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The Unbearable Weight of Aging: How to Deal with the “Demographic Time Bomb”

by

Yeva Nersisyan

Franklin & Marshall College
and Levy Economics Institute

Xinhua Liu

Levy Economics Institute

and

L. Randall Wray

Levy Economics Institute

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Levy Economics Institute
P.O. Box 5000
Annandale-on-Hudson, NY 12504-5000
<http://www.levyinstitute.org>

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ABSTRACT

The aging of the global population is in the headlines following a report that China's population fell as deaths surpassed births. Pundits worry that a declining Chinese workforce means trouble for other economies that have come to rely on China's exports. France is pushing through an increase of the retirement age in the face of what is called a demographic "time bomb" facing rich nations, created by rising longevity and low birthrates. As we approach the debt limit in the US, while President Biden has promised to protect Social Security, many have returned to the argument that the program is financially unsustainable. This paper argues that most of the discussion and policy solutions proposed surrounding aging of populations are misfocused on supposed *financial* challenges when they should be directed toward the challenges facing resource provision. From the resource perspective, the burden of caring for tomorrow's seniors seems far less challenging. Indeed, falling fertility rates and an end to global population growth should be welcomed. With fewer children and longer lives, investment in the workers of the future will ensure growth of productivity that will provide the resources necessary to support a higher ratio of retirees to those of working age. Global population growth will peak and turn negative, reducing demands on earth's biosphere and making it easier to transition to environmental sustainability. Rather than facing a demographic "time bomb," we can welcome the transition to a mature-aged profile.

KEYWORDS: Aging; population bomb; demographic time bomb; dependency ratios; birthrates; longevity

JEL CODES: H51, H55, H61; J11, J13, J14, J26

1. INTRODUCTION

We are aging, individually and collectively. The US media is replete with stories about the rise in life expectancies in the US and elsewhere while birthrates have been on the decline. The Stanford Center on Longevity projects that more than half of today's five-year-olds in the wealthiest nations will live to at least 100 (Warner 2023). At the same time, birth rates have dropped significantly, and fallen below replacement rates in many countries. That combination—longevity and low fertility—ensures that the worker-to-retiree ratio, the number of people of today's normal working age relative to the number of those of normal retirement age, will fall. Most European nations are already dealing with a decline of worker-to-retiree ratios (somewhat tempered by global climate refugees), and most of the rest of the world's nations are, or will soon be, in a similar situation.¹

Indeed, problems are said to be even worse in parts of Asia where fertility rates fell below replacement long ago—so much so that populations are shrinking. Japan's population has been mostly falling since 2008, South Korea has recently joined Japan with a shrinking population, and China's population fell for the first time this past year. All three have rapidly aging populations and very low birth rates—meaning that the ratio of workers to retirees is already low compared to global averages.

The aging population is claimed to place an unsustainable burden on government finances with relatively fewer workers paying taxes into the public pension systems. A recent report from Standard and Poor's (S&P) warns 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.” (Tilleray and Mrsnik 2023, 1) If governments take no action to solve their fiscal problems, many will end up with credit ratings of BB+ or below by 2060 (1).

¹ The world's population is aging—a very unusual experience for the human population, which had previously experienced slow population growth with a fairly constant age structure (Batini, Callen, and McKibbin 2006). This is the result of the combination of falling birth rates and rising longevity, as we discuss.

Since the problem is viewed in financial terms (i.e., the need to match revenue with spending) governments have few choices—cut benefits, raise taxes or pension contributions, or raise the retirement age. In France, Emmanuel Macron’s administration has pushed through a proposal to raise the early retirement age to 64, leading to massive national protests and strikes. France is not alone. Other nations (including Germany and Greece) have already enacted reforms, such as raising the retirement age or cutting benefits. Indeed, the minimum retirement age in OECD countries is poised to increase from an average of 62.5 to 64 years in the near future (Warner 2023). The US set in motion a policy of increasing the retirement age to 67 in the 1980s (although the early retirement age is still 62), and there’s a push to increase it further to 70.

Making people work longer often seems to be the preferred solution as it solves the problem “twice”: workers continue paying into the system longer and collect retirement payment for fewer years. In other words, this extends their working life and shortens their retired life, in an attempt to realign the distribution between the two in view of increased life expectancies. It is also politically preferable to cutting benefits or raising taxes, especially in countries where tax rates are already high. *Politico*’s Paul Taylor (2023) made that argument in reference to Macron’s proposed reforms, claiming that “[t]he only real alternatives to later retirement are either cutting pensions — which no one wants — increasing contributions, or raising taxes, which is hardly realistic in a country that boasts the second highest tax take in Europe after Denmark.” It should be made clear, however, that increasing the retirement age is effectively a benefit cut as the retiree collects less over a shorter period of retirement.

In the US, calls to “reform” Social Security predictably reach a crescendo each time the debt limit is approached. Groups like the Concord Coalition and researchers like Larry Kotlikoff had long warned that a day of reckoning is upon us—and that day is now within the next decade. President Biden called out Republicans at his recent 2023 State of the Union Address, daring them to admit they plan to slash benefits as the cost of cutting a deal to avoid default on the nation’s debt. While they demurred, experts and pundits alike warn that the program is unsustainable.

Brian Riedl, a senior fellow at the Manhattan Institute proclaimed on the pages of *The New York Times* that “Biden’s promises on Medicare and Social Security have no basis in reality.” He opined that Biden’s pledges to not raise taxes on those making less than \$400,000 and to not cut Social Security and Medicare “ensure an unsustainable debt path that eventually requires deeper and more drastic benefit and tax changes than already needed” (Riedl 2023).

The New York Times summarized the pessimistic view on demographics as follows: “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 will need to adjust to a different demographic composition—fewer children and more elderly. However, the adjustments should not be focused on how to “pay for” pensions or make them financially “affordable.” The real question we need to ask is this: with relatively fewer workers, how can we care for a growing army of retired seniors living longer lives? In other words, we face a potential resource problem, not a finance problem.

In this paper we will demonstrate that the US is not facing an economic time bomb related to demographics. Neither is China. While it’s true that governments will be collecting less revenue and paying out more under their current pension setups, there is nothing to prevent governments with sovereign currencies from paying the elderly what they have been promised. What is less certain is whether there will be enough real output those dollars can buy in a non-inflationary manner. While this framework should be the foundation of any useful analysis of pension sustainability, it is completely missing from the current discussion.

Given the recent focus on China’s aging, we will first look at demographic trends in China and then at global aging in Section 2. We will show that the so-called population “time bomb” results from falling fertility and rising longevity—neither of which is undesirable. In Section 3, we will use the case of Social Security in the US to demonstrate that, in spite of these trends, there is no evidence the system is unsustainable, regardless of whether the system is financially in a surplus or a deficit. A similar analysis is performed for China in Section 4. Our analysis leads to completely different policy prescriptions for dealing with “the demographic time bomb,” which we discuss in the concluding section. Rather than cutting government spending today or raising

taxes or the retirement age, the focus should be on making investments in physical and human capital to increase worker productivity and to direct resources to the areas where shortages may arise, such as care work.

