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October 2022

Economic and Financial Newsletter
Quo Vadis?

Suicide by Demography

Part I: Honey, I shrunk the population

Executive Summary

- Economic growth is driven by 2 factors and 2 factors alone: labour force growth and productivity growth.
- Demographic shifts have major economic consequences and shift the global balance of power.
- Contrary to popular belief, much of the world faces a problem of underpopulation, not overpopulation.
- World population will continue to grow until the middle of the 21st century, but growth is driven by sub-Saharan Africa. In most other parts of the world, the situation is radically different. The working-age population there has started a steady decline, putting a major brake on global economic growth in the coming decades.
- Slower global economic growth and a rapidly ageing population will put additional pressure on public finances. An expanding public debt will reduce productivity gains, further reducing economic growth.
- Global economic growth is in a downward spiral. There is no way back unless fertility rates rise again, which is highly unlikely.
- The long-term demographic and economic outlook for Europe, southern Europe in particular, Japan and many other developed and developing countries is dramatic. In China, the outlook is downright catastrophic. The Chinese growth story, just like the Chinese labour force population, is on the verge of collapse.
- Slow global economic growth and low commodity prices will structurally lower global inflation.
- The implications for investors are huge.

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Part I: Honey, I shrunk the population

The white edge of a fingernail

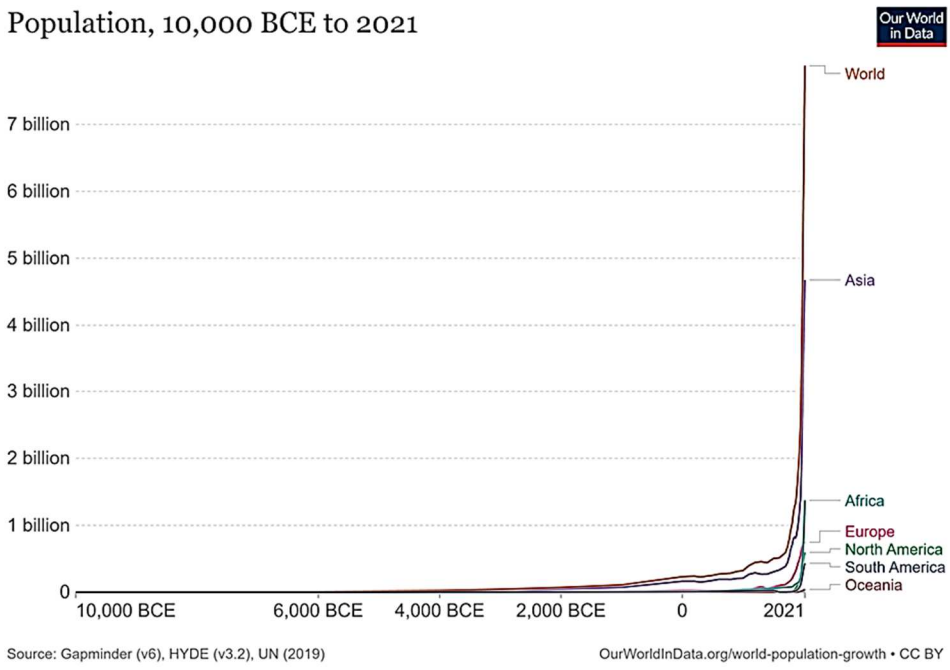
The world population today is 7.7 billion people. Most of us are convinced that there is a problem of overpopulation and that the planet is going down the drain if population growth is not slowed down.

It was once different. In 10,000 BC, the world population was only about 4 million, a tenth of whom lived in Europe. In the period before that, since the appearance of modern Homo Sapiens, the world population was often less than 1 million and the human species was threatened with extinction every so often by disease and deprivation. The fact that we still exist is in itself half a miracle. After all, 99.99% of all life forms that have ever existed have disappeared. New species come and old ones go. We worry about the impact of humans on the survival of our planet, but it is doubtful that the planet is as concerned. To the planet, humanity is just an anecdote. Planet Earth is over 4 billion years old. Bill Bryson illustrated this nicely in his book *A short history of nearly everything*: if the age of the earth is represented by the width of fingertip to fingertip of a person stretching both arms sideways, the existence of humanity represents less than the white edge of a fingernail.

