

Demographics, the economy and the environment: An MMT approach

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1. Introduction

The pace of climate change is blowing past even pessimistic projections, threatening human survival. At the same time, concern is rising over rapidly changing demographics. Falling birthrates are overtaking lower mortality rates so the global population is rapidly aging and already declining in some nations. That would have been celebrated a few decades ago when Paul and Anne Ehrlich warned about a population “bomb,” predicting that:

“[t]he battle to feed all of humanity is over. In the 1970's the world will undergo famines – hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate...” (Ehrlich and Ehrlich 1969, 5)

They suggested:

“We must rapidly bring the world population under control, reducing the growth rate to zero or making it go negative. Conscious regulation of human numbers must be achieved. Simultaneously we must, at least temporarily, greatly increase our food production. (188)

Similarly, in a 2017 survey of Nobel Laureates a third of respondents ranked population growth and environmental degradation as the “biggest threat to humankind”.

But rather than seen as a boon, these demographics are feared because of impacts on economic growth and the burden of supporting the aged. Some have stressed the impact of China’s declining workforce (where the population fell last year) and potentially elsewhere in the developing world because cheap labor has been a major factor fueling economic growth while suppressing prices (and wages) in developed countries. But the more immediate concern has been the supposed unsustainability of pensions as most countries face an avalanche of retirees with fewer people paying taxes into retirement systems.

We will use the Modern Money Theory (MMT) framework to address these concerns. While it is true that governments will likely collect less revenue while paying out more in pensions, we

argue this is not a cause for concern since there is nothing to prevent governments with sovereign currencies from paying the elderly promised pensions. What is less certain is whether there will be enough real output those incomes can buy in a non-inflationary and environmentally sustainable manner. The real issue, then, is production and distribution of real resources, not lack of finance.

Another fundamental presumption underlies this contribution: achieving environmental sustainability must consider economic and social sustainability, including provision of old age security. At the same time, rethinking aging and population decline from a real resource perspective leads to solutions more in line with our biophysical limits since the focus is on doing more with less (raising productivity) and the distribution of resources (improving equity). Since the environment is better off with a smaller global population, policy should focus not on changing the demographic trends, but on taking measures to ensure adequate provisioning for all, while respecting the biophysical boundaries. This includes taking measures today to fight the catastrophic effects of climate change which threaten collapse of production.

2. The Demographic “Time Bomb”

The news that China’s population actually fell in 2022 for the first time in 60 years led many pundits to warn of a “demographic crisis,” with “consequences not just for China and its economy but for the world” (Stevenson and Wang 2023). Bret Stephens warned that “[i]f you think the world has too many people already, then this might sound like good news. It’s not. China is increasingly likely to grow old before it gets rich, consigning millions of Chinese to a penurious and often lonely old age” (Stephens 2023).

China is not alone -- Europe, Japan, South Korea, and Russia have declining and aging populations. But China provides a warning of what to expect in other developing nations. Over this century, the most populous nations will see fertility rates fall below replacement. India--with the largest population in the world--has a total fertility rate (TFR) already below replacement (2.01), and that is expected to continue to fall to 1.78 in 2050 and 1.69 in 2100, when India’s population will also begin to fall (Stevenson and Wang 2023). Among the most populous countries, Nigeria and Pakistan have the highest TFRs at 5.14 and 3.41 respectively, but even these are expected to drop below replacement by 2100 (Stevenson and Wang 2023).

For now, the global population continues to increase. But on current projections that reverses sometime this century, peaking at 9 or 10 billion.¹ By 2100 the projected population is within a wide range, between 9 billion and just over 12 billion, however the median projection calls for the population to begin to decrease before the end of this century.² Barring catastrophe, we are not likely headed for either “population bomb” extreme: zero or infinite population. Eventually, the mortality and birthrates will probably align so that the global population will fluctuate within some narrow range.

¹ See UN data for a projected peak at about 10.4 billion in the 2080s: <https://data.worldbank.org/products/#eatlas>.

² The projected range varies between a low of 6 billion and a high of 15 billion simply by changing the assumed fertility rate by just half of a child (UN DESA 2022).

