliable. But for most of these countries the reported number is lower than a decade ago. The richest countries in 2010 have a GDP per capita of 40 or 50 times that. We're talking about the United States, Iceland, Norway, Switzerland, Denmark, Austria, Ireland, Canada, Belgium, Australia, Hong Kong, the Netherlands, Japan, United Kingdom, Germany and France. Here we find the major western economies, including Japan, for which the favourable scores for all indicators coincide.

The Gini index is often used to analyse income differences. The height of this index indicates the degree of income inequality. This criterion is less suitable for a comparison between countries with different circumstances. For example, basic data is not collected identically in all countries and it is not always clear what exactly is meant by "income", for example. At this point we must be satisfied with global estimates from the World Bank and the CIA (CIA World Fact Book). In 2007-2008, the African continent had a Gini index of 51%, the highest in the world. In the United States the index was 46%, in Russia 41%, China 40%, Japan 38%, India 36% and in the European Union 31%. Compared to earlier figures from around the year 2000, income inequality increased almost everywhere, except in most European countries and India. This is in line with the developments outlined above of a rapid shift between economic sectors, urbanization, informalisation in the labour markets, declining importance of trade unions and a further limiting of the role of governments.

In various countries in Africa, South America and Asia, the great differences in wealth can in part be traced back to the legacy of the colonial past. When extremely large differences in landownership arose, especially in regards to a particularly vulnerable rural population, for example workers on plantations. After the colonial period, this imbalance was continued by the new owners. These were often local or national elites, sometimes large multinational corporations, who were able to stay with the support of the new rulers. Even where, as in Latin America, more urban industrial states have now emerged, large landowners still have an almost untouchable social position. However, the growth of the urban, informal economic sector has drawn large parts of the rural population to the city over the past 25 years. The extent to which this will in turn lead to an average increase in incomes through, for example, education and better jobs is still the question.

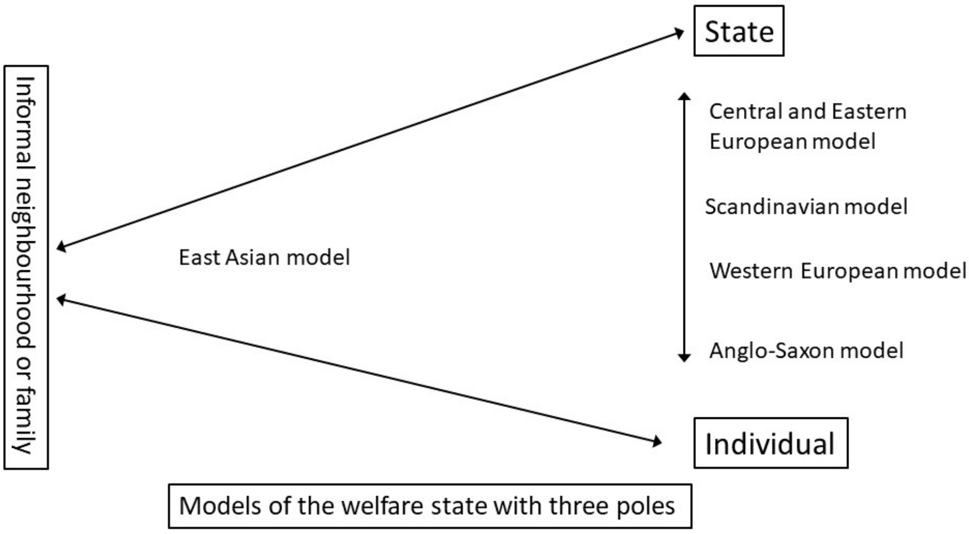
Redistribution and the role of governments

Thus, vigorous economic growth has led to widened income disparities in many parts of the world since 1970. This can be seen as a consequence of globalization, that is to say of continuing liberalization, declining protectionism and increasing specialization. The above overview leads to this conclusion, but one factor has not yet been discussed: government policy. Governments are often held responsible for the welfare of their population. By taking measures, they can reduce income inequalities, reduce social inequalities and promote the social participation of citizens, including those with social, physical or other disabilities. Almost all states in the world have such programs based on an ideological or religious motive or with the underlying aim to mitigate conflicts between social groups. States with an extensive program call themselves welfare states, welfare states or social states. They come in all shapes and sizes.

