

OVERVIEW

The future of the planet's population: open questions

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Aerial view of Jakarta, Indonesia, February 26, 2020. In this sprawling city, home to around 10 million inhabitants, drinking, washing, and cooking water is a scarce and costly resource. Although water arrives abundantly in Jakarta, it does so through polluted rivers, heavy rains, and floods. Photography by Santi Palacios

On the road to 10 billion

About two centuries ago, at the beginning of the Industrial Revolution, the world's population reached one billion inhabitants. This rose to two billion after the First World War, to four billion in the years of the moon landings, reaching eight billion in 2022. Fortunately, the race has been slowing down, a new doubling is not in sight and, according to the latest projections by the United Nations, the population of the planet could stabilise in the last three decades of this century, at around ten billion. That is two billion more people than today - equal to the accumulated growth of the last 30 years - who in the next half century will have to eat, dress, find housing, consume energy for heating, cook, work and produce, all without falling into poverty. Optimists believe this can be done, given that the world has welcomed six billion more people in the last 100 years while improving living conditions. Pessimists, on the other hand, believe the future is fraught with dangers, due to the increasingly harmful effects of anthropogenic pressure on the environment, and that climate change is an unequivocal sign that the balance between humans and the planet is already seriously compromised. This is not the place to delve into the debate over the fate of the planet; however, it is necessary to discuss what the prospects, and the possible

consequences, are of the current course of world demography, which is going through a historically high phase of demographic stress. The world population growth rate peaked at 2% in the 1960s, gradually falling below 1% in recent years. However, the world's countries and regions are not moving at the same pace, so the current growth rate is an average of very different situations, depending on the stage of the demographic transition process.

For a better understanding, let us consider the six most populous countries in the world (which together make up 40% of the global population) and look at their current growth rates (2024) according to UN estimates. In order of slowest to fastest: -0.2% for China, 0.5% for the United States, 0.8% for Indonesia, 0.9% for India, 1.5% for Pakistan and 2.1% for Nigeria and – for comparison – 0.86% for the whole world. These rates range from the decline in China, to the high speed of Nigeria, whose population, if it does not slow down, will find itself doubling in just over 30 years.

Geodemography under stress

Different rates of growth have led to a dramatic change in world geo-demography. In 1950, one in three inhabitants of the planet lived in rich countries, still defined by the United Nations as “developed”, and two out of three inhabitants in those defined as “developing”. By 2050, only one in eight inhabitants will be living in the countries we currently call rich. Let us consider the entire secular period 1950-2050, already three-quarters complete, and the (merely numerical) relationships between the populations of certain regions and countries, some close to each other, or if not, then competing or possibly in conflict with one another. North Africa and Southern Europe, Russia and Pakistan, the Philippines and Japan are on the fault line that separates the rich world from the poor world, and the world of early demographic transition from that of late transition. The picture is extraordinarily blurred. Southern Europe had a population more than twice that of North Africa in 1950, but it will be almost two-thirds smaller by 2050; Russia, three times more populous than Pakistan in 1950, will have just a third of the latter's population by 2050. Iran was more than five times more populous than Saudi Arabia and will be just twice as populated by 2050. In 1950, Japan had a population almost five times that of the Philippines, but by the middle of this century there will be one third fewer Japanese than Filipinos.

The economic fault line that separates the north from the south of the world has deepened over the last century. However, each of these two parts of the globe is far from being internally homogeneous. Continuing in strictly numerical terms, looking at the prospects for the next quarter of a century (2024-2050), the dynamics of the great world “competitors” are worth highlighting. For the United States, a period of sustained growth is still expected until mid-century (+12%), while a decline for Russia and Europe (without Russia) is expected (-6% and -5%, respectively). These are important, but not revolutionary, changes, even if they affect aging processes, productivity and other social aspects. However, Russia is experiencing a sort of double demographic stress: the first is due to the severe wear and tear of the war in Ukraine, and the extensive recruitment (2022 and 2023) required by a war of attrition. The second cause of stress, which dates back to the time of the Russian Tsar Peter the Great, concerns the need to populate and guard its vast territory. The gap

also affects the two large human reservoirs, China and India: the first on a descending track (-11%), the second still on a robust rise (+16%). The differences in birth rates, which are very wide today, are closely correlated to age structure. Just one example: between Europe and Sub-Saharan Africa the contrast is enormous. In 2024 the median ages were 42.8 and 18.2 years respectively; by 2050 the two values will have risen, to 46.3 and 23.4, but the difference will remain unchanged. The age structure, as is commonly known, has multiple consequences for productivity, the burden of welfare, and the cost of education and human capital formation, with very different impacts in the two regions.

How low can fertility fall?

On long-term demographic development, beyond the middle of the century, some unknowns weigh heavily. The first concerns the trend in fertility in countries where it is still high. It is obvious that the rise in education levels, better health of children and mothers, and women's lower dependence on oppressive traditions have led to the spread of birth control and lowering birth rates. This process has been set in motion in much of the world, even in poor countries, and will end up spreading everywhere. What we do not know is how low fertility levels will fall: recent decades have seen an increase the number of countries (and the share of the world population they represent) in which the average number of children per woman has fallen below the replacement rate (less than 2). There are endless data and studies on fertility levels, but many unknowns weigh on their future course.