2. CHINA – THE CANARY IN A COAL MINE

2.1. Demographic Trends in China

The news that China’s population actually fell last year for the first time in 60 years (with 9.56 million births and 10.41 million deaths) 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). This was the sixth year in a row that births have fallen in China, in spite of the government’s attempts to encourage women to have more children. 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’s customers around the world, the biggest being the United States, will suffer as her workforce declines; and her government will face lower tax revenues supposedly needed to pay pensions.

Between 1950 and 1970, China’s population grew from 540 million to over 800 million. In 1963, the fertility rate in China reached an amazing 7.5 births per woman² (by comparison, the US baby boom boosted the average number of children to 3.7 per family). The country adopted a one-child policy in 1979 to slow population growth. However, the birth rate had already declined from 5.9 per woman in 1970 to just 2.9 by 1979 due to voluntary programs introduced during the 1970s (dubbed the later-longer-fewer policy, which encouraged later childbearing, longer spacing between children, and fewer children).

Officially, China claims that the one-child policy resulted in 400 million fewer births, but others argue the correct figure is probably half that, as the voluntary program plus the demographic

² <https://data.worldbank.org>

transition from rural to urban living would have reduced the birth rate anyway.³ While the policy did contribute to slower population growth, it is now criticized as a violation of human rights in causing a decline in birthrates among ethnic minority groups, child abandonment and trafficking, and the creation of a large bureaucracy of family-planning officials. In addition, the policy had unintended consequences: aging, a rising male-female ratio,⁴ (reportedly) infanticide of female babies, and forced abortions and sterilizations. Furthermore, many families evaded the rules with children born outside the official system, leaving them without access to documents and benefits and thereby in a socially and economically inferior position.

In any event, China has long been on a path that would rapidly reduce its population (although rising life expectancy and immigration can postpone this) (Hesketh, Lu, and Xing 2005). By the late 1990s, the total fertility rate in China had fallen below the conventionally-cited replacement rate of 2.1 to somewhere between 1.5 and 1.7, where it has remained. Worried about the consequences, China replaced its one-child policy with a new two-child policy in October 2015. It was expected to increase the birthrate sufficiently so that the population would peak at 1.45 billion in 2029 versus a then-projected peak of 1.4 billion in 2023 with no policy change (Zeng and Hesketh 2016). As Zeng and Hesketh (2016) write in *The Lancet*:

fears about the ageing population have probably been the most influential factor in the decision to lift the one-child policy. Although ageing populations are increasing worldwide, the one-child policy has rapidly accelerated the process in China. The effect of large numbers of only children on family structures has its own name in China: the 4:2:1 effect, referring to couples who are responsible for the care of their four older parents and one child. (3–4)

³ Generally, birthrates fall with urbanization and rising status of women, especially with greater female access to extended education.

⁴ “Although sex determination is illegal in China, the high sex ratio at birth shows the lack of effective enforcement. The sex ratio at birth peaked at 121 in 2005, with latest estimates showing a fall to 116 in 2014, but with ratios as high as 140 in parts of rural central China. In rural areas, the ratio rises greatly with second births, as couples try to ensure a male birth within the two-child limit. By 2020, there will be around 30 million excess, and hence unmarriageable, men of reproductive age in a country where getting married and having children is still a strong cultural expectation” (Zeng and Hesketh 2016, 3).

Hence, despite the relaxation of the one-child policy, China's population may still fall by half by the end of the century as women continue to choose to have only one child (Feng 2023). Due to increasing life expectancy and low birth rates, by 2035, one-third of China's population could be over the age of 60.

2.2 Global Demographic Trends

China is not alone, of course; it is merely catching up to other countries that are dealing with this issue. Europe, for instance, has faced similar demographic trends for quite some time now. Italy has been at the “forefront of a global demographic trend that experts call the ‘silver tsunami’” with its population falling faster than any other in the West. The Italian government, historically weary of implementing policies to increase the birth rate, partly due to the association of such policies with Mussolini,⁵ is trying to change course. Current Prime Minister Meloni has warned that Italy “is destined to disappear” unless it does so (Horowitz 2023).⁶

Japan, South Korea, and Russia are also experiencing a declining and aging population. Late this century, both China and South Korea will have more than 40 percent of their populations above age 65, while the USA will have over 30 percent over age 65. As Figure 1 shows, almost a third of Japan's population is now above age 65 (Moses 2023). In Japan, labor is said to be in such short supply that even hard manual labor is performed by elders. The number in the labor force fell by nearly 2.5 million between 1998 and 2012,⁷ and although it has since recovered the loss, much of the recovery since 2012 was due to an influx of foreign workers and older workers taking part-time employment. Furthermore, the biggest cohort in the labor force is aged 45–54 (a quarter of the workforce) that will soon move toward retirement, so the labor force is expected to fall a fifth by 2040.⁸

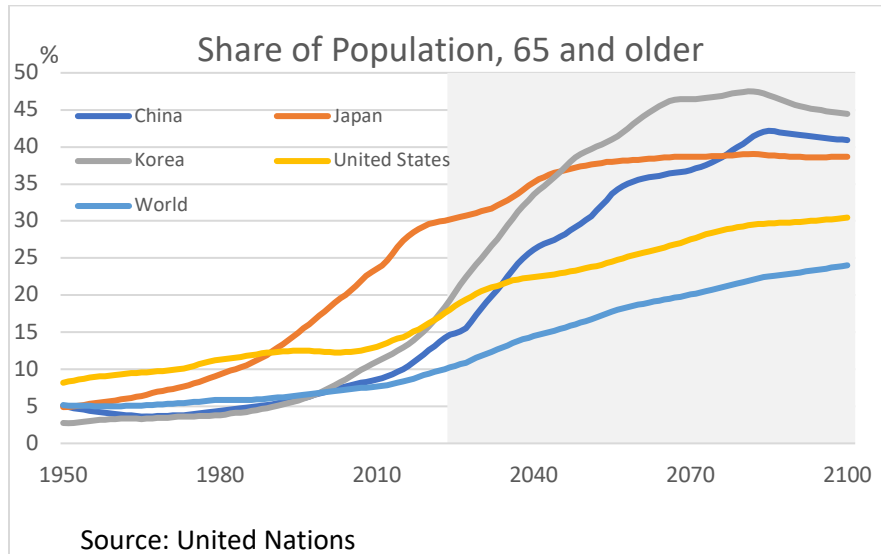
⁵ After Mussolini took power, he warned in 1927 of the dangers of falling population: “[i]f the number diminishes, ladies and gentlemen, you don't make an empire, you become a colony.” The fascists “immediately got to work on increasing birthrates, stemming emigration and increasing Italy's population to 60 million (from 40 million) by 1950” (Horowitz 2023).