It took until 1,000 BC before we passed the 100-million mark and in 1800 we reached the 1-billion mark. Indeed, the world population has grown spectacularly since (see Figure 1).

Strong growth in numbers at least. As a percentage, the world's population grew at an average annual rate of

Figure 1. Evolution of the world population (10.000 BCE - 2021)



only 0.045% over the past 12,000 years. However, there was a noticeable acceleration in the growth rate from 1800, at the start of the First Industrial Revolution. The growth rate peaked at 2.2% in 1962. A growth rate of 2.2% is by definition unsustainable in the long run. If the world population grew by 2.2% per year for the next 12,000 years, it would increase from a 10-digit number to a 124-digit number: 2,059,868,855,736,000,…etc. Even 1% growth is unsustainable because it would result in a 53-digit number. Exponential growth, by definition, never lasts in nature. Something has to break. And just as well. Rats, for example, breed like rabbits. A pair of rats, under "ideal" conditions, grows to 482,508,800 rats after only 36 months. To avoid this, Mother Nature intervenes in the form of food shortages and disease. Billions of years of evolution have turned our planet into one big self-regulating system that drives excesses back to the mean.

A falling growth rate

Since 1962, the growth rate has started to decline. Today, the growth rate is still 1% and going forward, according to UN estimates in its July 2022 report, it would fall back to zero around 2085 (see Figure 2).

From 2085 onwards, the growth rate becomes negative and the world population declines. By the end of this century, the world population would reach 10.4 billion (see Figure 3). In 2019, the UN still predicted a world population of 10.9 billion, but 10.4 billion remains an alarmingly high number for many.

Time for corrective action? Let us first critically examine the UN's figures. Any model that focuses on the future works with assumptions. Those who err in the inputs are guaranteed to get errors in the outputs. GIGO, Garbage In, Garbage Out.

Questionable hypotheses

A study published in 2020 in the authoritative The Lancet expresses well-founded reservations about some of the hypotheses used in the UN's demographic models. In the long run, population growth is driven by the fertility rate, i.e. the number of births per woman. The decline in the world population growth rate since 1962 is an inevitable consequence of the decline in the fertility rate. In 1962, an average of 5 children were born per woman worldwide, today only 2.5. The reasons are largely well known. The fertility rate is closely linked to women's level of education, which in turn is strongly linked to urbanisation. In poor countries, children in rural areas are a joy because they can get their hands on the plough, but in cities they become a burden, so to speak. A woman who moves from the countryside to the city can more easily evade

Figure 2. Annual growth rate world population (1950-2100) - UN forecasts July 2022