Notwithstanding particularities related to historical, political and cultural circumstances, a general consideration emerges. The birth rate is declining everywhere, and remains at very low levels, well below the replacement rate, in an increasing number of countries. There are areas (i.e. sub-Saharan Africa) where the decline is in its early stages and is proceeding at a slow pace; it is, however, plausible that the rise in education levels, better health of children and mothers, and women's lower dependence on oppressive traditions will sustain the downward trend, as occurred in Asia and Central and South America. All considered, the world is going through a historic phase of declining, low and sometimes very low birth rates. When converting the concept of birth rate into the more precise measure of average number of children per woman, we define "low" as an average number of children per woman below 2 and "very low" as a number in the region of 1. Today, among the 10 most populous countries in the world, only 2 (Nigeria and Pakistan) have a reproduction rate above the replacement rate, 3 (India, Bangladesh and Indonesia) are around that level; while the other 5 (China, the United States, Brazil, Japan, Russia) are below it, with China, where fertility can be defined as very low, leading the decline. The world is entering, or in vast regions has already entered, a historic phase of low birth rates. The expression "historic phase" is clearly vague, and of indeterminate length, but it could embrace one or more generations.

How long can fertility stay below the replacement level?

If we look to the future, we are confronted by three aspects of uncertainty: how far can fertility fall below replacement? Will this occur everywhere, and when will it happen? How

long will it stay low?

How far: is there a threshold level below which the fall in fertility stops? For some years now, South Korea - a country of 50 million inhabitants, at the forefront of development and globalisation processes - has had an average reproduction rate well below one child per woman (0.8 in 2023, the same as Sardinia in Italy, or the Canary Islands in Spain). Is South Korea a pioneering country? Has it reached the minimum threshold? Which and how many populations will follow a similar path? What is the minimum threshold for each individual population?

When: if low fertility, regardless of its level, is a common destiny, when will individual countries, or wider regions, reach it? When will Sub-Saharan Africa, which today (2024) has a fertility rate of 4.3 children per woman, reach the minimum threshold?

How long: once the minimum threshold has been touched, how long will a population remain at that level? Will there then be a recovery, perhaps followed by a fluctuating or cyclical trend?

In the future, variable intertwining of how far, when, and for how long will determine the reproduction trends of individual populations, creating oscillations and non-synchronous cycles in the various regions of the world. Low reproduction is now the prerogative of countries and societies with the most diverse characteristics. There are low (if not very low) reproduction rates in Christian - Catholic, Protestant and Orthodox - countries, Islamic countries, both Shiite (Iran) and Sunni (Turkey), and among Hindu, Buddhist and Confucian populations. Very low reproduction rates thrive in ultra-capitalist and ultra-liberal countries, as well as in those with socialist or communist regimes, and with planned economies. They are embedded in democratic countries as well as those burdened by totalitarian regimes. Low fertility can be observed in super-rich and ultra-poor countries, in tropical and Arctic regions, in agricultural and industrial contexts. Two-thirds of humanity now live in countries with low reproduction rates.

All this suggests that the motives that push people and couples to severely limit their offspring do not depend much on the context in which they live. They seem to arise from a pervading zeitgeist, the spirit of the times, elusive and plastic, difficult to define with concrete indicators, as demographers and sociologists would like to do. This explains why social policies adopted by many European and East Asian countries aimed at revitalizing birth rates, even those supported by abundant resources, have generally had modest and often only transitory results.



Dilcia playing with her nephew and her four-month-old daughter in front of her house on the Cedeño beach, Honduras, on November 28, 2024. Cedeño, a small fishing village of about 5,000 inhabitants located on Honduras' Pacific coast, is on the front line of the climate crisis. The local economy relied on tourism and fishing, but deforestation and pollution have damaged marine life and caused severe flooding, tropical storms, and a merciless advancing ocean. Photography by Santi Palacios

The limits of longevity

The second consideration concerns survival, in which great progress has been made everywhere over the last century, so that life expectancies today exceed 80 years in the rich world and 70 in the poor world. There is widespread optimism regarding the continuation of the major progress achieved in recent decades: the United Nations predicts that life expectancy at birth in the Global North could still rise from 80.1 years today (2024) to almost 90 (89.9) by 2100, and from 71.9 to 80.7 in the Global South. Certainly, advances in life sciences make further extensions to longevity possible. But optimism must be moderated for various reasons. First of all, the increase in survival at old age seems to be slowing down in countries where people live longer, a sign that there are limits to longevity that are difficult to overcome. Secondly, unforeseen events of a bio-pathological nature continuously occur: new pathologies emerge (HIV-AIDS and Covid-19 being the most destructive cases among the many examples that could be given) and there is no reason to rule out the repetition of other unpredictable pandemic episodes. In addition, the cost of health care is increasing everywhere, in both rich and poor countries, constituting a major burden on welfare systems and family budgets. In rich countries, the cost of healthcare is close to 10% of GDP, in the United States it exceeds 16%, and the share of this cost borne

by the public system tends to contract in favour of the private sector, compromising the universality of access to healthcare and increasing inequality.