⁶ To her credit, she has also proposed a sweeping change to policy to prepare to care for Italy's growing population of elderly (Horowitz 2023).

⁷ <https://www.statista.com/statistics/612396/japan-total-labor-force/>

⁸ <https://teamstage.io/japanese-workforce-statistics/>

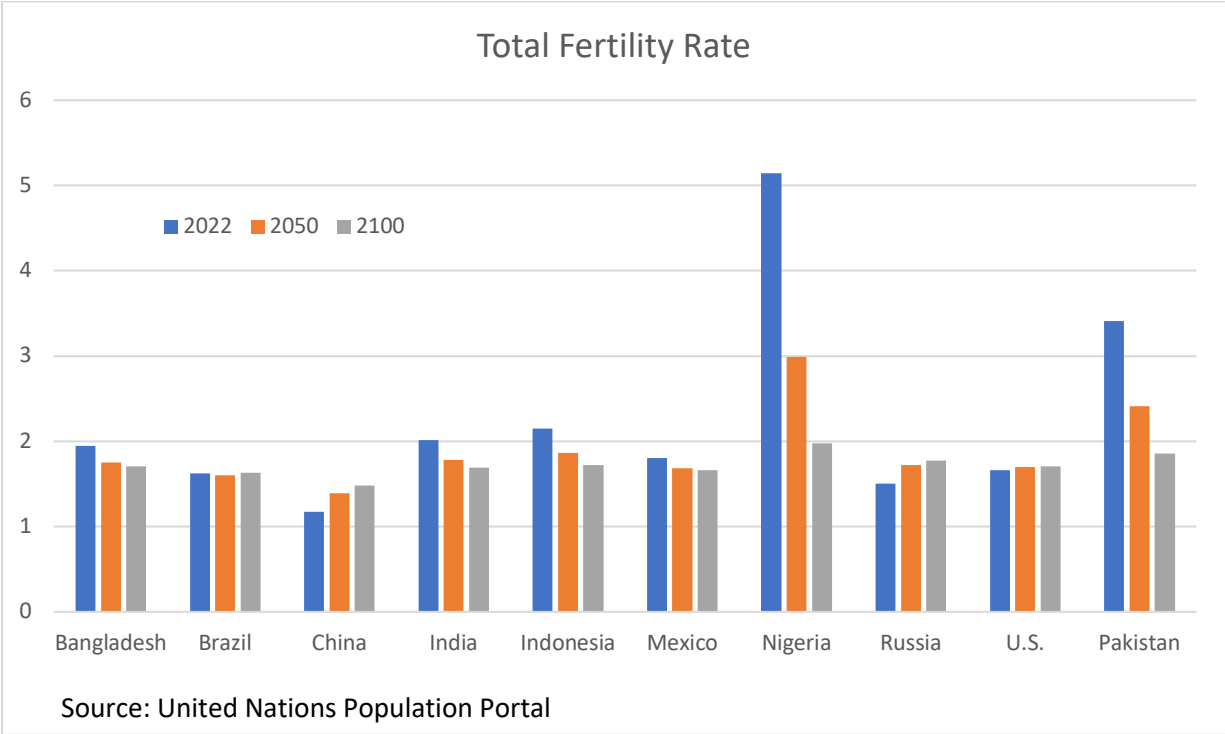
Figure 1. Share of Population, 65 and Older



China is seen as the canary in the coal mine—not only is it quickly catching up to the developed world, but it is also a warning sign of what to expect for other developing nations. Over this century, all the most populous nations will see fertility rates fall below replacement and will begin to lose population (ignoring immigration). Some important smaller countries have already reached that point, although others—especially in Africa—could continue to experience population growth for some years.

The global fertility rate has decreased from about 5 in the early 1960s to 2.3 in 2020. Over that period, average life expectancy increased from about 51 to 73 years. In China, it increased from about 51 to 78 years between 1962 and 2019, and the total fertility rate (TFR) fell to only 1.18 today. Figure 2 shows the TFR for the world’s most populous countries. India now has the largest population in the world, but with a TFR already below replacement (2.01) that is expected to continue to fall to 1.78 in 2050 and 1.69 in 2100, when India’s population will also stop growing and begin to fall (Stevenson and Wang 2023). The US TFR is well-below replacement, at 1.66, however, the population is growing thanks to immigration. 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).

Figure 2. Total Fertility Rate

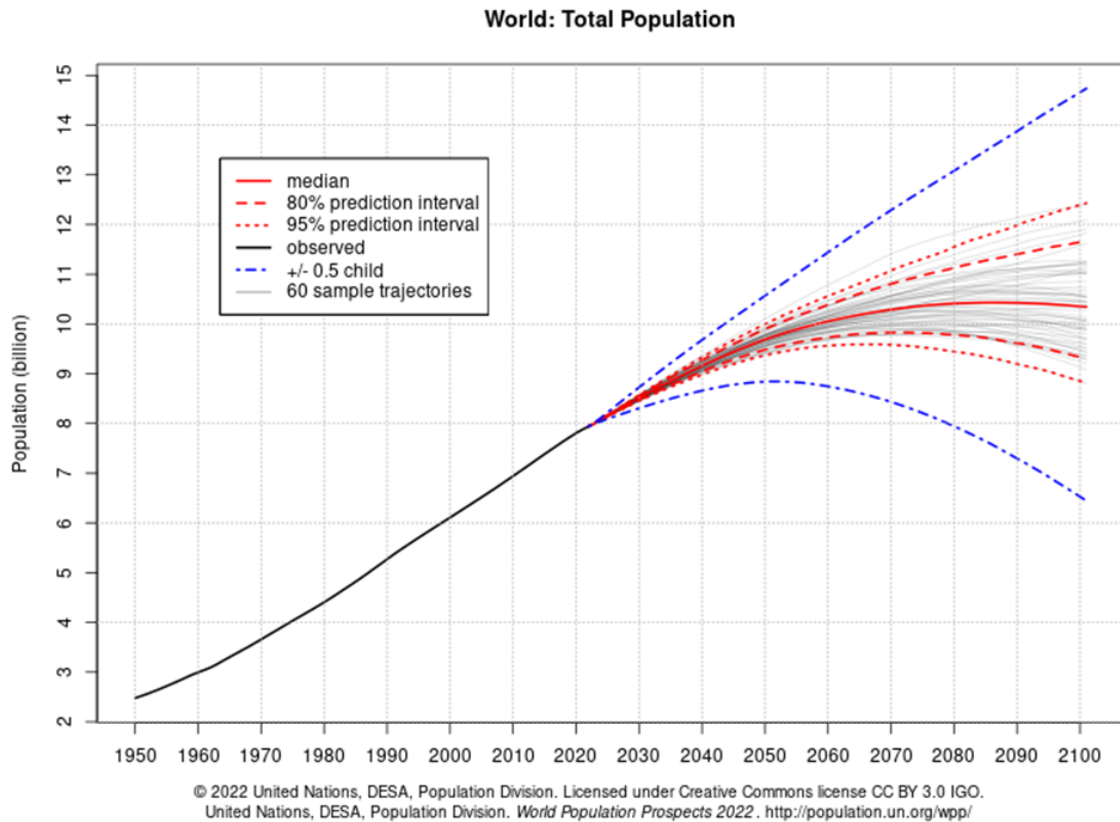


For now, the global population continues to increase. But current projections see an end to that trend sometime this century, peaking at 9 or 10 billion.⁹ As Figure 3 shows, in 2100 the projected population is within a wide range, between 9 billion and just over 12 billion, however the median projection calls for the population to begin to decrease before the end of this century.¹⁰

