



The  
Really  
Bad  
News  
About  
Retirement  
Policy

*By Steven A. Nyce  
and Sylvester J.  
Schieber*

**T**he aging of most of the world's population has been driven largely by increases in life spans – welcome news, indeed. And by no coincidence, it has been accompanied by the growth of organized retirement systems in affluent economies. Yet while it is nearly as hard to be critical of the generosity of these support systems as it is to wish to turn back the clock on life expectancy, the combination is raising concerns about the cost burdens that we will soon face from elderly dependency.

The World Bank's 1994 landmark report, *Averting the Old Age Crisis*, estimated that the G-7 countries (Britain, Canada, France, Germany, Italy, Japan and the United States) would, on average, have to increase taxes by an awesome 6.56 percent of GDP to finance their national pension obligations over the long run. A study seven years later by the European Commission and the Organization for Economic Cooperation and Development (OECD) suggested that considerable progress had already been made in reining in these financial liabilities – average public pension spending to meet existing obligations in the G-7 countries is now expected to be only 2.3 percent of GDP higher in 2050 than it was in 2000. But the same report added a new concern: the exploding cost of health care for the elderly. In Canada, for example, publicly funded health care costs for pensioners are expected to increase from 6.3 to 10.5 percent of GDP in the next half-century.

Moreover, as ominous as the new projections seem, they may well err on the rosy side. It now appears that many developed economies will experience prolonged periods in which the numbers of non-elderly will actually decline. In some cases, these declines are likely to exceed gains in worker productivity, implying that these societies face the prospect of declining standards of living. Allocating these reductions in income between workers and retirees will likely prove a severe test of democratic values.

#### **THE BIG PICTURE**

Stripped to the essentials, all retirement systems are mechanisms for dividing



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consumption between workers and retirees. Workers receive their share of output through wages, while the owners of capital receive theirs as returns to investments. Retirees are supported through ownership of capital, along with transfers – voluntary and involuntary – from workers and younger capital owners.

In a retirement model based purely on investment income, workers accumulate wealth by saving a portion of their earnings. They can do this by means of personal savings, or through formal retirement plans mandated by government, sponsored by employers or managed by some other cooperative entity. During retirement, retirees liquidate their assets.

Seen this way, retirement plans are mechanisms for transferring consumption rights across time, first by buying assets and then by selling them. In the parlance of actuaries, programs that provide for the accumulation of assets during the working career to finance participants' consumption during retirement are "funded" programs.

Transfers to support the elderly can be informal, with one generation of a family financing the previous generation. But most national governments sponsor formal inter-generational transfers. In the parlance of retirement financing, these plans are "pay-as-

you-go" (pay-go) because they tax today's workers and transfer the resources to today's retirees. Discussions of the burden of supporting the elderly typically focus on the cost of government-sponsored pay-go retirement plans.

In both approaches, though, workers finance retirees' consumption by giving them a share of what they produce. With funded plans, workers do this by purchasing assets that retirees sell. With pay-go retirement systems, workers pay taxes to finance pay-go retirement plans. Many governments have opted for pay-go systems, typically because pay-go makes it possible to pay full benefits on day-one. By contrast, funded plans depend on workers' decades-long accumulation of assets.

With either approach, rapid population aging is bound to reduce somebody's standard of living. There are at least two kinds of costs to

consider in this regard. The first has to do with the burden that a retirement system places on productive assets. The second has to do with the "opportunity costs" imposed on the economy – the extent to which the specific structure of a retirement program (the mandated age of retirement, for example) affects the handful of factors that define the legal retirement burden.

### Consumption Levels in the Developed Economies

The first of these factors is the consumption rate – the ratio of total consumption to total

**TABLE 1: CONSUMPTION AS A PERCENTAGE OF OUTPUT, SELECTED COUNTRIES**

	1970	2000
Australia	59.1	59.5
Canada	56.8	55.9
Germany	51.5	56.6
Ireland	73.0	49.6
Japan	54.6	54.1
Mexico	75.1	69.1
South Korea	68.0	50.6
Turkey	76.9	68.0
United States	64.8	67.7

**TABLE 2: PERCENT OF POPULATION 60 OR OLDER**

	2000	2030 (est)
Australia	16.3	26.0
Canada	16.7	29.1
Germany	23.2	36.1
Ireland	15.2	22.1
Japan	23.2	36.9
Mexico	6.9	15.8
South Korea	11.0	27.3
Turkey	8.4	15.8
United States	16.1	25.8

STEVEN NYCE and SYL SCHIEBER are economists at Watson Wyatt Worldwide, a pension consulting firm.

economic output. Economists have long studied the relationship between income and consumption. One general conclusion is that the long-term relationship between the two is fairly constant. Indeed, for nearly all the economies shown in Table 1, consumption has remained on track over the last four decades.

