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LONG-RANGE DEMOGRAPHIC PROJECTIONS AND THEIR IMPLICATIONS FOR THE UNITED STATES *

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A. OFFICIAL PROJECTIONS OF THE UNITED STATES POPULATION:

The U.S. Census Bureau released its most recent long-range demographic projections in January 2000 ((U.S. Census Bureau, 2000)[i]. The new series is similar to earlier Census Bureau projections, but extends the projection horizon 20 years further out than previously-issued series, to the year 2100. In addition, the new projection series allows both fertility and international migration to vary over time, versus the more typical assumptions of constant values incorporated in earlier projections.

1. Assumptions:

a. Fertility: The period total fertility rate of the United States has been relatively high by the standards of industrialized countries. In 1997 the reported rate was 2.0325, and this period measure has remained relatively constant since 1989.

For the "short-term" period of the Census projections, defined as 1999-2025, "target total fertility rates" were set on the basis of both demographic theory and adjusted data on birth expectations (adjusted following the method suggested by van Hoorn and Keilman, 1997).[ii] These "targets" were set separately for five race/Hispanic-origin groupings. (U.S. Census Bureau, pp. 8-9).

For the "long-term" period, from 2025-2100, the Census projections adopted two key assumptions: that the period total rate would slowly stabilize, and that current and prospective substantial fertility differentials among the five race/Hispanic-origin categories would slowly converge.

The central impacts of these assumptions need to be clearly understood. As may be seen in Table 1, the middle-variant projections assume that the total fertility rate of White/non-Hispanic women, reported to be 1.833 in 1999, would rise to 2.0433 by 2050, while that for Black/non-Hispanic women would increase from 2.0784 in 1999 to 2.1133 in 2050. Over this same period, the fertility rates of Hispanic women are projected to decline from 2.9205 in 1999 to 2.3338 in 2050. The low and high variant projections also include a clear pattern of convergence over this period in the fertility behavior of

Table 1. Projected Total Fertility Rates by Race and Hispanic Origin, 1999 to 2100.

(Rates per 1,000 women. As of July 1. Resident population.)

Race and Hispanic Origin	Lowest Series				Middle Series				Highest Series			
	1999	2025	2050	2100	1999	2025	2050	2100	1999	2025	2050	2100
Total Fertility Rate												
Total	2,035.8	1,865.5	1,799.7	1,632.1	2,047.5	2,206.8	2,219.0	2,182.9	2,059.2	2,557.5	2,646.8	2,737.4
White, Non-Hispanic	1,822.9	1,725.5	1,668.8	1,552.5	1,833.0	2,030.0	2,043.3	2,070.0	1,843.2	2,334.5	2,417.9	2,587.5
Black, Non-Hispanic	2,066.9	1,802.0	1,725.9	1,575.0	2,078.4	2,120.0	2,113.3	2,100.0	2,090.0	2,438.0	2,500.8	2,625.0
American Indian, Non-Hispanic	2,407.2	1,929.5	1,823.9	1,620.1	2,420.6	2,270.0	2,233.3	2,160.0	2,420.6	2,270.0	2,233.3	2,160.0
Asian, Non-Hispanic/2	2,216.6	1,845.5	1,759.5	1,590.9	2,229.0	2,171.2	2,154.5	2,121.2	2,241.4	2,496.9	2,549.5	2,651.4
Hispanic Origin/3	2,904.3	2,275.7	2,092.9	1,750.4	2,920.5	2,677.3	2,562.8	2,333.8	2,936.7	3,078.9	3,032.6	2,917.2
White	1,998.0	1,867.4	1,806.5	1,640.3	2,009.5	2,210.2	2,230.1	2,198.0	2,021.0	2,563.9	2,667.5	2,764.5
Black	2,110.1	1,836.7	1,760.4	1,598.8	2,121.9	2,164.1	2,159.1	2,131.0	2,133.8	2,493.5	2,558.6	2,663.6
American Indian/1	2,492.5	2,003.9	1,893.5	1,663.9	2,506.6	2,366.3	2,329.4	2,224.3	2,520.8	2,736.1	2,774.9	2,791.3
Asian/2	2,264.9	1,877.8	1,785.5	1,603.8	2,277.4	2,205.8	2,180.8	2,134.7	2,289.9	2,531.4	2,573.8	2,664.6

1 "American Indian" is used to describe the American Indian, Eskimo, and Aleut population.
2 "Asian" is used to describe the Asian and Pacific Islander population.
3 Hispanic origin may be of any race.
Source: U.S. Census Bureau, Internet Release date: January 13, 2000, Table B.

these three groups. Should the assumed convergence pattern not occur, i.e. if fertility rates of the White and Black non-Hispanic groups over the coming half century prove to be lower than projected and/or that of the Hispanic group higher, the proportionate contribution of these groups to demographic change would depart from those calculated in the projections.