⁹ See UN data for a projected peak at about 10.4 billion in the 2080s: <https://data.worldbank.org/products/#atlas>.

¹⁰ Surprisingly, as the graph shows, the projected range could be 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).

Figure 3. World: Total Population



Writing in *The Lancet*, Vollset et al. (2020) project even bigger declines in fertility rates, resulting in the population peaking sooner and at a lower level. That peak would be at just over 9.7 billion by 2064, and fall to 8.8 billion by 2100. TFRs would fall below replacement in many countries:

By 2050, 151 countries were forecasted to have a TFR lower than the replacement level (TFR <2.1), and 183 were forecasted to have a TFR lower than replacement by 2100. 23 countries in the reference scenario, including Japan, Thailand, and Spain, were forecasted to have population declines greater than 50 percent from 2017 to 2100; China's population was forecasted to decline by 48 percent. (Vollset et al. 2020)

Even with slowly rising longevity, the effect of falling birthrates will eventually overtake the effect of lower mortality rates so the population will begin to decline. While we often hear of

science fiction–like extension of human life well beyond a hundred years, the truth is that the probability of death rises very quickly beyond the eighth decade of life—so it is unlikely that greater longevity will overcome the effects of low birthrates. Eventually the mortality and birthrates will probably align so that the global population will fluctuate within some narrow range—barring catastrophe, it is not likely we are headed for either “population bomb” extreme: zero or infinite population. And the limiting factors will probably be imposed by the interplay of birthrate and longevity, not a dystopian scenario of resource scarcity.

This is a remarkable turn of events for anyone who paid attention in 1968 when Paul Ehrlich and Anne Howland Ehrlich warned of 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)

Well, mission accomplished, at least in the case of China. And the rest of the world will likely follow suit.

The projections of population decline discussed above would have been celebrated as a boon back in 1970, but they are increasingly viewed as problematic. Rather than seen as a way to avoid mass starvation (as predicted by the Ehrlichs) or unsustainable impacts on the environment, they are feared because of their impact on economic growth and especially due to the growing burden of caring for the aged.

3. IS THE BURDEN OF AGING *REALLY* A FINANCIAL PROBLEM?

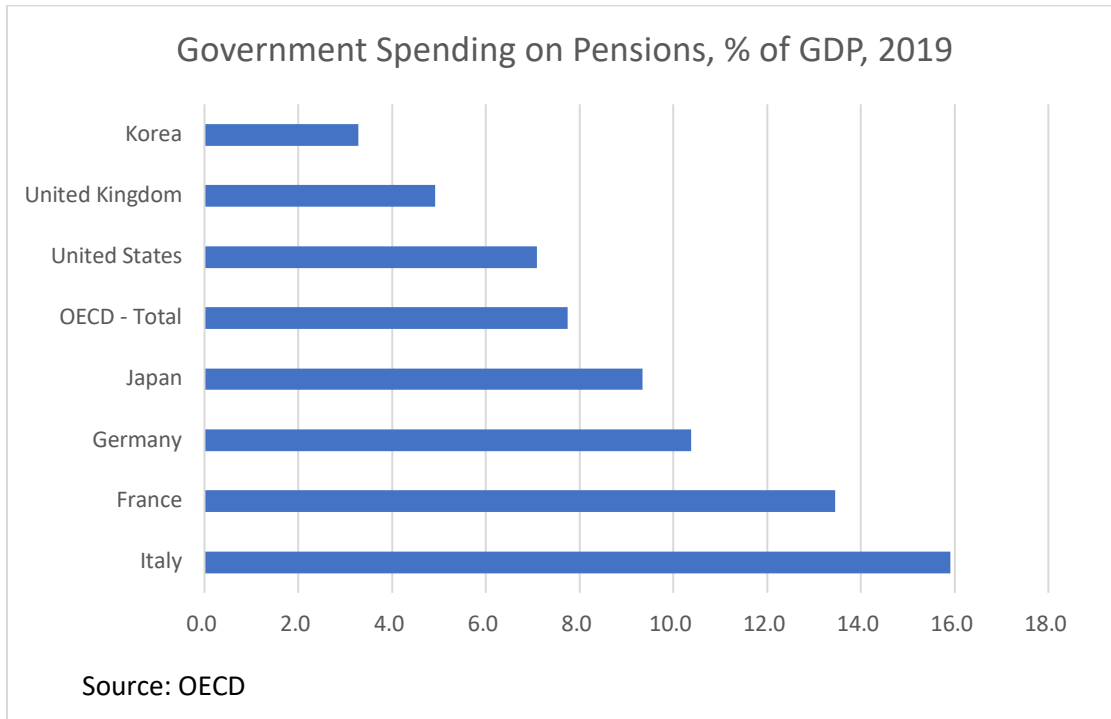
3.1. Aging and the Problem of Finance

The problem of an aging society is largely framed in financial terms. A January 2023 report from Standard and Poor's (Tilleray and Mrsnik 2023) warns that many countries in the world, developed and developing, are going to see increased pressures on government finances and potential ratings downgrades.¹¹ The report projects “a generalized and sustained fiscal deterioration stemming from a well-understood and predictable phenomenon: population aging” (15). The worsening demographic projections mean “a faster increase in the old-age dependency ratio, mostly driven by smaller population growth projections” (8). The spending on pensions for the “typical sovereign” is expected to rise “by almost 4.5% of GDP by 2060, in our estimation, to 9.5% of GDP” (8) pushing “median net debt ratio to 142% of GDP in 2060, from 48% of GDP currently, as the snowball effect of rising interest payments accelerates the negative budgetary impact” (14).