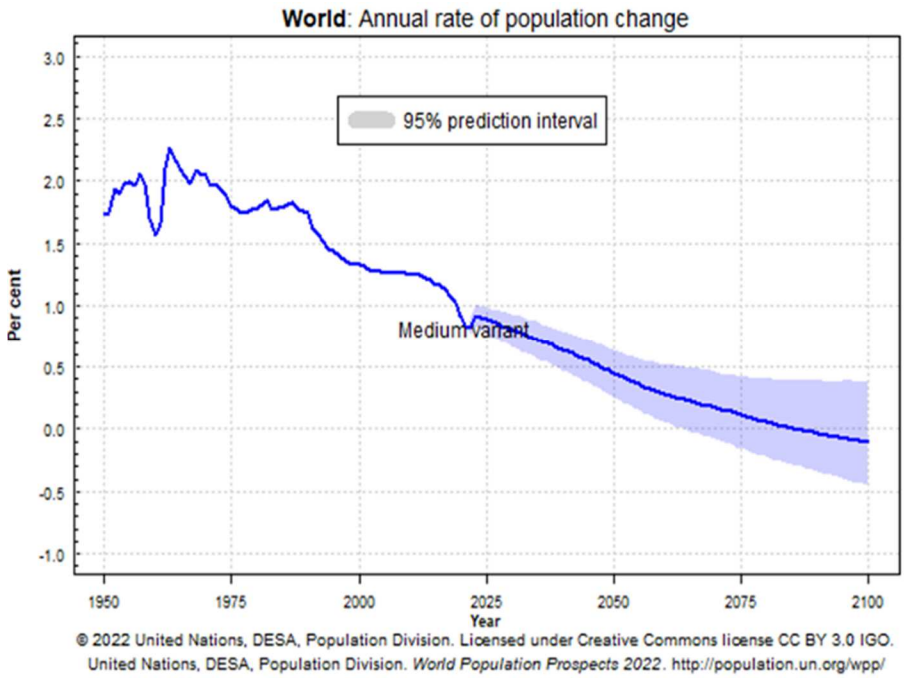


Figure 3. Evolution world population (1950-2100; figures in billions) - UN forecasts July 2022

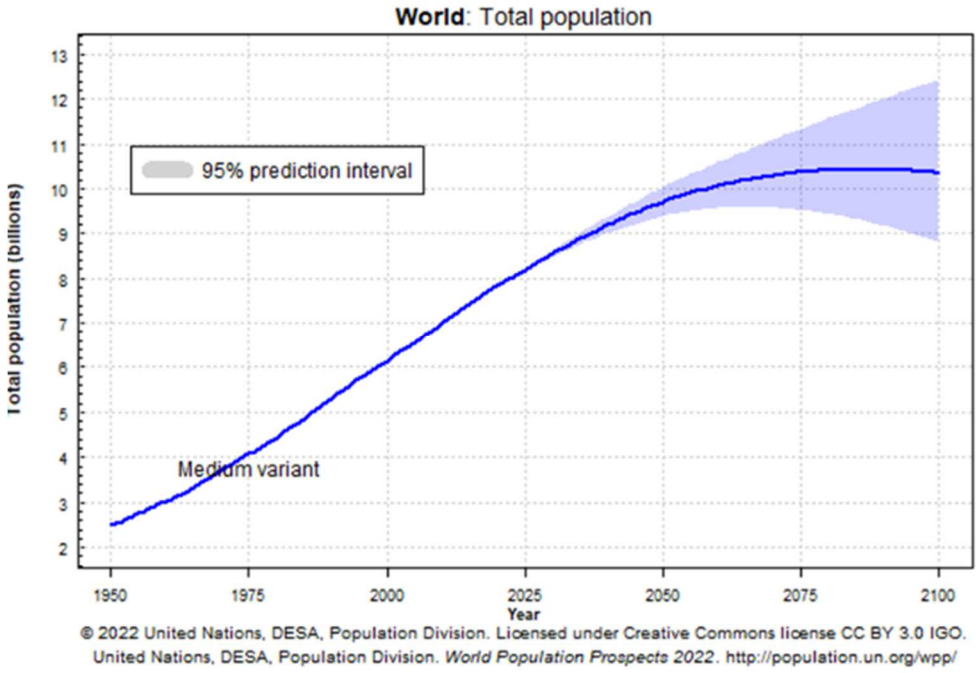
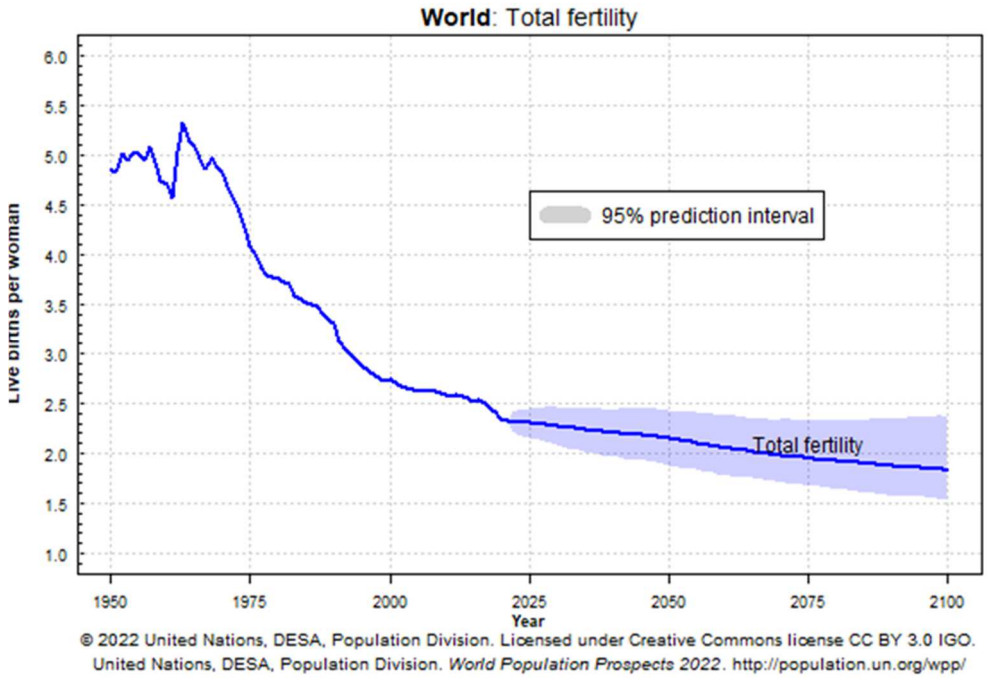