High and low fertility assumptions were incorporated in projection variants. These were calculated by inflating and deflating the middle series by specified proportions. These inflation/deflation proportions were calculated as linear interpolations rising from from zero in 1998 to 15 percent in 2025. From 2025-2100, the inflation/deflation proportions were linearly interpolated to increase from 15 percent to 25 percent (U.S. Census Bureau, p. 11).

b. Mortality: Current U.S. mortality data show substantial disparities between males and females, and among race and ethnic groups. The male/female and White/Black mortality differentials have not demonstrated a consistent trend during the 20th Century, increasing during some periods but decreasing during others.

For the purposes of its long-range projections, the Census Bureau assumed a small convergence between male and female mortality, and more substantial narrowing of mortality disparities among race/Hispanic-origin groups.

Low- and high-mortality variants were based on the 95-percent confidence interval reported by Lee and Tuljapurkar (1998).[iii] The quantitative outcomes of these assumptions may be seen in Table 2.

Table 2. Projected Life Expectancy at Birth, 1999 to 2100.

U.S. Census Bureau projections: (As of July 1. Resident population.)

	Lowest Series				Middle Series				Highest Series			
	1999	2025	2050	2100	1999	2025	2050	2100	1999	2025	2050	2100
Life Expectancy at Birth (Years)												
Total Population (Male)	74.0	76.5	79.5	85.0	74.1	77.6	81.2	88.0	74.1	79.1	83.8	92.3
Total Population (Female)	79.7	82.6	84.9	89.3	79.8	83.6	86.7	92.3	79.8	84.6	88.4	95.2

Source: U.S. Census Bureau, Internet Release date: January 13, 2000, Table C.

c. International Migration: The new Census Bureau projections include a departure from the Bureau's previous practice, in which a constant numerical value and a constant set of demographic characteristics was assumed. Instead, the new projection series allows the level and characteristics of international migration flows to change over the projection period. It also incorporates some limited feedback on assumed future migration from the characteristics of the projected basis population (e.g. immigration is increased as the projected growth in the size of the U.S. population of working-age declines.

However, while there is some limited feedback of this type allowed, the Census Bureau notes that it was "not able to develop a dynamic model for future international migration that reflects adequately the current base series information, yet conforms to any unifying theory of future change." (U.S. Census Bureau, p 16)

For the "short-term" to 2020, the new assumptions are that the rapid rise in legal immigration during the 1990s is a consequence primarily of the large-scale legalization of 3+ million illegal immigrants during the 1980s, many of whom were able to become U.S. citizens and then to sponsor the legal immigration of immediate relatives with no numerical limitations. The Bureau assumes that this is a time-limited phenomenon that will peak shortly after 2000, and then decline gradually to zero.[1]

Additional important assumptions are also adopted. Interestingly, these operate in the same direction of producing immigration flows that rise during the early years of the projection period, but then stabilize or decline. In particular:

i. It is assumed there will be "no change in immigration policy which would result in any change in the quantity of immigrant visas available in numerically limited legal categories between 1998 and 2020." (U.S. Census Bureau, p. 17).

[1] . It must be noted that the Bureau thereby implicitly assumes that there will be no additional legalization programs of any magnitude. Here one must note that as this article is being written there is substantial legislative advocacy underway for a new, substantial legalization; the outcome of such advocacy cannot be predicted.

ii. The flow of refugees to permanent residence is assumed to increase until 2000 and then decline to 2020

iii. The level of undocumented migration from Mexico and Central America is assumed not to change.