The authors of the S&P report are concerned governments will face increasing difficulty coming up with the financial funding for social programs as the number of retirees rises relative to the number of workers paying taxes as pension contributions. Indeed, the numbers seem to support their conclusions (Tilleray and Mrsnik 2023). As Figure 4 shows, France spent around 13.4 percent of its GDP on retirement in 2019, a number that's only projected to increase. Italy was the highest spender in Europe, with 15.9 percent of its GDP spent on pensions in 2019. By contrast, the US spent only about 7.1 percent of its GDP on pensions in 2019, lower than the OECD average of 7.7 percent. With benefits payments linked more or less directly to taxes received from those who are still of working age, governments will need to find financial solutions to the problem.

¹¹ There are 81 countries in the pool.

Figure 4. Government Spending on Pensions, % of GDP, 2019



3.2. Is Social Security on an Unsustainable Path?

The same arguments that the S&P report makes about the unsustainable trend in pensions worldwide have often been made about the US Social Security system. Indeed, the link between benefits and taxes is even more direct in the US compared to many other countries because the tax used to (supposedly) fund the program is imposed on wages.¹² In this section, we use the case of Social Security to explain why the concerns expressed in the S&P report (echoed in every mainstream thinktank and national media) are largely misguided. Our arguments are applicable to other nations that, like the US, issue their own sovereign currency.

Since its founding as the cornerstone of Roosevelt’s New Deal, Social Security has been the most important component of America’s three-legged retirement stool for most workers—with private savings and employer-provided pensions constituting the other two legs. The average household accumulates little financial wealth before the normal age of retirement, and employers

¹² More specifically, there is a tax both on employer and employee plus a tax on self-employment income.

have largely shifted away from defined benefit to inadequate defined contribution plans over the last few decades (Ghilarducci et al. 2015). If anything, retirees of today and tomorrow will have to rely even more on Social Security than did previous postwar retirees.

And yet, there is a growing fear that Social Security will not be able to meet its promises. As the number of workers paying into its Trust Fund continues to decline relative to the number of beneficiaries, and as retirees collecting checks are living longer, the Social Security Trust Fund is said to be in danger of running out of money. Reporting on the latest projections of 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 increasingly proposed to revamp the program. To make the system more sustainable, those on the *right* suggest we cut the benefits, raise the retirement age or invest Social Security funds in the stock market to get better returns. Some are even proposing that the US government set up a sovereign wealth fund to issue debt and invest the proceeds in the stock market!¹³ However, those on the *left* believe the problem stems from capping the wages that can be taxed. Progressives in the US, such as Bernie Sanders, have proposed eliminating the cap to increase the tax base and raise sufficient revenue to make Social Security solvent forever. Their French counterparts are of the same opinion; Jean-Luc Mélenchon and the Unions in France have argued that the solution to their retirement problem is to raise taxes on the rich and employers.

In his State of the Union address, Biden announced sweeping policies to “invest in America, lower costs and cut taxes for working families, and protect and strengthen Medicare and Social Security.”¹⁴ A centerpiece of the proposal is to raise the Medicare tax rate on high income

¹³ <https://www.semafor.com/newsletter/01/20/2023/pences-big-anti-abortion-play>

¹⁴ See Fact Sheet: The President's Budget for Fiscal Year 2024, White House Briefing March 9, 2023.

earners (those with income above \$400,000) from 3.8 percent to 5 percent; he will also broaden the tax base on those high earners to “close loopholes.” He would also expand the government’s ability to bargain over drug prices and credit all the savings from lower prices toward the Medicare program. These measures are claimed to prolong the solvency of the Hospital Insurance (HI) portion of Medicare by twenty-five years. He has not provided specifics for Social Security (OASDI) yet but is said to be considering a proposal by Bernie Sanders to remove the payroll tax cap so that all wage income would be subject to the Social Security Tax—supposedly postponing the day of reckoning for up to 75 years.¹⁵ If nothing is done, it is claimed that benefits will need to be reduced by about a fifth beginning just nine years from now.

His proposal also includes other tax increases on high earners as well as higher spending in a variety of areas, but claims that the proposal is “fully paid for” and indeed will reduce deficits by a total of \$3 trillion with no new taxes on those earning less than \$400,000.

All of this comes as the US nears its debt ceiling. Although Biden has vowed not to “touch the entitlements,” the debt ceiling fight may yet force some kind of compromise that would cut Social Security and Medicare spending. Still, Biden (and the Democrats in general), seem to have accepted the Republican view that, as it stands, Social Security and Medicare are unsustainable. Something must be done: find more revenue or cut benefits.

Unfortunately, most solutions proposed for solving the Social Security “crisis” are misguided as they approach the issue of sustainability incorrectly.

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 or not?* But from the perspective of society as a whole, the sustainability of its retirement system depends on its real resources and worker productivity. Workers support those who are not working: retirees, the unemployed, children, people with

¹⁵ The plan proposed by Bernie Sanders would also extend the tax to include investment income. According to a study by Social Security’s actuary, his plan would ensure the program’s solvency for another 75 years. Sanders would also increase benefit payments for all recipients but that seems unlikely to survive the political fight that will ensue even if Biden were to agree to push for an end to the taxable wage income cap. Biden has also promised that he will not raise taxes on income below \$400,000 per year, but the current cap is \$160,000—although some Democrats would apply the new tax only to those earning over \$250,000 (Stein 2023).

qualifying disabilities, and unpaid care providers.¹⁶ The output workers produce needs to be sufficient to support themselves, but also those who are not working. This is the real burden of retirement—having enough real goods and services for everyone. Even if we could *financially* afford to pay the 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 appropriate question to ask, therefore, is not whether we will have enough money in our retirement “fund,” but whether there will be enough workers and whether they will be sufficiently productive.

The solution proposed by the left serves to illustrate this point. Suppose we broaden the tax base for Social Security by eliminating the salary cap completely—so all pay is taxed without exception. But, at the same time, suppose we don't have enough workers with productivity sufficient to produce all the goods and services needed by the entire society. Our retirement system will be solvent in financial terms, but it will not be sustainable. We can continue sending Social Security checks to seniors, but that income will be competing for a limited amount of goods and services. This will lead to inflation, eroding the purchasing power of those checks. Hence, taxing higher-income individuals might alter the distribution of consumption but it will not create more output.