Almost every country in the world has a system that provides financial support for (part of) the retired population. Some states started their first retirement provision for government employees (civil servants and military) way back in the seventeenth or eighteenth century, others only recently developed such provisions. Some states have laws on workplace safety, working hours, and insurance that pay for an accident at work, disability, or pregnancy. Other states in turn provide free education, health care or housing to people with low incomes. Different models can be distinguished depending on the extent to which the system relies on informal collective care provided by family and neighbourhood, or more formalized care emanating from the state or the individual. "State", "individual" or "neighbourhood and family" can be regarded as three poles between which different care arrangements can be placed.

In some countries, health care is to a large extent regulated by the state, participation in the system is compulsory, every citizen can count on some form of support and the provisions are paid for from government revenues, that is, from taxes. This model was developed in the first half of the twentieth century in Northern Europe, among others,

and is therefore often referred to as the *Scandinavian model*. It mainly took shape in the countries that were led by social democratic and Christian parties around the Second World War. Here, a relatively large part of the National Income goes to the "public sector". In Central and Eastern Europe, similar models were often developed in the planned economies between 1945 and 1989.
In a second group of countries, healthcare is mainly arranged through social insurance. These private funds are made up of the premiums of individual participants and participation is therefore not always mandatory. Here it is the citizens or employees who insure themselves against risks and sometimes do this collectively by company or industry or through profit-oriented commercial insurance companies. If necessary, the government provides a legal framework and sometimes carries out some form of supervision, but is not or barely involved in the actual financial transactions of these insurance companies. Occasionally, the government links tax benefits to insurance or organizes certain basic services for the weakest groups in society. The collective sector is relatively small here. These days this system is often referred to as the *Anglo-Saxon model*, but it originated in Germany at the end of the nineteenth century, at the initiative of the then Chancellor Otto von Bismarck. The system is based on the idea of the "night watchman state" (a state in which the government only performs a bare minimum of tasks) and has been gaining ground again in recent decades with the neo-liberal ideology. The United States is familiar with this model and since the mid-1980s it has also been developed in the United Kingdom, where the Scandinavian model previously predominated.
A third form is visible in those countries where the role of government and social insurance is subordinate to care within the family, family or neighbourhood. No welfare or welfare state has emerged here, or schemes exist for only a select few social groups, as in most African, South American and Asian countries. In some countries these schemes are expanding and health care systems are under development. Here the informal care arrangements are combined with parts of the other two systems. This creates new hybrid forms that sometimes contain more "state" and sometimes more "individual", but which can nevertheless be distinguished well from the above two models. This model is, somewhat incorrectly, sometimes called the *East Asian model*, but it is in fact also adopted in various South American countries. As an extra factor, in some Asian and African countries, the role of external aid programs, offered by international (religious) aid organizations or other governments, can be mentioned. Their influence was particularly great in the 1960s and 1970s.
Figure 6: Models of the welfare state



European patterns

A mixed model has emerged in the Netherlands, in which the government provided a broad basis and, on top of that, there were many compulsory and additional (voluntary) insurance policies that further shaped the welfare state. These compulsory insurances were often linked to professional group or industries and the premiums consisted of an employee and employer share. The system was created at the beginning of the twentieth century, but reached complete adoption around 1960 thanks to full national coverage and more government influence. Between 1947 and 1957 the pension legislation was enacted, in 1949 a statutory unemployment benefit and in 1965 the mainly municipal care for the poor was replaced by a general social assistance act that provided for an income guarantee from the general resources. These laws replaced local and industry regulations and unified social security on a national scale. Economic growth and natural gas revenues were the financial engines behind the expansion of the welfare state.