For the first decade of the longer-term projections, from 2020 to 2030, the Bureau assumes that migration to the U.S. would increase by nearly one-third, from about 1.09 million to 1.45 million per year. This assumed increase is posited as a kind of balancing response to the projections' own projected increases in the U.S. "dependency ratio" during that period, as the large postwar baby boom cohorts pass the age of 65 (see discussion of this age boundary elsewhere in this article). Following 2030, the assumed level of net immigration is assumed to remain numerically constant (and hence a declining fraction of a growing population base) for the middle series.

As to "high" and "low" variants, the Bureau emphasizes that its goal is:

to establish a candid view of the uncertainty surrounding the middle series projection…The margin of uncertainty around the middle-level assumption is, of necessity, relatively wider for international migration than for births and deaths. The exogenous character of this component, and its reliance on unpredictable external factors such as the internal policy environment and world events, as well as the lack of demographic determinism in its projection, ensure a comparatively high level of uncertainty for this component." (U.S. Census Bureau, p. 19)

To be specific, the "high" immigration assumption exceeds the middle-series by zero in the base year of 1998, by 75 percent in 2010, and by 150 percent in 2100. The "low" variant deviates below the middle series by the reciprocal of these same multipliers, i.e. 1.0 for 1998, 0.57 for 2010, and 0.40 for 2100. (p. 20). The numerical levels of net international migration that result under these variants appear as Table 3.

Table 3: Net migration assumptions, 1995-2050, US Census Middle Series

	per year	Sum
1995-2000	915	4575
2000-2005	951	4755
2005-2010	872	4360
2010-2015	713	3565
2015-2020	734	3670
2020-2025	751	3755
2025-2030	912	4560
2030-2035	1061	5305
2035-2040	1061	5305
2040-2045	1061	5305
2045-2050	1061	5305
Total, 1995-2050		50460

Source: U.S. Census Bureau
Internet Release date: January 13, 2000, Table E.

2. Projected population size under projection variants:

Under all three of the above variants, the Census Bureau projections show the U.S. population continuing to grow in size up to the year 2050, the end of the period under discussion here. [See Table 4] From the base population of about 270 million in 1998, the middle series projects an increase nearly 50 percent, to nearly 404 million. The projected increase for the low series is 16 percent, to 314 million, and for the high series the comparable projection is an increase of over 100 percent, to 553 million.

Table 4. Total Projected Population, U.S. Census Bureau Series, Lowest, Middle and Highest Series

(Numbers in thousands. As of July 1. Resident population.)

Year	Population			Average Annual Percent Change		
	Lowest Series	Middle Series	Highest Series	Lowest Series	Middle Series	Highest Series
1998(est)	270,299	270,299	270,299	--	--	--
2000	274,853	275,306	275,816	0.84	0.92	1.01
2025	308,229	337,815	380,397	0.46	0.82	1.29
2050	313,546	403,687	552,757	0.07	0.71	1.49
2100	282,706	570,954	1,182,390	-0.21	0.69	1.52

Source: U.S. Census Bureau, Internet Release date: January 13, 2000, Table A.

In all such cases, the projected totals of the projections released in January 2000 exceed by a substantial margin the comparable projected numbers released in 1996. In all three variants, the projected numbers for 2050 are at least 10 percent larger.

3. Projected changes in age composition:

As is well known, the United States (along with only a small number of other countries, including Canada, Australia and New Zealand) experienced a far larger and longer-lived "baby boom" than did most industrialized countries after World War II [ref?]. The U.S. baby boom extended over nearly two decades, from 1947 to 1965. Fertility rates did not peak until the 1957, and the largest birth cohort was not seen until 1959. As a result, the age structure of the United States is characterized by a baby boom bulge in its age composition that is both higher in amplitude and wider as to its current age range than in most other such countries. In 2000, the large baby boom cohorts are (roughly) in the age range 35-54. If one is willing to accept the arbitrary age boundary of 65 as indicative of entry into "aged dependency" (but see discussion, below), this implies that the "dependent" category will begin to grow rapidly in size around 2011, and the largest cohorts will enter this age category in the middle of the third decade of the 21st Century.

Thus, if measures such as the "aged dependency ratio" [defined as the number aged 65 and over divided by the population aged 15-64, expressed in percent] are used to assess demographic aging, it follows that such ratios can be expected to increase rapidly after 2010.

Such a trend can indeed be seen in the Census Bureau projections In the Middle series, the "aged dependency ratio", so defined, is projected to rise from 19.1 persons aged 65 and over in 2000 to 33.9 in 2050 (U.S. Census Bureau, Table F).