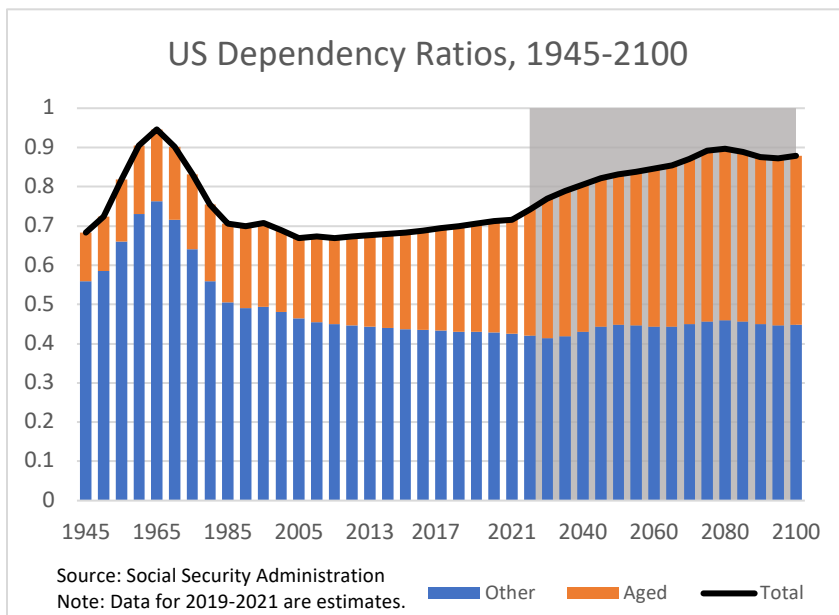
Taxing the rich would not necessarily lower their consumption to free up sufficient resources—even at very high rates. To reduce competition for the goods and services seniors need, we might need to raise taxes on middle income workers so that *they* reduce consumption—they are more likely to respond to tax hikes by cutting consumption, and there are more of them. Note we are NOT recommending such a policy; we are merely pointing out that the tax hike should be designed to free up resources, not to raise tax revenue. 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 increasing income inequality). But making the pension system *financially* more sustainable is not one of them. A better approach would be to promote more production. In other words, the answer is not more finance, but rather more consumer goods to distribute.

¹⁶ Although it must be recognized that much of the support of elderly, young, and people with disabilities is done by those unpaid care workers.

3.3 Social Security is Sustainable in Terms of What Matters

One of the main criteria for evaluating the sustainability of the Social Security system is the dependency ratio.¹⁷ The total dependency ratio is the ratio of the population 65 and over and the population under 20 to the population at ages 20–64. The old-age dependency ratio is the ratio of the population 65 and over to the population at ages 20–64. As we can see in Figure 5, the total dependency ratio is projected to rise from about 0.72 today to a peak of about 0.89 in 2075 and fall to 0.88 by 2100. However, it is important to note that the total dependency ratio peaked at about 0.95 in 1965 and, on current projections, will not reach that number again. In other words, the parents of baby boomers supported more (young and old) dependents 60 years ago than any generation will have to support in the future. That results from a falling fertility rate that trumps rising longevity. It was, of course, inevitable that the burden of elderly support would temporarily rise, while support of the young fell given these demographic shifts. At some point, the rising total burden will level—it might fall first but, eventually, the two main forces that affect the dependency ratio will likely offset one another and the population will stabilize.

Figure 5. US Dependency Ratios, 1945–2100



¹⁷ The old-age dependency ratio is the ratio of the population at ages 65 and over to the population at ages 20–64. The total dependency ratio is the ratio of the population at ages 65 and over and the population under age 20 to the population at ages 20–64.

If we look at projections of a rising senior population together with fewer workers and youths (relative to those seniors), and weigh those numbers against projections of future productivity of workers, is there cause for alarm? According to the data underlying Figure 5, the number of workers per retiree is projected to decrease from 3.5 in 2020 to 2.6 by 2050 (intermediate projection). That seems to indicate a rising burden. But merely looking at dependency ratios ignores the rise in worker productivity. In the past 30 years, US workers have become over 60 percent more productive.¹⁸ If this trend continues, we will only need 2.2 workers by 2050 to produce what 3.5 workers produce today. That number is lower than what the ratio is projected to be in 2050: 2.6. Even with no changes to policy, the growth of worker productivity, alone, will be enough to care for the increased numbers of aged with no increased burden on tomorrow's workers.

The question of productivity is closely intertwined with technological change, which has been another source of political anxiety in recent months. While policymakers are debating how to best deal with our retirement “crisis,” we are also grappling with advances in Artificial Intelligence (AI). AI is developing at a rapid pace and threatening to displace knowledge workers and destroy white-collar jobs that previously seemed impervious to technological displacement. If AI is going to make workers extremely productive, and redundant, which is the fear, can we really claim that the burden of retirement is unbearable? The inconsistency between these two arguments should be clear.

It is thus somewhat ironic that we are worried about a shrinking workforce and talking about raising retirement ages, while simultaneously fearing that robots are taking away all our jobs. Will we really have a problem of a “demographic time bomb” related to an aging society (and affordability of pensions) if our economy becomes so productive through advance of robotic technology that there is a sufficient amount of goods and services for everyone? We are not suggesting that robots are going to take over all the work—at least not in the near future—but

¹⁸ The productivity measure used is GDP per hour worked in constant prices, 2015 purchasing power parities (PPP), retrieved from OECD statistics.

rather arguing that it is difficult to reconcile the fear that robots are coming for our jobs and at the same time believe that we will not be able to adequately provision seniors.

Let's try a simple mental experiment. Imagine an extreme scenario in which robots produce everything. There is plenty of output for humans, and the robots never need wages, never pay taxes, and never retire. The needs of humans of all ages can be satisfied. However, since robots will not be paying payroll taxes (although Bernie Sanders and Bill Gates have proposed that they do¹⁹), this will effectively “bankrupt” Social Security even as the supply of resources needed for the young and elderly would be plentiful. All we would need to do is give the retirees (and others who can't work) their fair share of dollar income to distribute the appropriate share of output to them. The robots won't care. In other words, 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 of the output between young and old, there would be no question about sustainability or affordability. This demonstrates that the “affordability” of the retirement system is about production and distribution of output and income—not about finance.

3.4 An Alternative Framing of the Issue

Surprisingly, the framing for a truly progressive reform of Social Security is found not in the Bernie Sanders plan of raising the payroll tax cap or in Biden's plan of “taxing the rich” (although those may be policies that are worth considering for other reasons). Instead, it can be accomplished by following the logic of the ultra-conservative former Chairman of the Fed, 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 said the following:

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

¹⁹ <https://fortune.com/2023/02/21/bernie-sanders-bill-gates-robot-tax-automation-job-threat/>

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.²⁰

Greenspan thus recognized that the US government can afford to provide the financing for 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.

A truly progressive reform of Social Security therefore requires that we, first and foremost, drop the mainstream framework that treats retirement and aging as a financial burden. By adopting that framing, progressives risk putting Social Security on the chopping block based on the false suggestion that it is unsustainable. What if they are unable to raise the payroll tax cap? Or what if they raise it somewhat to delay the problem? Will they then agree to cuts to benefits because Social Security will eventually “run out of money?”

Instead, we need to eliminate the fiction of the Social Security Trust Fund to blow the cover off of the idea that payroll taxes pay for Social Security. The Trust Fund doesn’t protect Social Security; rather, it is used to manufacture a “crisis” to push through cuts that are politically unpopular. A better way to arrange for retirement finance would be to enact a pay-as-you-go system with the government appropriating funds for Social Security as it budgets for every other kind of spending. There is nothing that prevents the US government from spending as much as it wants, financially, as long as the “real assets”—in Greenspan’s words—are there to support that spending. Anyone who has lived through the COVID experience where we spent \$5 trillion without much fanfare should know that money is not an issue for the federal government. The real issue is how to create those “real assets.”

