

The Case for Gradual Population Decline

di Adair Turner

Contrary to conventional wisdom, rapid population growth rarely delivers demographic dividends, while low fertility rates do not necessarily lead to stagnation. In fact, persistently high fertility often exacerbates underemployment, limits investment in education and infrastructure, and entrenches poverty across generations.

LONDON – While we should always be wary of proposing a universal law of human nature, the past half-century has revealed a consistent and enduring pattern. In every society that combines economic prosperity, a well-educated female population, and access to safe and affordable contraception, fertility rates fall below – often well below – the replacement level of 2.1 children per woman.

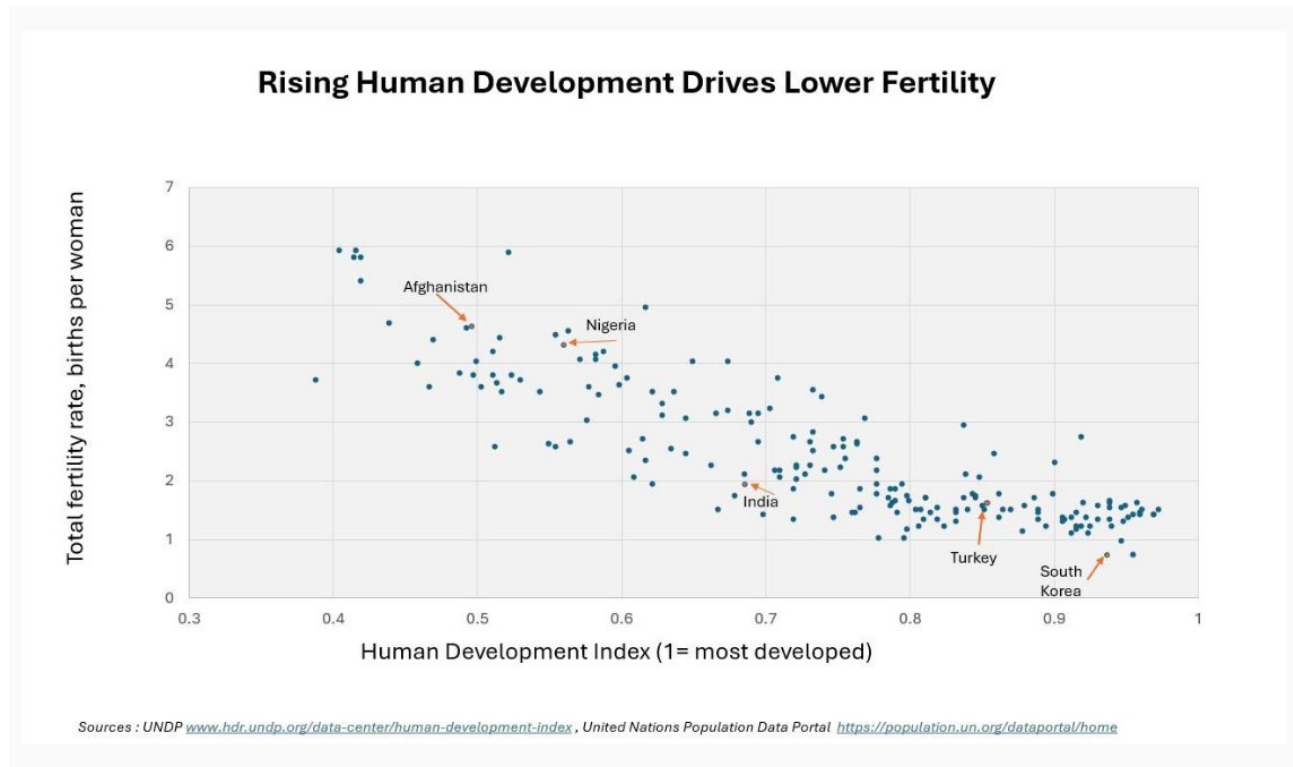
Sweden's fertility rate [dropped below 2.1](#) as early as 1968. By 1975, most European countries, along with the United States and Canada, had followed suit. None has risen above 2.1 since then.