The projection variants on international migration also differ in this regard. However, although the quantitative differences in the migration assumptions are quite large among the variants, the impacts on the "aged dependency ratio" are relatively modest: whereas in the middle migration variant this ratio rises from 19.1 in 2000 to 33.9 in 2050, in the high migration variant the increase is from 19.1 to 30.3, and in the low migration variant from 19.2 to 36.1 (U.S. Census Bureau, Table F). In short, the trajectory of this ratio is driven primarily by the lagged effects of the postwar baby boom.

B. COMPARISONS OF U.S. CENSUS AND U.N. ASSUMPTIONS:

The assumptions about fertility, mortality, and net immigration embodied in the two projections series differ quite substantially. The UN projections' fertility assumptions for the U.S. population are summarized in Table 5. Though the time intervals differ somewhat, these may be compared in rough terms with the fertility assumptions adopted by the U.S. Census Bureau, in Table 1 above.

Table 5: U.S. Fertility Assumptions in United Nations Projections

Low Variant			Medium Variant			High Variant		
2000-05	2025-30	2040-50	2000-05	2025-30	2040-50	2000-05	2025-30	2040-50
1.80	1.50	1.50	1.93	1.90	1.90-	2.13	2.30	2.30

Source: United Nations, 2000[iv], Table A-15.

As may be observed, the UN fertility assumptions are generally lower than the Census Bureau assumptions. For example, the "low variant" UN assumptions in 2025-30 and again in 2040-50 are 1.50, whereas the "lowest series"Census Bureau assumptions for 2025 and for 2050 are 1.865 and 1.80 respectively. Similarly, the UN fertility in the "medium variant" for these same years is 1.90 and 1.90, vs. 2.21 and 2.22 in the Census Bureau projections.

The differences in assumptions about future mortality may be examined by comparing Table 6 with Table 2. Here the assumptions are quite close for the periods around 2000 and 2025, but for the later period the UN assumptions about life expectancy are considerably lower than those of the US Census Bureau.

Table 6: U.S. Life Expectancy at Birth: United Nations Projections, for 2000-5, 2025-30, 2040-50

	2000-5	2025-30	2040-50
Total Population (Male)	74.2	77.3	78.8
Total Population (Female)	80.6	83.0	84.4

Source: United Nations, 2000, Table A15.

Finally, the two projection series also differ substantially in their assumptions about the magnitudes and trajectories of future net migration. Table 7 presents the two sets of "middle" assumptions side-by side. The UN projections are set a constant 760,000 per year over the projection period. Meanwhile, the Census Bureau's experiment with allowing limited feedback to produce rises and falls in net migration, coupled with the specific feedback assumptions adopted in this regard, produces an initial short-term rise in net migration, followed by a two-decade-long decline, followed by a subsequent increase to 2030, at which point the Census migration assumption is held constant. It should be noted that the cumulative effect of such differing assumptions is quite substantial over the 55-year period in question. Overall, the assumed net flow of immigrants to the United States is 8.66 million higher in the Census projections than in those produced by the U.N.—a difference of over 20 percent.

Table 7: Comparison of net migration assumptions, 1995-2050, for UN Medium Variant and US Census Middle Series

	UN-Medium Variant		US Census, Middle Series	
	per year	sum	per year	Sum
1995-2000	760	3800	915	4575
2000-2005	760	3800	951	4755
2005-2010	760	3800	872	4360
2010-2015	760	3800	713	3565
2015-2020	760	3800	734	3670
2020-2025	760	3800	751	3755
2025-2030	760	3800	912	4560
2030-2035	760	3800	1061	5305
2035-2040	760	3800	1061	5305
2040-2045	760	3800	1061	5305
2045-2050	760	3800	1061	5305
Total, 1995-2050		41800		50460

Source: U.S. Census Bureau, Table E; United Nations, 2000, Table A.16.

C. CONSEQUENCES:

Before entering into any discussion of possible consequences of such projections, it is essential to underline just how uncertain the future demography of the United States truly is beyond the short-term. Here one must be both clear and forceful: the uncertainties many in number, and large in magnitude. The professionals at the U.S. Census Bureau are well aware that it is nearly impossible to establish credible long-term forecasts for at least two of the three key components of their projections---fertility and international migration---and even the more stable and predictable component of mortality trajectories is increasingly uncertain.