3. Aging and Government Finances

Conventional wisdom holds that an aging population places an unsustainable burden on government finances, with relatively fewer workers paying taxes into public pensions. A report from Standard and Poor's (S&P) cautions that "[i]n the absence of policy action to cut age-related spending, the median net general government debt will rise to 102 percent of GDP in advanced economies and 155 percent of GDP in emerging economies by 2060" eventually resulting in ratings downgrades (Tilleray and Mrsnik 2023, 1). Reporting on the latest projections of U.S. Social Security's finances, Jeff Stein of the *Washington Post* warns:

[r]egardless of the politics, the aging of the baby boomer generation poses a real challenge for federal lawmakers. Congress has until 2032 to avert major cuts to Social Security and until 2033 to avert major cuts to Medicare, according to the latest projections by the nonpartisan Congressional Budget Office. (Stein 2023)

Radical changes have been proposed to make the US Social Security system more sustainable -- those on the *right* suggest benefits cuts, raising the retirement age or investing Social Security funds in the stock market to get better returns.³ Americans on the *left* favor eliminating the income cap on the payroll tax, increasing the tax base to make Social Security solvent. Jean-Luc Mélenchon and the unions in France argued for raising taxes on the rich and employers. *The New York Times* summarized the pessimistic view on demographics: "How do you adapt to an older world and pay for the inevitable pension time bomb ticking in the background as this super-ager cohort approaches retirement age?" (Warner 2023).

The *Times* is correct that policy is needed to adjust to a different demographic composition—fewer children and more elderly. Unfortunately, most solutions proposed for solving the "pension time bomb" are misguided. The adjustments we need to make should not be aimed at how to "pay for" pensions. The real question is this: with relatively fewer workers, can we care for a growing army of retired seniors living longer lives? We face a potential resource problem, not a finance problem.

When we think of retirement at the individual level, it's certainly a financial issue: *will I have enough money saved for my old age?* But from the perspective of society, sustainability depends on its real resources and worker productivity. Workers support those who are not working: retirees, the unemployed, children, people with qualifying disabilities, and unpaid care providers.⁴ This is the real burden of retirement—having enough real goods and services for everyone. Even if we could *financially* afford to pay retirees what they were promised, a retirement system would not be sustainable if a nation couldn't produce (and import) enough goods and services.

The solution proposed by the left serves to illustrate this point. Suppose we broaden the tax base for Social Security by eliminating the cap—so all pay is taxed. But, at the same time, suppose we don't have enough workers with productivity sufficient to produce all the goods and

³ Some even propose a sovereign wealth fund to issue debt and invest proceeds in the stock market! <https://www.semafor.com/newsletter/01/20/2023/pences-big-anti-abortion-play>

⁴ Although it must be recognized that much of the support of elderly, young, and people with disabilities is done by those unpaid care workers.

services needed. Our retirement system will be solvent in financial terms, but it will not be sustainable. We can continue sending checks to seniors, but they will compete for a limited amount of goods and services, leading to inflation and eroding the purchasing power of those checks. Taxing higher-income individuals might alter the distribution of consumption, but it will not create more output.

One could still argue for higher taxes on the wealthy for a variety of good reasons: the payroll tax cap is clearly regressive and has become even more so due to rising wage inequality. The rich contribute inordinately to greenhouse gas emissions because of the composition of their consumption basket: private jets, yachts, and mansions. Taxes can be used to alter their consumption patterns and to reduce inequality that threatens democratic governance. We emphasize, however, that success of such taxes should not be measured by revenue generated but rather by reduction of emissions and power to influence elections. Very high tax rates on the rich and a tax surcharge on the middle class may be required to release sufficient resources to distribute to seniors—again, success is measured by reduction of resources consumed by extravagant lifestyles, not by revenues raised.

Whether we can take care of tomorrow’s seniors will depend on the resources available to support them in the future—including most importantly the labor force—and on growth of productivity. On current projections for the USA, the overall dependency ratio (number of young and old dependents per worker) will rise, but only to the levels already reached at the height of the baby boom. With even modest growth of labor productivity, it is difficult to imagine that this would lead to a catastrophic burden. And if we can believe that advances in Artificial Intelligence live up to expectations, we may face a cornucopia of productivity advances.

Do we really face a “demographic time bomb”? It is difficult to reconcile the fear that robots are coming for our jobs while believing that we will not be able to adequately provision seniors. A report from Goldman Sachs projects that two thirds of the jobs in the US could be subject to replacement or degrading if generative AI lives up to its hype. Extrapolating to the world, they conclude that as many as 300 million jobs globally could be affected.⁵

Imagine an extreme scenario in which robots produce everything. There is plenty of output for humans, and the robots never need wages, pay taxes, or retire. However, since robots won’t pay taxes, this will “bankrupt” Social Security even as the supply of resources needed for the young and elderly would be plentiful. But we only need to give the retirees (and others who can’t work) their fair share of income to distribute output. This demonstrates that if we remove the real resource constraint, it is easy to come up with the finance to distribute output to old, young, and everyone in-between. Although there could be political fights about the distribution, there would be no question about sustainability or affordability. Hence “affordability” concerns production and distribution of output and income—not finance.