Figure 4. Evolution global fertility rate (1950-2100) - UN forecasts July 2022



patriarchy and has easier access to education there. The mass rural exodus towards cities thus translates into a world with much smaller families than before. For the population to remain constant, a fertility rate of 2.1 children per woman is needed (and not 2 because of early mortality). In its models, the UN assumes that in some countries where the fertility rate has fallen well below the 2.1 threshold, it will rise again. The Lancet questions this. Some demographers point out that once the fertility rate falls back below 1.5, there is no turning back as society organises, adjusts to having few children. Figure 4 shows the free fall of the global fertility rate.

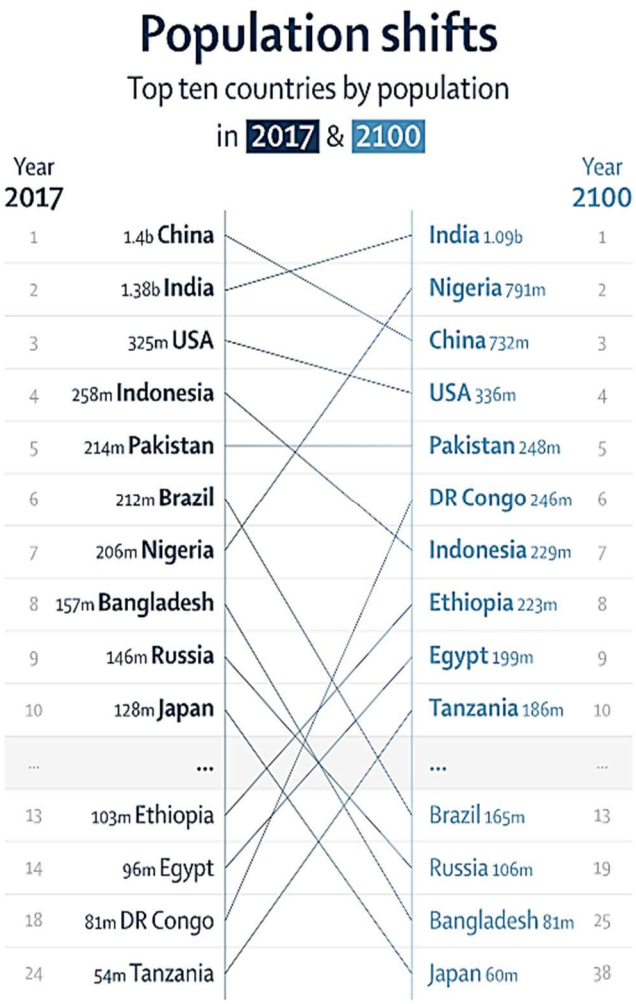
While the UN figures show a decline in the global fertility rate to below 2.1 (around the year 2065), this figure hides the assumption that in some big countries like China the fertility rate would recover.