Some less-developed economies – Ireland, Mexico, Turkey – that have grown rapidly in recent decades have seen a fall in consumption rates, as a higher proportion of income is plowed back into savings. But these are exceptions. In most cases, the relatively stable relationship has held up under economic, demographic and political stress. Thus Japan, which developed quite rapidly in the postwar era only to face economic stagnation in the last decade, has not changed its consumption rate.

### The Implications of Aging on Consumption

While consumption has remained roughly a constant proportion of income for entire economies, individuals’ consumption varies greatly across their lives. In what economists call the “life-cycle model,” the young consume more than their income as they invest in education, start a family and the like. During middle-age they become savers, paying off debts and then accumulating wealth for retirement. The elderly, of course, consume assets accumulated earlier.

The life-cycle model implies that older retirees (who have had more time to spend down assets) ought to possess less wealth than younger retirees. But several studies have found just the opposite. Measurement is complicated by the likely correlation between

wealth and life expectancy. If poor people die at younger ages, the growth in wealth from one age group to the next in the cross-section might simply reflect differences in mortality rates. Note, too, that, in the case of the United States, Social Security has provided larger windfall benefits to some age groups than to

others – and thus may have given earlier recipients an incentive to spend down their savings more rapidly.

If the general conclusion is that people tend to save during their working lives and to dissave during re-

tirement, differences in the age structure across countries or variations in age structures across time should have significant implications for macroeconomic performance. The aging of populations should lead to lower national savings rates, which in turn should lead to less investment – and, eventually, to declines in living standards. So far, there is not much evidence of this. But the jury is still out: we have not reached the rates of aged dependency that are certain to develop over the next couple of decades.

### Retirees as a Share of National Populations

If average age for retirement does not change over time, calculating the effects of aging on the retirement burden is straightforward. For example, if we were to assume that the retiree population in Japan was comprised of all people over age 55 who were not economically active, the retirees in 1995 would have equaled roughly 15 percent of the population. Applying the 1995 rates of economic inactivity for those over 55 to the projected age composition of the Japanese population suggests

**TABLE 3: AVERAGE ANNUAL GROWTH IN GDP**

	1970s	1990s	2010s (est)
Canada	4.29	2.71	1.59
Germany	2.72	2.66	1.44
Ireland	4.73	7.08	3.00
Japan	4.43	1.36	1.05
South Korea	7.59	6.10	4.20
United States	3.20	3.34	2.22

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that 26 percent of the total population will be retired in 2030. Hence one sees the potential value of the data in Table 2, which shows the percentage of the populations over age 60 in the selected countries for 2000 and the three decades following.

Table 2 can only suggest retirement burdens, present and future. For one thing, many people retire in their late 50s, while others work into their 60s. Besides, retirement patterns may well change. Many countries have been increasing the age of eligibility for public pension benefits or otherwise offering financial incentives to stay on the job. Still, the conservative projections in the table are probably a good indicator of the trends in the retirement burden.

And they suggest that, in most of the developed economies, the retirement burden rate will increase by about half over the next three decades – and in some cases, by considerably more.

### Retiree Consumption Levels

The third crucial factor in defining retirement burdens is the ratio of average retiree consumption to average consumption for the whole population. In one regard, it is the most revealing variable, because it has the potential to show the relative effects of rising retiree burdens on both retirees and the remainder of society.

If personal consumption remains relatively stable as a portion of GDP over the next couple of decades in the aging societies, economic growth will largely drive what happens to living standards. Table 3 shows GDP growth for the selected countries back to the 1960s, along with projections of growth for this decade and the next. Overall, the rate of growth has not changed much in the past few decades. There is good reason to believe, however, that it will slow considerably in the 2010s.

As a matter of arithmetic, growth in total economic output is determined by the combination of worker productivity and the size of the work force. As Table 4 shows, there is no universal trend to suggest either faster or slower

productivity gains down the road. Some people believe that technology and capital “deepening” – an increase in the average amount of capital per worker – will lead to acceleration in productivity gains. Others worry that aging work forces will depress the rate of productivity improvement.

Table 5 shows the historical rates of growth in the labor supply for the OECD countries. We projected future growth using United Nations population projections by age and gender, and applying the current labor force participation rates to future years. This may result in a slight underestimate of actual growth because younger women may partici-

**TABLE 4:  
AVERAGE ANNUAL GROWTH  
IN LABOR PRODUCTIVITY**

	1960s	1990s	Late 1990s
Australia	2.66	2.05	2.27
Canada	2.26	1.44	1.59
Germany	4.25	1.50	1.09
Ireland	4.21	3.31	3.95
Japan	8.63	1.10	1.46
Mexico	0.13*	0.29	1.71
South Korea	3.86**	4.55	4.23
Turkey	4.63	2.53	3.26
United States	2.26	1.52	1.96

\*1980s \*\*1970s

**TABLE 5:  
AVERAGE ANNUAL GROWTH IN  
LABOR SUPPLY**

	1960s	1990s	2010s (est)
Australia	2.49	1.34	0.38
Canada	2.66	1.17	0.09
Germany	0.15	0.69	-0.65
Ireland	0.00	2.87	0.39
Japan	1.34	0.58	-0.50
South Korea	2.82	1.70	0.32
United States	1.74	1.13	0.46

pate at higher rates as they age than older women do today. But our analysis suggests this will not offset the clear trend toward much slower labor force growth. In some countries, labor forces will actually shrink.