To drive the point home, consider a dystopian future in which climate catastrophe is not avoided. Production collapses so that we are unable to provision tomorrow’s youth, workers, and elderly. No matter how *financially* “sound” the retirement system is, it will not be able to support the population.

⁵ https://www.key4biz.it/wp-content/uploads/2023/03/Global-Economics-Analyst_-The-Potentially-Large-Effects-of-Artificial-Intelligence-on-Economic-Growth-Briggs_Kodnani.pdf.

4. An Alternative Framing of the Issue

Surprisingly, the correct framing for financing retirement systems is found not in the Bernie Sanders plan of raising the payroll tax cap or in Biden's plan of "taxing the rich". Instead, it comes from the ultra-conservative former Fed Chairman, Alan Greenspan. In an exchange with Paul Ryan who was prodding Greenspan to agree with him that privatizing Social Security "can help us achieve solvency for the system," Greenspan responded:

Well, I wouldn't say that the pay-as-you-go benefits are insecure, in the sense that there's nothing to prevent the federal government from creating as much money as it wants and paying it to somebody. The question is, how do you set up a system which assures that the real assets are created which those benefits are employed to purchase.⁶

Greenspan recognized that government can finance retirement since it cannot run out of its own currency. The real issue is whether there will be enough real output for that finance to buy.

It should be obvious that, from a real-resource perspective, simply focusing on the aging population in the context of low birthrates and population decline is missing half the story: there are fewer children to support. The child dependency ratio fell as the aged dependency ratio rose. Certainly the burden of support per child has grown: with a smaller families, parents focus more attention on children and support them for more years. A few decades ago, children in the developed world began working at age 16, or at least by age 18. Today, they are often supported by their parents for 25 years. At the other end of life, seniors are supported in retirement. Going forward, a typical global worker might live as a dependent for 50 years (25 as a youngster and 25 as a senior), with a working life of 40 years.

In terms real output, the burden of aged dependency is not much different from the burden of dependent young (although the composition of consumption is different). But the method of distribution is very different. Parents bear most of the burden of caring for the young, while, at least in the West, society bears much of the burden of supporting the elderly. For the young, distribution is largely within the family (although indirect support of youth by government plays a big role) while direct income support by government of the elderly is huge. It is the transparency of government elderly support—cash, with an attached payroll tax in the USA—that raises concerns about sustainability. We expect, and to some extent overlook, much of the burden of parental support for children. If today, instead of an aging population, we were dealing with a baby boom, we wouldn't worry about its financial sustainability. Instead, we would worry about the real issue – the environmental sustainability of a growing population. Yet, in terms of the "burden" on society, the macroeconomic impact would be similar to what we face with the aging "crisis."

Attempts to cut old age security would do for elder care what we already do with the care of the young—push more of the burden onto families and away from the public sector. Cutting back on retirement security does not reduce society's burden of caring for the elderly—unless we choose elder neglect. It simply transfers financing from the social sphere to the household. More seniors today and tomorrow would become impoverished and forced to rely directly on

⁶ <https://www.youtube.com/watch?v=DNCZHAQnfGU>

their children. Workers would have to support, within their own households, both seniors and children. This is the system we had before there were national old-aged security programs.

Thus, while reforming national social retirement systems is portrayed as achieving “intergenerational justice” by raising taxes and cutting benefits now—supposedly to avoid burdening our grandkids—in reality, such “reform” simply burdens workers of today and tomorrow. In real terms, workers are always—inescapably—supporting both the young and the old. Social Security puts the financial responsibility at least partially in the public sphere. There are several benefits to this, including greater horizontal equity: one’s standard of living depends less on the extended family’s income as government can provide income directly. Luck plays a smaller role as retirement does not depend on number of children, their earning capacity, or their health (and vice versa, the children do not bear all the costs of bad luck in “choice” of long-lived parents and absence of siblings to share the burden). There is less incentive to have lots of children. And government can partially offset differences of lifetime earnings that generate big private retirement funds for some and miniscule funds for others by providing a base income for all. That base should grow with overall productivity and capacity to provide higher living standards for all.