The study in The Lancet rejects this assumption and develops two demographic scenarios. There is the "reference scenario" which yields 8.8 billion people in 2100, 1.6 billion less than the UN scenario, but not that much more than the current population. There is also an "SDG pace" scenario, that we present below.

Nigeria surpasses China

Behind The Lancet's reference scenario, however, are huge regional shifts. Just look at Figure 5:

Figure 5. Evolution world population in the largest countries (2017-2100) - reference scenario The Lancet



Source: The Lancet, July 14, 2020, Fertility, mortality, and population scenarios for 195 countries.

Japan's population is widely known to be in free fall. Since 2010, every new day there are fewer Japanese than the day before. By 2100, Japan's population will have fallen by more than half. But Japan is not alone.

China, whose population rose from 660 million to 1.4 billion between 1961 and 2021, is also seeing its population almost halve. The UN projections (see Figure 6) see China's prospects as slightly less gloomy and arrive at a population of around 800 million by 2100, a 43% decline. In The Lancet's reference scenario, China has to cede first place to India, although India itself sees its population shrink by 30%. China is also overtaken by Nigeria, a country with an exceptionally high fertility rate. Russia sees its population fall by 40 million, coincidentally or not, equivalent to the population of Ukraine.

In addition to the reference scenario, The Lancet shows the "SDG Pace scenario". SDG stands for the UN's Sustainable Development Goals, which include fighting hunger and poverty and perpetuating healthy cities. If the world succeeds in achieving these SDGs, the world population in 2100 would not reach 11 or 8.8 billion people, but 6.3 billion, 1.4 billion less than today. Of course, the biggest impact of achieving the SDGs is found in less developed countries (where fertility rates are still high). In the SDG Pace scenario, for example, Nigeria's population would not grow from 206 to 791 million by 2100 but "only" to 409 million. In the Democratic Republic of Congo, the population would not grow to 246 million but to 106 million.

Belgium champion

But the big shifts are not only evident in the "emerging" (?) countries, but also closer to home. The European picture is depicted in Table 1.

Western Europe's population is shrinking. Only Belgium, France and Sweden are still seeing their populations thicken. Elsewhere, there are sharp declines. Southern Europe is a disaster, unless you think halving the population is good news. The Dutch population is falling by a third and is outnumbered by

Figure 6. Evolution Chinese population (1950-2100; figures in billions) - UN forecasts July 2022