As women's education and access to contraception expanded, low fertility became increasingly common. India's fertility rate now stands at 1.96; Latin America and the Caribbean fell below replacement level in 2015 and now stands at 1.8; Vietnam, Malaysia, and Turkey have rates of 1.9, 1.54, and 1.62, respectively.

A similar pattern appears within countries. In India, the fertility rates of the three most economically developed states – Gujarat, Maharashtra, and Karnataka – range [from 1.7 to 1.9](#), whereas rates in the poorer states of Uttar Pradesh and Bihar are 2.4 and 3.0, respectively.

Over the past 50 years, the world's fastest-growing economies – South Korea, China, Taiwan, and Singapore – have recorded the lowest fertility rates, ranging between 0.8 and 1.2 children per woman. By contrast, the highest fertility rates are found where

poverty remains entrenched or women's rights are severely restricted, such as Sub-Saharan Africa (4.26) and Afghanistan (4.76).



Yet instead of being welcomed as the natural outcome of economic progress and women's freedom to choose, declining fertility is often framed as a looming crisis. In India, commentators warn of the “[end of the demographic dividend](#),” while low fertility rates in Europe (1.4) and North America (1.6) are [routinely portrayed](#) as evidence of “[stagnant](#)” societies suffering from demographic “exhaustion.”

In 2018, the Robert Schuman Foundation warned that Europe risks “[demographic suicide](#).” In the US, billionaire Elon Musk has [predicted](#) “catastrophic population collapse,” and Vice President J.D. Vance [says](#) he wants “more babies in the United States of America.”

But this conventional wisdom is deeply misguided. While East Asia's exceptionally low fertility rates will indeed create serious challenges if sustained indefinitely, fertility rates in the 1.5-2 range are likely more conducive to human welfare than those above the replacement threshold of 2.1.

Moreover, the greatest demographic challenge of our time is not falling fertility in successful countries. Instead, that distinction belongs to explosive population growth in many of the world's poorest economies, particularly across Africa.

Too Few Workers?

Warnings about falling fertility often focus on the old-age dependency ratio – the number of retirees relative to the economically active population. In countries where fertility decline started earliest, McKinsey [estimates](#) that the ratio of people over 65 to working-age individuals (aged 15-64) will rise from around one-quarter today to one-half by 2050.

There are two major problems with this widely used measure. First, it assumes that retirement ages remain fixed despite rising life expectancy, thereby conflating two distinct demographic trends: falling fertility and increasing longevity. As the United Kingdom's Pensions Commission (which I chaired from 2003 to 2006) [showed](#), a significant share of the apparent rise in dependency – about half in Britain's case – disappears if retirement ages are gradually raised so that the proportions of adult life spent working and in retirement remain roughly stable.

Second, the standard measure ignores the fact that children are also dependents, which means lower fertility reduces child dependency even as old-age dependency rises. Politicians calling for “more babies” should recognize that if birth rates do increase, the total dependency ratio will rise even faster than before until those children enter the workforce two decades later.

But, in principle, the dependency ratio argument is valid: lower fertility means a one-off increase in the number of retirees relative to workers. The crucial question is whether productivity growth can make up the difference. So far it always has.

In 1800, old-age dependency ratios were close to zero, because most people worked from childhood until death. In today's advanced economies, there are about 0.4 retirees for every worker, each of whom enters the labor force far later in life and works far fewer hours each year than their counterparts in the early 19th century. The share of hours lived after the age of 15 which are spent working has fallen at least 60%; but advanced-economy GDP per capita has [increased 15-fold](#).

This reflects humanity's extraordinary capacity to raise productivity. In pre-industrial societies, most people worked in agriculture, laboring more than 60 hours per week simply to produce enough food to survive. In developed economies today, fewer than 3% of working-age [adults](#) – working far fewer hours – produce enough food to feed not only themselves but also retirees, children, and teenagers, who no longer need to work.