Lastly, based on our discussion in Section 3.3. it should be obvious that, from a real-resource perspective, simply focusing on the problem of an 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 has fallen as the aged dependency ratio has risen. It is true that the burden of support per child has grown, even as the number of children per family has declined.

²⁰ <https://www.youtube.com/watch?v=DNCZHAQnfGU>

As the number of years of schooling, including advanced degrees, rises, the number of years of dependency of children rises. With a smaller family size, parents can focus more attention on children and are willing to support them for more years. A few decades ago, children in the developed world might have been expected to begin working at age 16, or at least by age 18. Today, they increasingly will be supported by their parents for 25 years or more. At the other end of life, seniors need to be supported as they transition to retirement. The legislated “normal” Social Security retirement age is now 67 for most workers in the USA. Many will live for another 25 years after 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.

Parents bear most of the burden of caring for the young, while, at least in the West, society bears much of the burden for supporting the elderly. In terms of delivering real output, the burden of aged dependency is probably not much different from the burden of dependent young (although the composition of output is different for these groups), but the manner in which the distribution of output to young versus old is accomplished is very different. For the young, the 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—that raises concerns about sustainability. We expect, and to some extent overlook, much of the burden of parental support of the young. If today, instead of an aging population, we were dealing with a baby boom (something former President Trump plans to encourage!), would we be up in arms about the unsustainability of the boom? Most likely not. Yet, in terms of the burden on society, the macroeconomic impact would be the same as what we face with the aging “crisis.”

The attempts to cut social security try to 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 Social Security does not reduce the burden of caring for the elderly for the society as a whole—unless we choose elder neglect. It simply removes the financing from the social sphere and puts it into the household. More seniors today and tomorrow would become impoverished and forced to rely directly on their children for support. Workers would have to support, within their own households, both seniors and children. This is the system we had before there was Social

Security. In other words, rather than relieve families of the burden of caring for the young, we want to add the care of the elderly to the families as well.

Thus, while reforming Social Security (and other national social retirement systems) is often portrayed as achieving “intergenerational justice” by raising taxes and cutting benefits now—to avoid burdening our grandkids—in reality, such “reform” achieves nothing but burdening workers of today and tomorrow. In real terms, workers are always supporting both the young and the old. This is inescapable. What a social retirement program does is to put the financial responsibility at least partially in the public sphere. There are several benefits to this, including the possibility for 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 a decent 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 number of siblings to share the burden). There is less incentive to have lots of children. And the 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 the growth of overall productivity and the capacity to provide higher living standards for all.

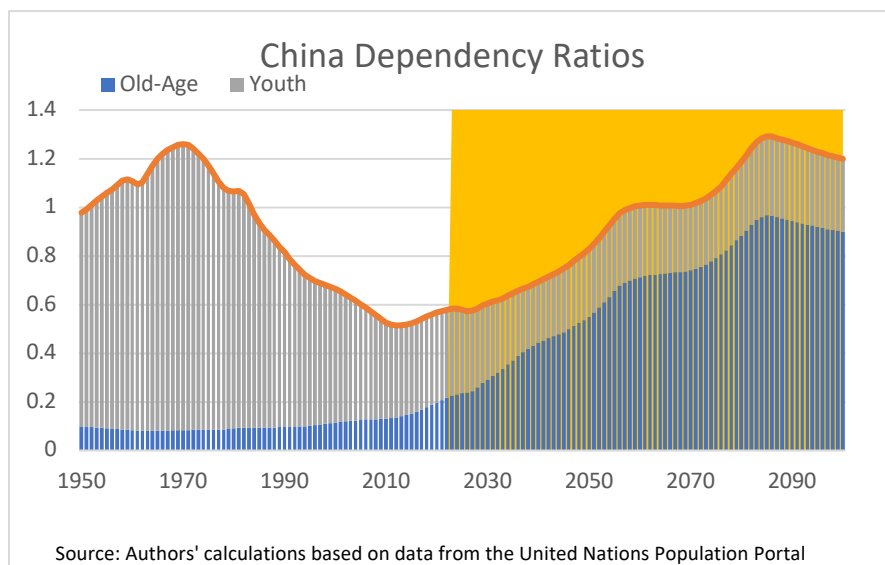
More public support of the young, and fewer of them, we think, are both desirable outcomes, at the level of the family and at the level of society as a whole. It ensures that average productivity per worker *can* rise more quickly due to greater investment in the young, while we curb and reverse population 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 particularly 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.

4. CAN CHINA SUPPORT ITS AGING POPULATION?

We have focused on the US, but the arguments above are applicable to all aging societies. The problem is not financial, but concerns the capacity to produce. As we can see in Figure 6, the trajectory of the total dependency ratio in China looks similar to that of the US: a baby boom with a peak, a gradual decrease and an imminent increase. The declines and the consequent increases are steeper in the case of China compared to the US. However, just like the US case, China's total dependency ratio has been decreasing due to decreasing youth dependency (and much more steeply compared to the US), and it is not really projected to surpass its 1970s peak even by the end of the century. The total dependency ratio is projected to reach its peak value of 1.29 in 2085 and then begin to decrease to 1.19 by the end of the century. That's because, while the old-age dependency ratio is projected to reach a peak of 0.97 in 2085 (up from 0.21 in 2022), the youth dependency ratio peaked at 1.18 in 1970 and is projected to decrease to 0.3 by 2100.

Yet, China in the 1970s is not comparable to the China of today and, arguably, the China of 30 years from now. It is a much more developed and industrial nation than it was, with rising productivity and GDP per capita. In other words, if the worst-case scenario is for China to reach a peak total dependency ratio comparable to that of the 1970s, then surely China can take care of its young and the old, considering how far it's come developmentally since then.

Figure 6. China Dependency Ratios



The data underlying Figure 6 show that China's working age population (20–64-year-olds) has been decreasing since 2017; it has decreased by about 12 million since then to a little over 900 million workers in 2022. At the same time, the number of retirees has increased steadily, reaching around 200 million in 2022. The old-age dependency ratio in 2022 was 0.22, still lower than the youth dependency ratio of about 0.35. That means that there were 4.54 workers per retiree in 2022 but only 1.7 workers per total dependents (those over 64 and under 20 combined). By 2050 there will be 1.88 workers per retiree and 1.2 workers per total dependents. Clearly while the worker/retiree ratio is going to fall by more than half, the ratio of workers to total dependents will only decrease by about 30 percent.