More public support for the young, and fewer of them, are desirable outcomes—at the levels of the family and society—ensuring that average worker productivity *can* rise more quickly due to greater investment in the young, while we curb and reverse population growth to save the planet. While this is not foreordained, policy can make it a more certain outcome. Rational public policy should play a bigger role providing a social safety net for both dependent groups (young and old), especially in the USA where child poverty is high and retirement benefits for the lowest paid workers are inadequate. The question is whether—and how—we can prepare to support individuals for something over half of their lives.

5. Conclusion: Policy Solutions

Why is it important to bring aging into a discussion of environmental sustainability? Most proposals for dealing with aging would increase precarity among not just seniors, but for all ages of the population. Families that must care individually for their elderly members cannot devote as much care to their young. Those of working age must struggle to set aside funds for their own retirement. They must continue to work long hours and seek more monetary remuneration. Local and national governments promote economic growth to create more jobs, better paying jobs, more wealth accumulation and more taxes to support social security programs. Insecurity, inequality, and precarity create division, invidious distinction, and winners and losers. Those who fall through the cracks generate social and economic costs. In poorer countries, environmental damage can be a direct result as people desperately exploit nature to survive. In the rich world, damage is indirect, through environmentally unsustainable growth promoted by socially unsustainable policy.

Centering on real resources also leads us to question the disastrous austerity policies of previous decades that have negatively affected productivity growth and our potential. Austerity programs have largely sought to raise revenue and reduce benefits to enhance financial sustainability. This misguided logic kept large portions of the population in developed and developing nations idle even as many of community’s needs go unmet. In the aftermath of the Great Recession we left workers unemployed for many years instead of employing them to

accelerate the transition to renewable energy and a more sustainable economy. Even today many Southern European nations are reeling from double digit unemployment rates while greening initiatives remain on the shelves.

Adequate social provisioning for seniors can reduce precarity and promote transition to a more socially and environmentally sustainable model. Instead of remaining in single family homes, we can reduce environmental footprints by constructing compact, multi-use communities for seniors with healthcare and recreational facilities within easy reach by senior-friendly transport. Instead of a patchwork system of public Medicare and privatized Medicare Advantage (that is bankrupting American families with private equity maximizing returns) public health facilities would be freely available to all. Instead of a “three-legged stool”⁷ old-aged security would be guaranteed by adequate public funding. It would be best to provide all essential benefits on an equal basis to all elderly people. The main component of Medicare works so that, at age 65, all Americans qualify on an equal basis. Access to medical care is essential for elders, but so is access to adequate food, appropriate transportation, shelter, and entertainment.

If this sounds like a call for government to play a bigger role in provisioning for a sustainable demographic transition, it is! We are convinced that just as moving to an environmentally sustainable economy will require greater government involvement, social and political sustainability will also require more oversight. The neoliberal push for less government and more reliance on “the market” has been exposed as not only wrong, but as an existential threat to human survival. We would add that achieving environmental sustainability requires policy to reduce social precarity so the population of all ages can support the transition.

We should also recognize the benefits of low birthrates and an aging population. Instead of increasing the age of retirement, we should incentivize participation of elderly people in caregiving for both the young and the old. Women over age 65 already provide much of the care to their elderly parents, but more men should also participate in care activities—in the home, in the school, and in the community. Social policy could support seniors who want to provide youth care—perhaps with income but also with transportation and other support. This sort of investment in child rearing can help to produce a healthier, happier, and more productive labor force for the future.

In conclusion, a nation’s pension system (public and private) determines the distribution of production to retirees. The fight over pensions is a fight over the distribution of the nation’s output and income to workers, retirees and other dependents. The supposed unsustainability of government finances serves as a useful pretext for altering the distribution of resources away from seniors that rely on Social Security and for pushing the burden of care from the public sector onto households. The policies to “shore up” public pensions are not likely to increase output but would reduce the share going to the elderly. The old-aged security crisis is not real, but manufactured. Giving credence to the idea that there is an actual crisis serves to legitimize potentially disastrous “reforms.” To get to appropriate solutions, we first need to change the framing of the issue—away from finance and toward real resources.

⁷ In the USA seniors are supposed to rely on a combination of Social Security, personal savings, and a private pension. However, most seniors have accumulated very little personal savings, and pensions have largely been converted to defined contribution plans that are nearly universally inadequate. See Teresa Ghilarducci *When I'm Sixty-Four: The Plot against Pensions and the Plan to Save Them*, Princeton University Press 2017.

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