The Netherlands is a small country with an open economy that is exposed to international influences and competition. Yet it has produced one of the most comprehensive welfare states in the world. The size of the welfare state was mainly due to the desire and willingness of national politicians to allocate government resources to this, and also to the possibility of taxing the population and companies for this. However, international position and competition were important factors that set limits to this political will. During and after the economic recession around 1980, the Dutch welfare state was adjusted on a number of points. Under the influence of the relatively high unemployment and the consequent rising costs of the welfare state, the desire for limitation arose. In particular, the General Social Assistance Act, unemployment benefits and benefits for the disabled were slimmed down. In this way, the rapidly increasing government funding deficit could be limited, but also the part that employers contributed to social insurance. In the public debate there was now a growing desire not to burden public resources further with expenditure on social care.

People who wanted a more extensive provision had to take out more and more private and supplementary insurance around 2000. The dreaded consequences an ageing population will have on the affordability of pensions have been debated for twenty years. Only in 2011 did this result in a proposal to gradually increase the retirement age from 65 to 67 years.
The Netherlands and Belgium can be regarded as an example of the mixed systems as they have developed in various Western European countries. These systems include state, collective and individual schemes. The formalized system includes benefits borne by the taxpayer as well as benefits accrued from insurance premiums. The trade union movement is often also important in the management of collective social funds, this is more the case in Belgium than in the Netherlands. Under the influence of the Christian Democratic and Social Democratic parties, there is convergence between various European countries. The development of a European common market led to attempts at harmonization of social legislation. Within the European Union, this process has been reinforced since 1992 by the Maastricht Treaty. The social section of that convention included general objectives on employment, social participation, working and living conditions and social protection of the population within the Union. Despite this, there remains variation in the size and way in which the individual welfare states are financed. The United Kingdom with its major role for private and commercial insurance and the Scandinavian countries with their relatively large contribution from general resources and their extensive health care system are the two extremes. With the enlargement of the European Union, new member states had a wide array of examples of how to organise their social security.
In the Central and Eastern European countries, a corresponding social system was introduced when the planned economies were formed in the late 1940s. In what was then the Soviet Union, this had been taking shape from the 1920s onwards, in Central Europe these measures were introduced after the Second World War. Guaranteed employment, low cost of living and social security were the ideological principles of these "socialist states". This social security was broad and consisted of, among other things, a pension provision, continued payment of wages during illness, state health care, housing and education. There was some variation in the system between countries. In Czechoslovakia and Hungary, among others, the workers continued to pay social security contributions from their wages, just as before 1948; elsewhere financing was entirely with the government. In the 1950s, the package expanded to all economic sectors, including the collectivized agricultural sector. From that moment on, social security was available to every inhabitant, but the benefit level was low, especially compared to Western Europe.
With the collapse of the communist system in 1989, a radical restructuring of this system followed. With the "shock therapy" that the market economy introduced, a revolution in social security also took place. Many of the existing facilities offered by

the state were discontinued or privatized. New was the introduction of unemployment benefits (albeit at a low level). Where there was no open unemployment before 1989, it was high in the first years of the transition. Social legislation also had to be extended to the rapidly growing new group of self-employed people. And an adjustment of the pension system took place everywhere. Retirement benefits had to be raised to keep up with rising prices, but that also meant the retirement age had to be raised from 60 to 62 or 65 for both men and women. A mixed model was introduced for financing: a (small) basic pension from the government, with an insurance component that is sometimes compulsory and can sometimes be taken out privately. In most cases, the introduced social safety net resembled the Western European or Anglo-Saxon model. Among the countries of Europe, the Central and Eastern European economies are among those with the lowest benefit amounts. Nevertheless, in the year 2000 they spent 10-15% of their GDP on the public sector.
A variation of the Scandinavian model emerged in some rich oil-producing countries from the mid-twentieth century. In countries affiliated with the Gulf Cooperation Council and, for example, in Brunei and Saudi Arabia, an extensive social system was developed with state-paid education, free health care and income support for, for example, widows, orphans, the disabled, the unemployed and those in less developed parts of the country. Moreover, since 1958 general retirement has been in place here at a relatively young age for men and for women. In 2000, the retirement age was 60 for men and five years earlier for women. Here, most of these schemes are restricted to native population and are not open to migrant workers.