The same is true of manufacturing, which currently accounts for [less than 20%](#) of the workforce in developed economies. China's 125 million factory workers produce 30% of all the [manufactured goods](#) used by the world's 8.2 billion people; and [robot-based automation](#) will reduce that number quickly even as output continues to rise. While the technological advances of the past 50 years have given us mobile devices with far more computing power than NASA used to land a man on the moon, producing all the world's smartphones, laptops, and tablets employs only [10-15 million people](#) out of a global working-age population of [five billion](#).

So, rising dependency ratios are not a problem unless humanity has suddenly lost its ability to sustain productivity growth. In fact, AI is likely to strengthen it.

The AI Acceleration

At first glance, AI may appear just another tool for automating an ever-wider range of tasks, but its self-learning capacity makes it more than that – not just a technology which can increase productivity, but one which can itself accelerate technological advance. This transformative potential underpins optimistic projections of AI's economic impact, with true believers predicting that it could automate almost all jobs, [boosting](#) annual growth to 20-30%, compared with the twentieth-century average of 2.8%.

There are good reasons to take such extreme predictions with a very large [grain of salt](#), especially those suggesting that rapid gains in underlying productivity will be reflected in measured GDP. But we are clearly moving toward a future in which machines can perform most human jobs. By 2100, all the world's food could be produced by less than 1% of the global population, and manufacturing, transport, and logistics could require a similarly small fraction of the workforce. Many people may remain employed in these sectors, but only because high fertility rates in poorer countries continue to

generate surplus labor willing to work at very low wages, not because it is technologically necessary.

When it comes to desk jobs, humanity has shown an almost limitless capacity for inventing tasks devoted to zero-sum competition, especially in areas like marketing, sales, lobbying, and finance. But AI is still poised to automate a significant portion of the roughly [one-third](#) of jobs that involve repetitive tasks like information gathering and processing.

Tasks that require hand-eye coordination, fine motor skills, and flexibility will be far harder to automate. Robots are still pretty inept at something as simple as [loading a dishwasher](#); plumbers and electricians are unlikely to be replaced any time soon. But even here, the question is almost certainly *when*, not *if*.

Bank of America [estimates](#) that by 2060, there could be two billion humanoid robots working in people's homes, alongside another billion in the service sector. If that forecast is even remotely accurate, and if these machines are even moderately capable, there will be no shortage of workers.

There are also jobs we should not automate, even if we could. In the US, about [14.5% of employees](#) work in health care and social assistance. But even in this sector, only a minority of hours worked involve emotionally important face-to-face interaction. In 2017, McKinsey estimated that [36% of hours](#) worked in this sector could be automated with already existing technologies. As that percentage rises over time, and as work is automated across all other sectors, finding enough workers will hardly be a major challenge.

For many people, a world of near-limitless automation raises another concern: Will there be enough jobs for everyone to earn a good living? Whatever the answer, it is absurd to worry about a shortage of jobs while simultaneously fearing that low fertility will leave us with too few workers.

Too Few Innovators?

While machines can perform many tasks, what about innovation and creativity? In a world of low fertility and population decline, “there are fewer young people around to think, create, and invent,” argues Paul Morland in his 2024 book [No One Left: Why the](#)

[World Needs More Children](#). Fewer births, the argument goes, means fewer discoveries.

But the notion that “old people” cannot innovate is ludicrous. Whatever one thinks of his politics, Musk at 54 shows no signs of declining ability to drive technological and business innovation. Beethoven wrote some of the most strikingly original works in music history when he was in his fifties, and Picasso was as inventive in his sixties and seventies as he was in his twenties.

Still, on average, a higher share of younger people may contribute to innovation, especially in technical fields where mathematical reasoning plays a central role. But only a fraction of the population, whether young or old, has ever been responsible for major technological advances.

Consider nuclear science. In 1890, humanity had almost no understanding of nuclear physics; by 1945, its knowledge was deep enough to build atomic bombs and generate nuclear power. Yet the scientists and technologists behind these breakthroughs [numbered only in the thousands](#) and were concentrated mainly in Europe and the US at a time when these regions’ youth population was less than a tenth of today’s global total.