It should not be necessary to write this kind of caveat: the failure of past long-term demographic projections to correctly anticipate long-term trends is well known. As but two of

many possible examples that might be offered: there was a broad consensus during the 1930s that the populations of countries such as the UK and Sweden could be expected to decline in size during the ensuing decades; yet in reality their populations grew substantially over that period. Moreover, no one correctly anticipated the sustained and powerful baby boom seen in the United States and some other industrialized countries during the 1950s and 1960s; a short-term postwar fertility spike was anticipated, of course, but not the two-decade boom actually experienced.

Still, if the past is any guide, these caveats will prove fruitless: those who wish to make quantitative statements about the second half of the 21st Century will (correctly enough) see well-done demographic projections as the most credible forward looks available, far more soundly based than those based upon economic, social, or technological anticipations. Notwithstanding the deep uncertainties attaching to such demographic projections, they will—with varying levels of enthusiasm--interpret them as realistic and well-founded forecasts. The subjunctive form implicit in any long-range projection—"if X were to occur, then the implications would be Y or Z"—will unwittingly slip into the predictive form "will".

So, let us repeat: when it comes to the demography of 2050, uncertainties abound. No one should misinterpret the U.N. or Census Bureau projections to be credible long-range forecasts.

Having emphasized these uncertainties, we can also acknowledge that some demographic trends are more likely than others. This is the case because certain specifiable demographic patterns involve powerful forces of inertia that last over a period of decades, and these allow us to discern some futures to be more likely than others.

First, all of the long-range projections, from the lowest to the highest, show substantial continuing growth in the US population to the year 2050. The highest series shows dramatic numerical growth over this 50-year period: from and estimated 1998 population of ~270 million to one of 553 million in 2050. But even the lowest series also shows substantial growth from 1998 levels, from 270 to 314 million [See Table ***].

Second, nearly all of the demographic projections show the U.S. population will experience a gradual shift over the next half century toward an "older" age composition, a trend that often is called "demographic ageing." [For a skeptical comment on this usage, see below.] In this the U.S. is like all other industrialized countries, and even most developing countries. The fact that fertility rates are nearly everywhere lower than their levels during the 1950s and 1960s implies such a shift toward an age composition with higher proportions in older ages and lower proportions in younger ages. Moreover, this pattern is amplified by increases in life expectancies at older ages during the same period.

The fact that U.S. fertility rates during the 1980s and 1990s have generally been higher than those of Europe and Japan suggests that phenomenon may be less dramatic in the U.S. than in these other regions and countries—at least when comparing proportions in the older age groups. At the same time, U.S. fertility rates were far higher during the 1947-1965 baby boom than they were in most other industrialized countries, and hence current rates, though higher than those in peer countries, represent substantial proportional declines from those of the recent past.

Nonetheless, it is nearly certain that "aged dependency" in the United States, as measured by the ratio of persons 65 and over relative to those in the "working ages" of 20-64, will increase substantially. The shift now underway in age distribution in most industrialized societies is a truly powerful force that policy will ignore at its peril. Yet there are perils too in blinding ourselves--by mis-specifying the concept of "aged dependency" itself. The lower bound of this category was set rather arbitrarily at 65 years fully two-thirds of a century ago, based primarily upon the entitlement age then set by law (also rather arbitrarily) for retirement under Social Security. Since the 1930s, both the life expectancy and health/vitality experienced at age 65 have increased dramatically.

Since then, an odd statistical rigidity has been established. Though demographers are well aware that the "meaning" of age 65 has changed dramatically, demographic categories have not adjusted to these changing demographic realities. Demographic analyses and projections (including the most recent United Nations and U.S. Census Bureau projections) present calculations of the proportion 65-and-over---sometimes to several decimal places. Yet this traditional age boundary appears increasingly disconnected from the real ages at which people in industrialized countries transition from "productive working age" to "aged dependency". In part such a fixed and unchanging age boundary in the context of dramatic change in underlying mortality and morbidity rates represents a proper reflection of the rigidities of statutory retirement age emanating from the policy domain. It also reflects an understandable desire by statistical agencies and users to maintain the definition continuity of statistical time series. Yet we must recognize that our worldview of the implications of "demographic ageing" may be in the process of being distorted by our own increasingly-misleading indicators.