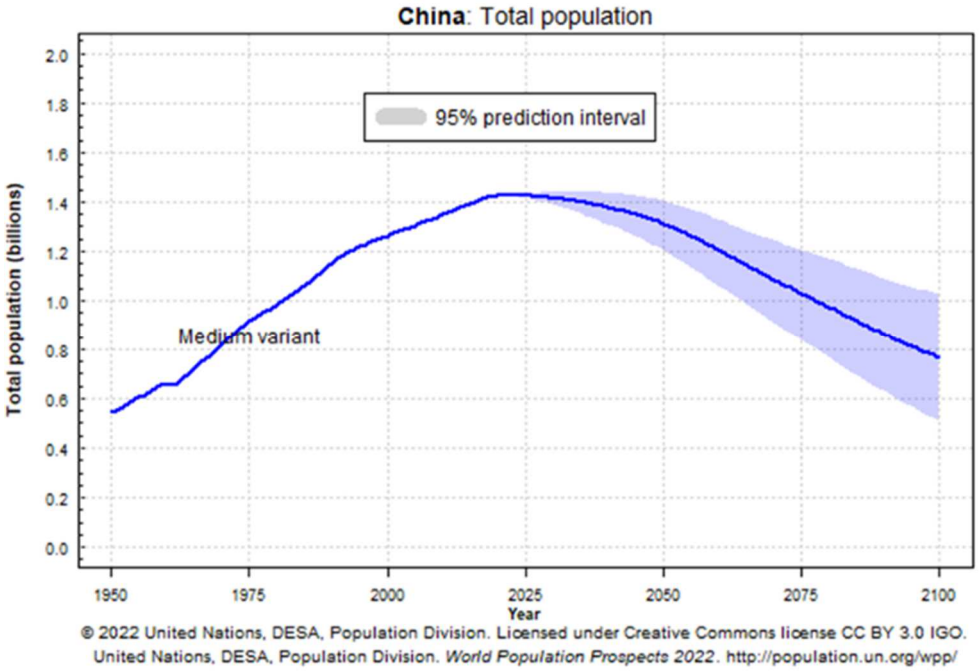


Table 1. Evolution Western Europe (2017-2100; figures in millions) – The Lancet

	2017	2100 reference scenario	% var	2100 SDG pace scenario	% var
Western Europe	433	374	-14%	330	-24%
Belgium	11	13	19%	12	2%
Austria	9	7	-25%	6	-32%
France	66	67	2%	60	-8%
Germany	83	66	-20%	60	-28%
Greece	10	5	-47%	5	-47%
Italy	61	31	-50%	31	-50%
Netherlands	17	14	-20%	11	-35%
Spain	46	23	-51%	23	-51%
Sweden	10	13	31%	11	7%
Switzerland	9	8	-3%	7	-14%

Source: The Lancet, July 14, 2020, Fertility, mortality, and population scenario's for 195 countries

Belgium. 2100 is still far away, but the new demographic reality is here for tomorrow (or yesterday, as in Japan). Population in the European Union might still rise slightly in the next 3 years, but after that it will be downhill.

Honey, I shrunk the population

China, given the size of its population, a sixth of the world total, and its role as the growth engine of the global economy, deserves our special attention. According to official statistics, 2022 will be the first year since the Great Famine of 1959-1961 that China's population shrinks. The contraction comes much earlier than expected. In 2019, the Shanghai Academy of Social Sciences, China's oldest and second largest human and social sciences think tank, still assumed that China's population would not peak until 2029. Until recently, the UN assumed the population peak would not be reached until 2032. Not so.

For the cause, we need to go back in time. In 1972, the Club of Rome published the report *Limits to Growth* that predicted the Apocalypse. The Club hooted that the planet was heading for total disaster because it would not be able to sustain the increase in world population. The report created - just like today - a global fear of overpopulation. Although it would later turn out that their assumptions were far too pessimistic and their computer models shaky, they did have a point as far as China was concerned. In 1971, the Chinese fertility rate was 5.8, a worryingly high level given the size of the population. The Chinese government therefore introduced policies in the 1970s that sought to curb population growth. By 1980, the fertility rate had already fallen to 2.8. In 1980, China introduced the infamous "One Child Policy". That policy, by Chinese custom, as we also saw with the Covid lockdowns, made no bones about it. It included a minimum age for marriage and childbearing, a limit of two children per family, minimum intervals between births, strict supervision and high fines for non-compliance. It worked. And perhaps even too well. The policy did not just reduce the fertility rate, it simply turned the fertility rate upside down. Today, it stands at just 1.15. China is thus doing even worse than Japan (1.3). China therefore made a U-turn in 2016 by replacing the One Child Policy with the Two Child Policy. But to no avail. As pointed out earlier, the way back up is much steeper than the way down. Spain, for example, can also speak for itself. When Spain saw the number of deaths exceed the number of births for the first time in 2017, a high-ranking official, commonly known as the "Sex Czar", was appointed to encourage the Spanish population to increase procreation. Without success. Targeted government policies can encourage people to procreate less, but not more. In a desperate attempt, China introduced the Three Child Policy in May 2021. Two months later, it even lifted any restriction on the number of children per family.