And that was before the development of AI, itself developed by a tiny fraction of the global workforce. DeepMind’s AlphaFold has mapped the structure of [nearly all known proteins](#), hugely improving the ability of very small numbers of research scientists to develop new drugs.

The same applies to entertainment, fashion, and the culinary arts, where new ideas are driven by a small minority of creative people, many of whom make their most important contributions well past youth. And if we really did need more innovators, having smaller families later in life might free up youthful energy otherwise devoted to childcare.

South Korea is a case in point. Its fertility rate fell below 1.7 in 1985, and the share of its population aged 20-40 has declined by 20% since 2000, yet the country still ranked first in Bloomberg’s [2021 Innovation Index](#). Earlier this year, it ranked twelfth in the [Brand Finance Global Soft Power Index 2025](#), a “meteoric ascent” attributed to its

“dominance in arts and entertainment” and the worldwide appeal of its cultural exports, whether K-pop, K-dramas like [Squid Game](#), or K-beauty products.

At just 0.8, South Korea’s fertility rate may eventually sap its innovative vitality. But the idea that low fertility rates inevitably result in technological and cultural stagnation is supported by neither logic nor empirical evidence.

Demographic Dividends and Delusions

Conventional wisdom holds that low fertility leads to stagnation, while rapid population growth delivers dynamism. The International Monetary Fund, noting that Africa will account for 80% of global population growth through 2100, [describes](#) this as “a window of opportunity, which if properly harnessed, can translate into higher growth and yield a demographic dividend.” India’s national investment promotion agency, Invest India, similarly highlights its youthful population as a key [selling point](#) for global investors.

But there is no evidence that economies with sustained high fertility rates grow faster. On the contrary, persistently high fertility often leads to a demographic disaster of sluggish income growth and widespread underemployment.

Sustained increases in per capita income depend on rising capital per worker – physical (infrastructure and equipment) and human (education and workforce skills). Rapid population growth undermines both, limiting investment in education, reducing per capita physical infrastructure, and making it impossible to create jobs quickly enough to absorb new workers.

India offers a striking example. Since 1990, per capita income has grown by an average of 4.3% annually, with a high savings rate offsetting capital dilution. But per capita growth would have been faster if population growth had been slower. Over the past three decades, the working-age population has [swelled from 700 million to one billion](#), but only 490 million count as part of the workforce. Of these workers, just 113 million earn a regular wage outside agriculture, and barely 60 million are employed in the “organized sector,” where large companies deploy cutting-edge technologies to boost output while reducing labor demand.

In effect, India’s economy is a rapidly growing island of high productivity surrounded by a vast ocean of low-income underemployment, with much of the working-age

population excluded from the country's growth story. Had fertility fallen sooner, India today would have a higher employment rate and per capita income. The good news is that with fertility now below replacement level, the working-age population will stabilize within the next 20-30 years.

By contrast, Africa's demographic trajectory is clearly unsustainable. Between 1990 and 2020, GDP per capita in Sub-Saharan Africa [grew](#) by 0.9% per year – a pace so slow that extreme poverty could persist for centuries. The region's working-age population has risen from 206 million in 1990 to 580 million today. Rather than producing a demographic dividend, this population boom has fueled an underemployment crisis. The International Labor Organization [estimates](#) that 93% of Nigeria's working-age population is either unemployed or stuck in the informal economy. Even in South Africa – the region's most advanced economy – 35% of workers remain outside formal employment.

Looking ahead, Sub-Saharan Africa's working-age population is projected to [rise](#) to 1.1 billion by 2050 and 1.9 billion by 2100. But in a world where most jobs can be automated, there is no chance that such vast numbers will be absorbed into high-productivity work. Africa will reap a true demographic dividend only when its fertility rates fall below replacement level.

How Population Growth Fuels Cost-of-Living Increases

For developed countries, too, the conventional wisdom is that rising populations drive growth and that immigration is critical to countering the effects of low fertility. But this overlooks the significant benefits of gradual population decline.