Lest we mislead ourselves as well as others, there is a strong case to be made for development and tabulation of a series of alternative indicators of "aged dependency," to be calculated and presented alongside the time series based on the constant-definition currently in use. For example, a second aged-dependency ratio (aged-dependency') could be calculated using a age boundary of 70 years (also arbitrary, but perhaps closer to emerging reality). Or an aged-dependency" that varied with changing life expectancy could be constructed, e.g. by holding constant not the age boundary itself, but instead the number of years of remaining life expectancy.[2] These additional series, examined in parallel with continuation of the current measure, would offer quantitative insights into the real meaning of demographic aging.

As noted above, the implications of the age-structural changes underway are indeed powerful forces that carry deep and troubling policy implications. They present unavoidable challenges to some of the most well-established social inventions of the last century, and especially to the near ubiquitous "PAYE" (Pay-As-You-Earn) state-run pension systems such as the U.S. Social Security system, and to publicly-provided or tax-subsidized health care systems. In addition, they carry powerful implications for the common but hardly universal pension and benefit systems provided by employers in many countries. Many thousands of pages have been written in recent years about these implications in the United States, but the space limitations

[2] In 1940 the life expectancy of a U.S. male aged 65 was 11.9 years, vs. 15.6 in 1997; for women, the comparable numbers were 13.4 years in 1940 vs. 19.2 years in 1997. See Urban Institute, 1998, Figure 3.

here require that only the key points be summarized, and very briefly at that. One sophisticated and balanced analysis (Urban Institute, 1998)[v] makes the following points:

- U.S. fertility rates, though high by the standards of peer countries, are substantially lower than the high levels experienced during the 1947-65 baby boom.
- There are large unfunded commitments in the public sector for Social Security and healthcare for the elderly.
- Private employers also face rising costs for largely unfunded retiree health benefits, as well as for "defined benefit" pension plans.
- The retirement security of even those who have saved for themselves is also threatened by unanticipated increases in life expectancy at old ages.
- Both the public and the private sector provide strong incentives for older workers to retire early, and these incentives have led to substantial declines in retirement age.
- "In 1950, the typical male retired at age 69. By 1994, the average male retiree was 64 years of age. Combined with longer lives, this means that the typical person…now expects to live close to one-third of his or her adult life in retirement." (p. 4)

One might add that the United States, compared with peer industrialized countries, is relatively exposed by its weak capacities to control the escalation of health care costs. This incapacity imposes special stresses on the Social Security system, for several reasons. First, it makes cost containment very difficult for the Medicare system (which provides health care to persons 65 and over). Second, the tax on the working-age population for Medicare has been rising rapidly, in effect exacerbating the perceived tax burden of the related Social Security system. Third, the fact that most U.S. health insurance is provided by employers under group-rated policies tailored to their particular workforces means that older workers tend to increase employers' health insurance premiums, thereby bringing about incentives for them to encourage retirement at younger ages.

In addition to such impacts upon the Social Security system, the relative incapacity of the U.S. to contain healthcare costs means that, without policy intervention, a shift toward an older age structure can be expected to increase significantly the share of US GDP allocated to health care expenditures, a share that already is the highest in the world even though the age structure of the U.S. is “younger” than those of many other industrialized countries. Though such a shift in age structure would also be expected to simultaneously lower the share of GDP allocated to expenditures on the youth population (especially those to education), there are no policy or economic mechanisms in place by which incremental transfers might take place from the younger to the older age groups. Institutional resistance to expenditure reductions might therefore be expected to result in aggregate increases in total allocations to education and health sectors. (Whether one considers such expenditures to be non-productive “consumption” or productive “investment in social capital” is a matter of strongly-contested opinion.)

D. POLICY OPTIONS

As noted by many commentators, these are problems of a quite peculiar sort. They are challenges that result from success: in women gaining effective control of their own fertility; in improving health and vigor at older ages; in raising Social Security pension levels to lift those dependent on them out of poverty; in providing the elderly with subsidized health care services.