Demographic suicide

The Chinese government's desperation hides a reality far worse than what the official figures suggest. Anyone who thinks The Lancet's reference scenario is bleak should also take a look at the Shanghai Academy of Social Sciences' scenario. That predicts China's population will fall to 587 million by 2100, a plunge of almost 60%. It assumes the fertility rate will remain stable at 1.1, whereas the UN assumes it will recover to 1.65. This is what you eventually get with a fertility rate (well) below 2.1: you commit demographic suicide. However, this mathematical certainty does not stop some parties from proclaiming that a low fertility rate is a noble social goal. The Club of Rome, a motley crew of scientists, pseudo-scientists, politicians, entrepreneurs and attention seekers, still exists. They persist unabated in error. In 2016, they published *Reinventing Prosperity*, the follow-up to *Limits to Growth*. The book argues that rich countries should adopt a One Child Policy. Humans are a plague on the planet, aren't we? And certainly, those overconsuming creatures in the West. No sensible person advocates unbridled population growth, but some sense of reality is appropriate. If we deliberately exterminate ourselves, the problem is indeed solved. It is sad when young people, poisoned by misinformation and gloom and doom, declare that they "don't want to bring any more children into such a [n awful] world". They do not seem to realise what the life of the average Joe was like 100 years ago. Poverty, violence and hardship everywhere. In 1900 in America, for example, life expectancy at birth for a white man was 44 years (woman 49) and for a black man 33 (idem) years. Of those groups, less than 13% (15%) reached their 60th birthday. In 1890, 55% of all American workers earned less than the then-poverty line of $500 a year. Their ancestors, the immigrants, were as poor as Job, arriving at Ellis Island, in New York harbour, with their Sunday clothes on as their main possessions. The good old days?

Lies, damned lies and Chinese statistics

China is notorious for the unreliability of its official statistics. Chinese official economic statistics invariably, like Bernie Madoff's paper returns, show very low volatility, although this ideal picture is occasionally disrupted by bizarre peaks and troughs. The purpose of manipulation is to present reality rosier than it is. Some data series are discontinued without explanation. The CCP (Chinese Communist Party) sees to it that the good news show keeps running except when bad news helps the party agenda. Chinese corporate data are also notoriously unreliable. In our story, it is interesting to note that the Shanghai Academy of Social Sciences is under the control of the Chinese government. According to the FBI, the institute

even allegedly works for the Ministry of State Security. Whatever the case, the point is that when a Chinese government institute reports that something is bad, it really is bad and most probably much worse than thought.