In the UK, the fertility rate varied between 1.7-1.9 for four decades after the mid-1970s. Until the 1990s, net migration was close to zero. Had that pattern continued, the population would have stabilized at around 60 million, followed by a gradual decline. Instead, net immigration [increased](#) to around 100,000 annually in the late 1990s and 200,000 between 2004 and 2019. Over the last five years, it has surged to roughly 600,000 per year, pushing the population to [69 million](#). But the UK has not experienced a demographic dividend: GDP per capita has averaged [just 0.4%](#) annual growth since 2005, compared with 2.3% in the previous half-century. While the slowdown has multiple causes, the benefits of immigration as a remedy for low fertility remain

unproven. Supposedly “demographically stagnant” Japan, with a population now [four million smaller](#) than in 2000, has grown faster, with GDP per capita rising by [0.6% annually](#).

UK Population and Economic Growth (% Per Year), 1975-2025

%	Real GDP	Population	GDP per head
1970s	2.7	0.1	2.5
1980s	2.6	0.1	2.5
1990s	2.1	0.3	1.9
2000s	1.7	0.6	1.1
2010s	2.0	0.7	1.3
2020s	1.1	0.7	0.3

Source: UK Office for National Statistics

Conversely, rising populations have fueled cost-of-living pressures and widened inequality, most notably by raising housing costs. Over the past 20 years, many countries have experienced sluggish real income growth and a much-discussed “[cost-of-living crisis](#).” But not all costs have increased: clothing has become cheaper relative to income, and the prices of most electronic appliances, mobile communications, and online entertainment have fallen dramatically. By contrast, rents and home prices have climbed far [faster than average earnings](#) in most developed – and many developing – countries.

This is partly the result of economic prosperity. As automation lowers the cost of many goods and services, households devote a [larger share of their income](#) to competing for scarce resources like housing and land. That dynamic would persist to some extent even if populations declined, because what matters most is not the total housing supply but homes in specific, desirable locations. But population growth intensifies the pressure.

Many [recent studies](#) assess the link between immigration and housing prices, but immigration and higher birth rates produce the same effect over the long term. Research by Bank of Canada economists [found](#) that immigration inflows equal to 1%

of a US county's population were associated with a 3.8% increase in house prices and a [2.2% rise in rents](#), but that native-born population growth had roughly twice the impact.

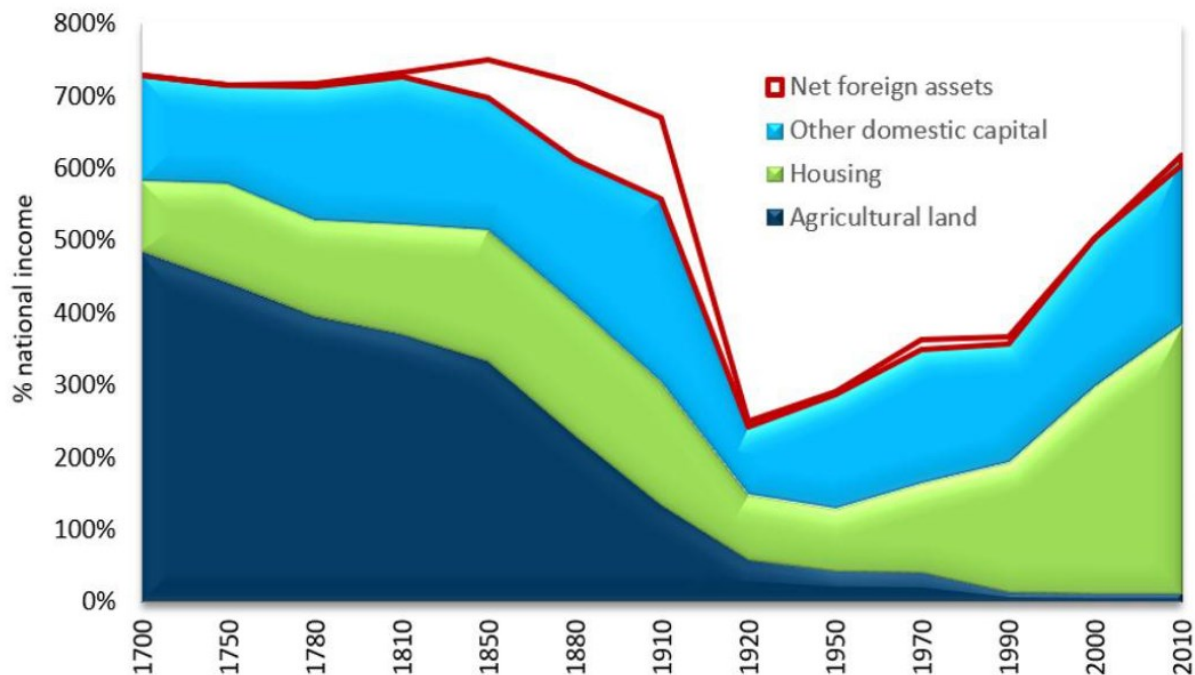
Why Population Decline Could Reduce Inequality