Asian patterns

In the Far East, the Japanese system has a lot in common with the model that has developed in Taiwan and South Korea. The organization of the welfare state in these countries contained so many similarities that one speaks of the model of the East Asian welfare state. Traditionally, the care of the sick, the elderly and others belonged to the domain of the neighbourhood and the extended family. It was arranged in a largely informal way. In a more modern society with a lot of migration and urbanization, such a system is difficult to hold on to. At the beginning of the twentieth century, the Japanese government took a number of European-style measures that laid the foundation for a welfare state with a very modest role for the government and a relatively large role for the business community. Government tasks included a (low) basic pension provision, with on top of that a system of company-related insurance that the largest companies provided for their permanent staff. Comparably company-related are the provisions for medical expenses, accidents and disability.
In 1961 the Japanese system was expanded to include national and compulsory health insurance, a pension system and in 1964 to include a mother-and--child care scheme. In the following years, this was further expanded with an indexed pension and free medical care for the elderly. The basis for this was always insurance premiums raised

through company funds, only a small part was financed from tax revenues. Economic growth, better healthcare and the demographic transition have resulted in a rapidly growing group of elderly people. In 1981, under the influence of a economic recession, the system was reformed with an increase in the retirement age from 60 to 70 years for men and 60 years for women; and a greater emphasis on family and community-based care. There are clear differences between the social systems in the emerging East Asian economies. In Singapore, for example, the state plays a much greater role in financing and also has a major role in housing. But in all these countries, relying on traditional Confucian norms and values, the emphasis is once again on neighbourhood and family. Since the mid-1990s, this has been presented as an Asian response to globalization.

Things were different in China. In post-war communist China, a state-organized welfare state was established: with pensions, maternity and medical care. The provisions were particularly generous for a country with a low GDP per inhabitant, but they therefore only benefited the people part of the publicly owned collective agricultural companies and those working in the industrial companies in most urban of areas. It is estimated that in 1978 these provisions reached about 18% of the population. The gradual introduction of a market economy from the 1980s was accompanied by a revision of social security. At the initiative of the large companies, more space was created for private insurance. However, the large informal sectors of urban labour markets have remained out of reach to date. Here one should fall back on informal care and / or on the new private insurance funds.

In India, too, the organization of social care has changed over the past twenty years under the influence of economic growth, migration and urbanization. The demographic transition, resulting in a changing distribution between age groups, also played a role. In rural areas and in the urban middle class, the extended family still predominates. Houses are inhabited by several generations: grandparents and unmarried adult children live in. Men and sometimes also young women are active in the labour market, while older women perform care tasks within the household. Traditionally, roles in such a complex household have been divided along gender and age lines. But this family dynamic is rapidly disappearing. Nonetheless, in establishing a welfare state, a link is sought with the Hindu ideology of the extended family, with the government and private insurance in a supportive role.

From its independence in 1947, India has had labour legislation aimed at, among other things, occupational safety and compensation in the event of industrial accidents, and since 1995 a pension legislation. These provisions apply mainly to the organized sector of the economy, in particular to companies where a premium payment system exists. In addition to people in the public sector, this concerns workers in large industrial companies, but also sailors, miners and workers on large plantations. However, this amounts to only a small part of the total working population; by 1990 this was 9% of the working population of 314 million and ten years later it was even less, 7% of the 397 million. The Indian government is attempting to expand the system through various initiatives. Since 1995 there has been a special pension program for vulnerable groups such as widows and disabled people, the Indira-Ghandi pension. In addition, since 2003, voluntary pension insurance has been in place for the growing unorganized, informal sector of the economy, with participation being fiscally supported by the state. Attempts are also being made to introduce a system in which the entire population is assigned a unique social-tax number.