At the same time, increases in worker productivity are more than likely to offset this decrease. According to data from the International Labor Organization (ILO), between 1991 and 2022, the cumulative increase in output per worker in China has been a whopping 1.143 percent.²¹ On average, worker productivity has increased about 8.5 percent per year during that period. While productivity is unlikely to keep increasing at the same pace for the next 30 years, it doesn't really need to. For those 1.88 workers to produce as much as 4.54 workers produce today, worker productivity would only need to go up by around 3 percent per year for the next 30 years. However, the OECD predicts that labor productivity will continue to rise at a rate of 3.9 percent through 2025, while the China Economic Information Network projects it to rise at a pace of 5–6 percent per year in coming years.

If we do the exercise above with a much more pessimistic assumption about productivity growth, we find that with even a much smaller rise in productivity, the workforce would be able to keep China at the same total dependency level as today. A mere increase in productivity of 1.15 percent per year would be sufficient. Clearly, China still has a long way to go to allow its citizens to enjoy a western-comparable standard of living. In other words, it should strive to grow its productivity levels by much more. But that, to a large extent, is a policy choice, and so far China has shown willingness to use the policy tools available to it to encourage massive productivity growth.

²¹ Productivity is measured as output per worker, constant 2017 dollars at PPP.

Obviously, it is difficult to project growth of productivity (or population demographics) over many decades, but it is not difficult to believe that worker productivity would double within a few decades—likely well above the pace of rising dependency ratios. Once labor productivity growth is taken into account, it is difficult to argue that rising dependency ratios even in a worst-case scenario will increase the “real” burden of provisioning for China. Thus, commentators who worry that the Chinese government will not be able to afford to take care of the elderly are missing the mark. China will have the means to do so; what path it will choose is a political question.

5. CONCLUSION: POLICY SOLUTIONS

What follows from our discussion is that the Social Security system in the US is sustainable in terms of what matters—real resources—as far as current projections about future output and future seniors is concerned. The same is likely true for many other countries in the world that, according to S&P, face “a fiscal crisis.” We don’t need to “strengthen” Social Security by cutting it. In fact, many of the policies that could “shore up” Social Security financially, such as tax increases or benefit cuts would be counterproductive for creating the real resources that are so essential. But it doesn’t mean there is nothing we can, or should, do as a society to prepare for the aging “tsunami.” Even as the number of aged dependents rises relative to workers, we can make investments that allow living standards for all to rise more than current projections would allow.

So, what are some things we can do?

One of the most important actions we can take today to strengthen our preparation for an aging society is to invest in our physical and human capital to increase growth of our productivity faster than the aging of our population—which would result so that all ages can enjoy rising living standards with greater expected longevity, low birthrates, and shrinking population. We can also put in place programs that lessen the burden of supporting both seniors and youth for

today's and tomorrow's workers. That would imply that rather than reducing benefits we need to increase them for lower-wage workers, since US Social Security benefits are linked—perversely—to wage earnings. It would be even better to eliminate that link to provide 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, clothing, appropriate transportation, shelter, and entertainment.

Approaching retirement as a real resource problem also leads us to question the disastrous austerity policies of previous decades that have negatively affected productivity growth and our potential. Even based on the slow economic growth of the past 40 years, current projections expect a declining real burden of supporting seniors placed on tomorrow's workers. However, if we had grown faster in the past, and if we were to grow faster than assumed in the projections, productivity would rise more quickly as firms would have an incentive to invest in productivity-enhancing plant and equipment, including robots. That would further reduce the burden of caring for an aging population.

Austerity programs have largely been driven by the felt need to raise revenue and reduce benefits to enhance financial sustainability. This is misguided, as financial affordability is not an issue for sovereign government. The payroll tax hikes that were phased in after the Greenspan Commission recommended moving Social Security to “advanced funding” (designed to build up a huge trust fund in preparation for boomer retirements) only reduced economic growth and raised unemployment above what it might have been by withdrawing more income from the economy than what the government was injecting back into it. Raising normal retirement age meant that those who were not able to keep working (either due to health issues or age discrimination by employers) took lower benefits for the rest of their lives because they had to retire before the new, higher “normal” age. Indeed, even today there are major discrepancies in the life expectancy of different population groups—the life expectancy of African American and American Indian and Alaska Native males, for instance, is only 66.7 years and 61.5 years, respectively, i.e. below the current full retirement age of 67 (Hill, Ndugga, and Artiga 2023).²²

²²“Life expectancy for Black people was only 70.8 years compared to 76.4 years for White people and 77.7 years for Hispanic people. It was highest for Asian people at 83.5 years and lowest for AIAN people who had a life

Similarly, research shows that the increase in life expectancy is very much dependent on one's income level—those at the top half of the income distribution have gained many more years beyond retirement, while for those in the bottom half of the income distribution life expectancy has increased only slightly (Congressional Research Service 2021). On the other hand, better benefits, more employment (in producing the infrastructure that will be needed to care for seniors), and higher take-home pay might have boosted demand and growth.

Yet another self-evident solution in countries with high unemployment rates, such as France, is to implement policies that would lower unemployment rates (maintain tight full employment). It is not the numerical size of the labor force that matters, but the number that will actually be working. It is inconsistent for a country with an unemployment rate of 7 percent to want to raise the retirement age. Forcing seniors to remain in the workforce longer than they want to, potentially taking jobs away from new, young entrants in a competitive struggle for a limited supply of jobs, doesn't help with the unemployment situation. Again, raising aggregate demand through a variety of means, including through more government spending, would be the better solution. Creating more jobs will not only reduce the unemployment rate, but will produce a higher labor force participation rate. Competition for workers will boost wages and make entering the labor force more attractive. It will reduce involuntary part-time work, long-term unemployment, and the number of discouraged job seekers who leave the labor force. It could pull more parents into the labor force. On that note, providing more childcare and other assistance to parents of young children will also encourage greater labor force participation—as would family-friendly workplace policies.

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. With low birth rates and high longevity of seniors, each child

expectancy of 65.2 years. Life expectancies were even lower for Black and AIAN males, at 66.7 and 61.5 years, respectively” (Hill, Ndugga, and Artiga 2023).

is likely to have as many as four grandparents available. Relatively low retirement ages in China (traditionally 50 for women and 55 for men, although retirement age is rising) allowed grandparents to assume responsibilities so that two parents could participate in the labor force. Social policy could support seniors who want to provide care to young and old—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 and their retirement-age dependents. The supposed unsustainability of government finances serves as a useful pretext for altering the real 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 and would merely reduce the share going to the elderly. Rather than coalesce around the shortsighted solution of raising the payroll tax cap, those who do want to save Social Security should work to put to rest the misguided financial framing of the issue. The Social Security crisis is not real, but manufactured. Giving credence to the idea that there is an actual crisis serves to legitimize potentially disastrous "reforms," if not today then at some point in the future. To get to appropriate solutions, we first need to change the framing of the issue—away from finance and toward real resources.

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