[Thomas Piketty](#)'s 2013 book *Capital in the Twenty-First Century* showed that wealth-to-income (W/Y) ratios have [increased sharply](#) across most of the world's developed economies over the past 70 years. Because wealth is distributed far more unequally than income, and because it is inherited, this trend undermines social mobility. Without higher taxes on wealth or inheritance, he argues, W/Y ratios will continue to rise.

Piketty may well be right, but for the wrong reason. His analysis assumes that the annual increase in total wealth equals the savings rate multiplied by total income. In other words, wealth comes from household savings, which implies that the W/Y ratio depends on the savings rate relative to the economy's growth rate. By reducing GDP growth, then, declining fertility would boost the W/Y ratio.

But Piketty's own data show that most of the increase in the W/Y ratio is the result of housing prices rising faster than average earnings, driven by competition for limited supply in desirable locations. This implies that, contrary to Piketty's prediction, population decline would actually [slow the rise in W/Y ratios](#). And a slower or falling W/Y ratio would benefit those without access to inheritance or the "[bank of mom and dad](#)" as a path to homeownership.

The Wealth-to-Income Ratio in France, 1700-2010



Source: *Capital in the Twenty First Century*, T. Piketty (2013)

Population decline will also reduce income inequality, benefiting lower-income groups. As Geoffrey Hinton, the Nobel Prize-winning scientist often called the godfather of AI, has [warned](#), “AI will make a few people much richer and most people poorer.” Recent studies [support](#) this view: if AI fuels rapid productivity growth, the gains will flow mainly to capital owners and a small pool of highly skilled developers, while lower-skilled workers’ wages will fall.

In a world of near-total automation, it is easy to imagine a small wealthy elite employing armies of low-paid workers to tend gardens, cater parties, provide personal care, and walk their dogs at wages so low that replacing them with machines would not be worthwhile. But wages in such a world will still reflect the balance between labor and capital: the larger the workforce relative to capital, the lower wages will sink. Conversely, if low fertility leads to a gradual population decline, wages for lower-income workers are likely to be at least somewhat higher.

Historically, slow population growth – or outright decline – has tended to benefit workers and disadvantage capital owners. In his 2017 book [The Great Leveler](#), the Stanford University economic historian Walter Scheidel notes that the collapse in

Europe's population after the Black Death of 1348 drove up real wages and cut landowners' rents. A [2020 study](#) suggests that these wage increases also spurred innovation, putting northwest Europe on a path to sustained improvements in living standards.

Scarcity, not abundance, is often the mother of invention. Fortunately, similar benefits can now be achieved through freely chosen low fertility rather than a catastrophic plague.

Smaller Population, Healthier Planet

A shrinking population would also enhance welfare by reducing the burden on natural systems. As people grow wealthier, many place greater value on scarce resources such as urban green spaces, protected habitats and wildlife, clean rivers, and uncrowded beaches – all of which are diminished by population growth and could be preserved, even expanded, with gradual decline.