Latin American patterns

In Latin America, social programs for people in government service emerged in the first half of the twentieth century. Gradually, the urban middle classes and unionised workers, such as journalists, educators, transport and dock workers, were included. The social programs reached the rural population relatively late, and even then only in a few countries. In Argentina, Brazil, Chile, and Costa Rica, the welfare state for this continent acquired broad reach early on. After the revolution of 1959, a system similar to the Eastern European planned economies was created in Cuba. In rural and informal parts of the urban economy, in most Latin American countries, social support continued to rest on family and neighbours, as well as on some special programs for health, education and housing, or for subsidized drinking water, for example. These special programs were often set up with foreign support.

Between 1932 and 1973, the Christian and Social Democrats in Chile developed the most comprehensive welfare program in Latin America. Based on various legal measures, a diverse set of social schemes was created that varied significantly by industry and by region. In 1971, 17% of Chile's GDP was spent on social security, against about 10% in neighbouring countries. However, the military coup of 1973 led, among other things, to a heavy-handed reduction and standardization of these regulations. In 1980, social security accounted for less than 11% of GDP. Not only did the government reduce its contribution, but employer's contributions were also limited. Shortly afterwards, the pension system and health care were also privatized to further minimize the collective burden that this entailed. Since then, Chile, along with Argentina, can be regarded as a welfare state with a particularly highly individualized character and a social system based on private insurance that mainly benefits the middle classes. Around 2000, both countries spent between 7 and 8% of GDP on the public sector, including education.

In Brazil, the contours of a welfare state for employees- aligned with the official trade unions developed between 1934 and 1964. After the coup of 1964, an attempt was made to put an end to this privileged situation and instead a more general system for people in government service and in industry was created. In 1971 this system was extended to the agricultural sector with free health care, pensions and other benefits. As of 1980, according to the Brazilian government, 93% of the population was assured of support and income through this system. In practice this was much lower. Medical care was not available in all parts of the country, and most of the benefits were very low in most sectors. Social security funding is mixed in Brazil, with a portion from tax revenues and an additional portion based on contributions that vary by industry. Attempts by the government in the last decades to finance a larger part of the health care system from contributions and thus make it more of a social insurance scheme, have so far proven politically unfeasible. In 2000, about 13% of GDP in Brazil was spent on the public sector, which is particularly large in Latin America. Since then, however, the favourable pension rights of civil servants have come to an end.

To wrap up

In the development of welfare states, various models can be distinguished with more or less 'state' as a criterion. Between 1945 and 1980-1989, there was a trend towards "collectivisation" in the Western world, whereby the government took a more central position, followed directly after from 1990 onwards by an opposite trend towards more privatized care arrangements. The Scandinavian model with a relatively large "state" only seems to hold up in a few richer countries where it has a long tradition. In the former planned economies and in some Latin American countries, extensive government involvement in the social sector has diminished sharply after 1989. In emerging economies, the caring capacity of the extended family is declining due to migration, urbanization and the demographic transition. In response to this, "collectivisation" also arises here, but with more emphasis on the independent role of the broader family bond.

The process of internationalization of economic activities is accompanied by specialization. All parts of the world are involved in this specialization. Some regions are developing as a mining area, others as an agricultural or industrial area, services centre or amusement park and the last untouched nature reserves at "the end of the world" has attracted the attention of today's "eco-tourist". Nothing escapes the traces of human actions this way.

This process is part and parcel of current short term economic trends, one that has accelerated in recent decades. Globalization has perhaps been the fundamental buzz-word in the last ten years. It finds its origins in the increasing visibility and size of the flows of goods, air traffic and litany of communication networks as a result of the enhanced global interaction. Exchange of goods, services and information is simplified and cheaper than ever before. Almost everything is available to many people. Yet globalization is not the great equalizer, which makes the opportunities equally great for all actors. On the contrary, social inequality, differences between urban and rural populations and those between the poor and the rich have increased worldwide.