Another problem to consider is the “political” sustainability of a long life span; by the term “political”, I mean the entire institutional structure of society. High survival rates are the result of the gradual accumulation of scientific knowledge, technological capacity, environmental safety, material resources, efficient social actions and favourable individual behaviour. Each of these elements contributes to sustaining survival. Slow progress in all these factors has led to the increase in life expectancy over the last two centuries. In rich countries, the progress of survival was continuous during the 20th century, with only temporary halts or reversals in the worst years of the two world wars. Maintaining this rate of continuous progress over two or three generations suggests that the pillars on which progress was based in the past century will remain strong. Yet history shows failures are possible.

An example: at the beginning of the 1960s, modern Russia had reached a life expectancy at birth very close to that of Western countries, but this trend halted and then went into reverse, with a rapid decline in the 1980s and 1990s. The collapse was greatest among men, whose life expectancy fell to 59 years at the beginning of this century, returning to the level of half a century earlier, lower than that of the poorest countries in Latin America, such as Bolivia or Guatemala. The initial deterioration and subsequent collapse of the political system was the general cause of the Russian crisis: food levels worsened; consumption of poorer quality alcohol increased; public spending on health also decreased in real terms due to the rise in the price of drugs and high-tech treatments; and extreme poverty increased, affecting a quarter of all families. A syndrome of social stress fuelled by insecurity and poverty led to a rise in alcoholism, drug addiction, violence and suicide. The political collapse caused an increase in the risk of death, particularly among adult men, from cardiovascular, respiratory and alcohol-related diseases, and violence. We might assume that a collapse of a magnitude similar to that which befell the populations of the former Soviet Union cannot happen again in the future, in rich countries, but can we really rule out the possibility of periods of crisis and stagnation that compromise the progress in survival hypothesized for the next half century by even the most conservative forecasts? Because political instability is brought about by conflicts and wars and the losses they cause, both military and civilian, direct and indirect, immediate or delayed.

Migration: the great unknown

According to the United Nations, the world’s migrant stock now has almost 300 million members. These are persons who live in one country, but were born in another, who have therefore crossed a state border at least once in their lifetime. It is a very crude measure, and not particularly suitable for describing the intensity of the phenomenon. According to the OECD, the organisation made up mostly of developed countries, several million migrants (5-6 million in recent times), not temporary or seasonal, migrate from the Global South to the richer countries every year. Migration statistics are highly flawed, and any prediction is a gamble regarding a phenomenon so strongly conditioned by political events

and world instability. However, there are deep forces at work and that will undoubtedly affect future migratory pressures. The most obvious ones are those exerted by the demographic and economic imbalances between rich and poor countries, which will undoubtedly remain powerful for many decades to come. The most subtle such force is growing world social globalisation, of which economic globalisation (which many believe is stalling, if not declining) is only one component. The population of our planet is tied together in an increasingly dense network, woven by physical and virtual bonds. The physical bonds are those created by permanent and temporary migrants, by the increasingly intense international mobility of people who move for work, personal and family reasons, for study, research, care and cooperation, and for leisure, curiosity and tourism. Virtual ties affect almost the entire world population that surfs the web and is connected by social media. It seems difficult for such a highly connected world to regress, dissolve its ties and slow down international mobility.

The most obvious and measurable force is that produced by demographic imbalances, and by the contrasting trends prevailing in countries and regions of the world, which we have already referred to extensively. Differences in age structures have long-term effects. Consider the young adult population, which is the engine of development in every society, due to its high productivity, capacity for innovation and inclination to mobility. Within it, families are formed, children are born and life decisions are made. Consider the countries of Southern Europe, the Mediterranean and North Africa, and young adults in the 20-40 age group. In Southern Europe, young adults will decrease by a quarter between now and mid-century, while in North Africa they will increase by half. No one can say to what extent this imbalance can be mitigated by south-north migration, but the pressure for migration will certainly continue to be high. This is just one of many possible examples found by comparing the demographic dynamics of the Global South and the Global North of the planet.

The traditional factors driving flows remain very strong, due to the persistence of great economic and demographic inequalities and worsening situations of war, conflict, discrimination and persecution. These generate forced migration, which has increased dramatically in recent decades. At the same time, states have adopted ever more restrictive migration policies, justified by the recent pandemic, international conflicts and increasing instability. Only a “grand strategy” could govern a phenomenon whose disorder is fanned by the opposing interests of states and by the weakness of international institutions. Well-regulated human mobility requires a high degree of cooperation between states and institutions, not unlike that required for other planetary phenomena, such as climate change or the fight against pandemics.

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