Population stabilization and eventual decline would also make it easier to confront the greatest environmental challenge of all: climate change. With global temperatures rising at an alarming rate, the top priority is to reduce emissions per capita while improving energy access and ensuring prosperity by deploying the clean technologies now available.

But the larger the population, the harder the task becomes. Since 2000, China's emissions have [nearly tripled](#) as its GDP per capita quintupled and its population [grew](#) by 12%, before leveling off after 2022. Had China's population grown as fast as India's, which [surged](#) by 38% over the same period, its emissions would be even higher.

Meanwhile, Sub-Saharan Africa emits [less than one ton](#) of carbon dioxide per capita – a reflection of its severely constrained energy use and low incomes. Expanding zero-carbon electricity is both possible, thanks to the [plunging costs](#) of solar PV and batteries, and urgent. But achieving this transition will require [massive investment](#), and given the region's limited domestic savings, external financing is essential. The larger the future population, the greater the financing needs will be, and the less likely they are to be met.

In some countries, high population density will also increase the cost of the energy transition. Globally, devoting [just 1% of land](#) to solar PV could generate double today's global electricity supply. China, with [150 people](#) per square kilometer (388 per square mile), has plentiful land to support a zero-emission economy. But in Bangladesh, where density is around 1,300 people per square kilometer, supplying as much electricity per capita as Europe consumes would require devoting [6-10% of the land](#) to solar PV, potentially undercutting food production or forcing the government to rely on more expensive alternatives like nuclear power.¹

The sooner densely populated countries achieve population stability, the easier it will be to build the net-zero economies needed to contain global warming.

Any serious assessment of fertility decline must therefore weigh costs against potential benefits, rather than reflexively assuming that any rate below 2.1 is inherently bad. Of course, fertility can fall too far. If South Korea were to maintain its current rate of 0.8 indefinitely, the retiree-to-worker ratio would eventually rise from 0.3 to around 1.5 – a burden that even major technological advances might not offset.

But there is no reason why the optimal fertility rate for human welfare could not lie somewhere between 1.6 and 1.9 rather than 2.1 or higher. A global fertility rate of around 1.75, if sustained, would imply a population decline of roughly 30% over the next century – enough to mitigate the inequality that AI will almost certainly intensify, while also reducing environmental pressures without stifling innovation.

But that fortunate outcome won't happen anytime soon. The United Nations' [median projection](#) is that the global population will climb from 8.2 billion today to 10.2 billion by 2100, with 147% growth in Africa offsetting a 5% decline in the Americas, Europe, and Asia.

The Freedom to Choose

In a free society, fertility should not be determined by politicians or economists, but by individuals, particularly women. The key question, then, is what people themselves want, not what experts think the optimal rate might be. A [recent UN report](#) argues that the “real” fertility crisis lies in the gap between aspirations and reality: 11% of women expect to have fewer children than their “ideal,” while 7% expect to have more. The median “ideal” is two children.

But as *Financial Times* columnist Janan Ganesh [points out](#), survey responses about “ideal” family size often reveal little about how people make decisions. In reality, families weigh the desire for children against the pull of consumption and leisure. The revealed preferences of the past half-century, therefore, tell us more than opinion polls: in every advanced economy where people are free to choose, fertility rates settle well below 2.0. But how *far* below does matter to the balance of benefits and costs. Policymakers would therefore be wise to address the factors which drive fertility to very low levels.

According to the UN survey, beyond limited income and job prospects, the main barriers would-be parents face are the lack of affordable, high-quality childcare and soaring housing costs. Addressing the latter challenge effectively may, however, involve difficult trade-offs: if new construction comes at the expense of green spaces and sports fields, raising children may appear less attractive. Immigration to offset low fertility may therefore drive fertility rates lower.

Even with effective policies, fertility rates are unlikely to rise above the 1.5-1.9 range observed in many developed countries over the past 50 years, including those with excellent childcare systems and abundant land for housing. Rather than being feared, this outcome should be celebrated as the hallmark of a prosperous society where people are free to decide how to live their lives.