However, the foundations of some aspects of this success are fragile. U.S. retirees have experienced extraordinarily high “returns” (at least relative to their Social Security contributions, although the system is a PAYE rather than a "funded" one. However, these “returns” over the past decades have been in fact been based not upon financial returns of their own contributions, but instead upon increasing tax rates on cohorts of younger workers that were themselves increasing in size due to the postwar baby boom. These large cohorts will themselves begin to reach the statutory retirement age early in the second decade of this century, and for them the "returns" on their Social Security contributions are likely to be low. Moreover, some commentators speak darkly of a catastrophic collapse of the entire system, leading to broader economic crises, even disaster.

These are problems that, from an analytical perspective at least, have an array of clear and unambiguous solutions. If rates of "return" have gradually been increased for decades in a manner that cannot be sustained, this trend can be reversed. If strong incentives for early retirement have been effective in guiding retirement behaviors, these incentives can be modified. If health care costs have been allowed to escalate in an unsustainable fashion, the policies that allowed such trends can be changed.

Yet the fact that solutions are available does not mean that they will prove politically feasible, or at least attractive. Decades of increasingly generous provision for retirement and for retirees may well have engendered powerful expectations among prospective retirees of more-of-the-same. The demographic fact that leading edge of the U.S. baby boom will not reach 65 until the second decade of the 20th century, and that current projections show fiscal surpluses during the first decade, allows political leaders to avoid unpopular measures for a period representing much of their likely political careers. Yet the longer delayed are incremental actions to equilibrate the system, the more painful and costly will be the measures required.

There is no lack of proposals; indeed they are so numerous that we can only list them here (the author’s comments on some of these are appended, enclosed within brackets):

- Raise "normal retirement age" (under laws passed in the 1980s, Social Security retirement age is scheduled to increase, but only very slowly--up from age 65 to 67 by 2027)
- Increase "early retirement age", currently 62 with somewhat lower annual pension payments. Alternatively, the financial attactiveness of taking such early retirement could be reduced.
- Enact legislation to prohibit compulsory retirement (this was done in the U.S. in 1986, under the so-called Pepper Act.)

- Change laws regulating private pension plans to increase the age at which their pensions can be paid out, or alternatively reduce the tax incentives available for plans allowing earlier retirement.
- Adjust public and private pension and tax policies to facilitate part-time retirement by older workers who wish to reduce but not end time commitment to work..
- Invest part of Social Security payments in market investments expected to yield higher returns than current US Government bonds (albeit carrying with them higher risks), either collectively or via individual accounts.
    - [This has become a major partisan issue in the 2000 U.S. Presidential campaign.]
- Modify the cost-of-living index applied to Social Security payments, on grounds that the current Consumer Price Index exceeds true inflation rates.
- Increase the progressivity of Social Security payouts, such that the current higher payouts for lower-wage contributors are even higher.
- Find ways to contain the rapid escalation of health care costs, especially for elderly persons.
    - [Comment: In the United States, this is a hotly-contended political issue, given the existence of strong political and interest-group opposition to government-supported or "single-payer" health insurance systems such as those in many other industrialized countries.]
- Increase taxation rates on working-age population to subsidize pension benefits of retired population, or increase subsidies drawn from general taxation sources.
    - [Comment: Such increases would have to be very substantial to compensate for demographic age shifts underway in many countries, unless other changes are made at the same time.]
- Increase fertility rates on a sustained basis (e.g. via direct financial incentives for additional births, or indirect pension or in-kind benefits (preferential access for mothers with many children to subsidized housing,or early retirement provisions); or measures to reduce the opportunity costs if additional childbearing.
    - [Comment: Such policies have had modest impacts in authoritarian states such as the former Communist countries of Eastern Europe, but only minimal impacts in liberal democracies such as France and Sweden.l
- Increased immigration, to increase the number of working age contributors to PAYE pension systems.
    - [Comment: Even very large immigration numbers typically have relatively little impact upon the fiscal stability of PAYE pension systems. Immigrants are themselves future beneficiaries of inadequately-funded PAYE pension systems. Moreover, the net financial contribution of immigrants to PAYE pension systems depends upon their likely taxable earning levels, yet the skill/education levels of U.S. immigration flows are poorly matched to such a purpose and seem unlikely to change given the stalemated politics of US immigration policy.]
    - Retain or enhance productivity of existing workforce via investment in "lifelong learning" or continuous upgrading of skills and education of the workforce.
    - [Comment: This is becoming increasing feasible with the growth of high-quality education and training delivered anytime-anywhere over the Internet.]

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