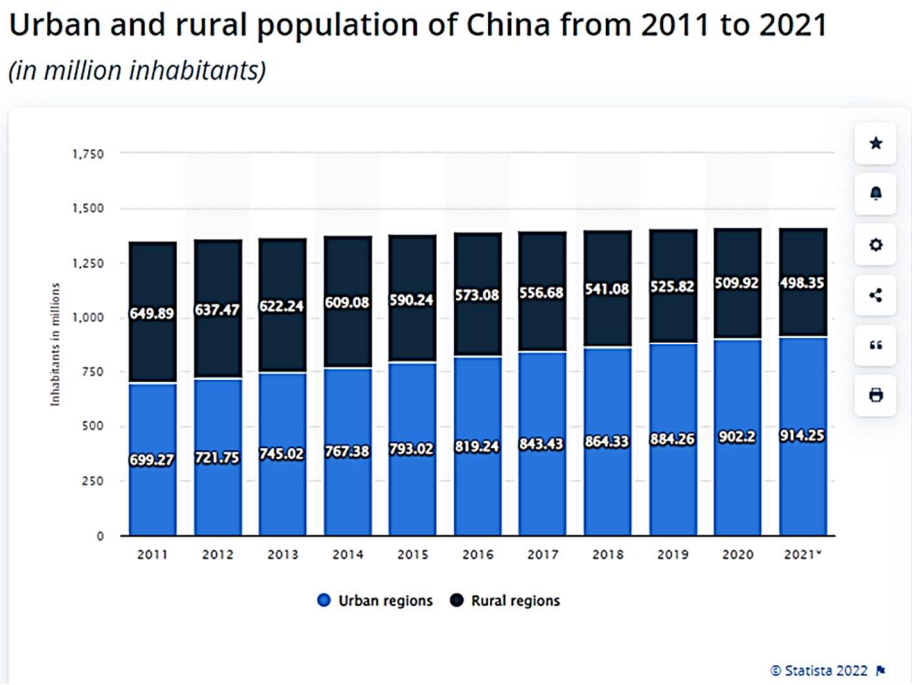
Big Country with an Empty Nest

Yi Fuxian, author of the China-banned book *Big Country with an Empty Nest*, has worked out that China's population is a lot lower than the official figure. The official statistics - and the UN figures - just don't line up if crossed with other data sets such as the number of tuberculosis vaccines administered. In China, every new-born is required to be vaccinated within 24 hours. With one dose, an average of 1.2 to 1.5 babies can be vaccinated. When the official birth rate is set against the number of vaccines distributed, about 2.5 babies would have been vaccinated per dose. Thus, the official birth rate is overestimated. This is indirectly confirmed by Baidu Trends, China's equivalent of Google Trends, which show lower sales of baby supplies. Yi Fuxian also refers to a data leak at the Shanghai Police Department in June 2022. A hacker released the personal data of 750,000 Chinese families, compiled randomly. An analysis of the data confirmed that the number of births was lower than the official figures and that the decline had long since begun. Yi Fuxian estimates that China's population is not 1.41 billion, but only 1.28 billion. And that difference makes a huge economic difference because it involves young people, who [should have been] part of the labour force. According to official statistics, China's labour force has already started to decline in 2012. If Yi Fuxian is right, the reality is much worse than what the official numbers are showing. China's harsh reality is also starting to sink in at the UN. In its July 2022 report, the UN assumes that China's labour force will take a dive over the next decade. By 2100, China's labour force would drop by 2/3 (!). And remember this prediction uses the unrealistically optimistic assumption that China's fertility rate will rise by almost half. More realistically, we may assume that China's labour force will fall by at least 3/4.

The inevitable conclusion

In recent decades, China has recorded high economic growth rates. More than through population growth, this growth was driven by a huge increase in labour productivity. The latter was driven by the massive rural exodus. The productivity of a Chinese worker in the city is four times higher than in the countryside. There is still some stretch to that migration to the cities, but

Figure 7. Evolution Chinese urban and rural population (2011-2021)



that trend is also coming to an end. Today, more than 900 million Chinese already live in cities (see Figure 7).

The inevitable conclusions from all this are as follows:

1. The Chinese growth story is over, the annexation of Taiwan imminent.

We didn't even mention China's gigantic property bubble and hidden debts. When the dire economic situation can no longer be hidden from the Chinese people, the temptation to bring in military trophies becomes all the greater. And what greater trophy for the CCP than Taiwan? Also read the previous edition of Quo Vadis on Taiwan.

2. The outlook for global economic growth has been greatly overestimated.

Over the past 10 years, the global economy grew by 27%. China's contribution to this growth was 33.4% when taking into account the size of the informal economy. China will contribute substantially less or even negatively to global economic growth in the future.

The cost of an ageing population has been underestimated.

This, together with lower economic growth, will put further pressure on public finances.

Ballooning public debt will in turn reduce productivity gains, further reducing economic growth.

3. Demand for commodities will be much lower than thought.

China consumes about half of the world's metals and coal and about 30% of all rice to name a few examples. The correlation between Chinese economic growth and commodity prices is particularly strong.

4. Inflation will be much lower than thought.

Slow global economic growth and low commodity prices will structurally lower global inflation.

The implications for the global economy and investors are huge. This edition of Quo Vadis has outlined the framework. In the next edition of Quo Vadis, Part II, we will discuss the implications in more detail.

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