Table 6 shows estimates of GDP growth for some major economies, along with alternative estimates based on the assumptions that worker productivity continues to grow at the 1990s rate and that the labor force grows in accord with our estimates. In countries with severe aging problems – for example, Germany and Japan – slower growth in output could have a profound effect on standards of living. Indeed, if the most optimistic predictions do not prove accurate, these societies will face the question of who bears the brunt of demographically driven scarcity. The character of the retirement systems in many countries will have a lot to do with the answer.

#### **THE ROLE OF RETIREMENT SYSTEMS IN DETERMINING RETIREMENT BURDENS**

In many countries, benefits granted to those already retired are tied to growth in current labor productivity through some form of indexing to current wage rates. Even where pension benefits are tied to the general growth in income or to the cost of living, the explosive increase in the cost of retirees' health benefits tends to increase the cost of benefits at rates approaching that of wage growth.

Where retirees are largely dependent on pensions linked to current workers' wages, pension systems may actually insulate retirees from a slowdown in the economic growth that is likely to result from population aging.

Here, it follows as a matter of arithmetic that workers and their young dependents face the prospect of seeing their consumption grow more slowly than the pace of productivity gains. That is, some of the fruits of their

**TABLE 6:  
ESTIMATED GROWTH IN REAL GDP AT  
HISTORICAL PRODUCTIVITY GROWTH RATES UNDER  
CURRENT WORK FORCE PATTERNS**

	REAL GDP GROWTH OECD ESTIMATES		PRODUCTIVITY GROWTH 1990s	ESTIMATED GROWTH IN GDP AT 1990s PRODUCTIVITY GROWTH	
	2000–2010	2010–2020		2000–2010	2010–2020
Australia	—	—	2.05	2.93	2.43
Canada	2.22	1.59	1.44	2.17	1.55
Germany	2.21	1.44	1.50	1.44	0.85
Ireland	4.60	3.00	3.31	4.59	3.71
Japan	1.22	1.05	1.10	0.84	0.60
Mexico	—	—	0.29	2.32	1.73
South Korea	5.84	4.20	4.55	5.51	4.87
Turkey	—	—	2.53	4.25	3.79
United States	2.96	2.22	1.52	2.43	1.99

greater productivity would go to retirees, as workers pay higher taxes to support public pensions or voluntarily save more by purchasing more assets from retirees. It also implies that workers' living standards will not only grow more slowly than their productivity, but will also grow more slowly than the living standards of retirees.

We estimated the growth in total consumption over the current and next decades, assuming that national savings rates remain constant. We then distributed consumption between retirees on the one hand and workers and their young dependents on the other, assuming that the retired population consisted of everyone over age 60.

To divide total consumption between the two groups, we developed estimates of consumption by age based on household survey data. The result is a characteristic hump-shaped consumption profile, with household expenditures peaking with the 45-to-54 year olds. Note that while middle-aged individuals

# In countries with severe aging problems, slower growth in output could have a profound effect on standards of living.

## SCENARIO 1: THE YOUNG BEAR THE BURDEN OF AGING POPULATION AND SLOWER PRODUCTIVITY GROWTH

	TOTAL CONSUMPTION PER CAPITA 2010–2020	ACTIVE WORKERS AND DEPENDENTS PER CAPITA 2010–2020	ELDER POPULATION PER CAPITA 2010–2020
Australia	1.63	1.64	2.05
Canada	0.83	0.84	1.44
Germany	1.04	1.04	1.50
Ireland	2.78	2.75	3.31
Japan	0.78	0.78	1.10
Mexico	0.70	0.81	0.29
South Korea	4.50	4.66	4.55
Turkey	2.78	2.86	2.53
United States	1.17	1.23	1.52

## SCENARIO 2: THE ELDERLY BEAR THE BURDEN OF AGING POPULATION AND SLOWER PRODUCTIVITY GROWTH

	TOTAL CONSUMPTION PER CAPITA 2010–2020	ACTIVE WORKERS AND DEPENDENTS PER CAPITA 2010–2020	ELDER POPULATION PER CAPITA 2010–2020
Australia	1.63	2.12	-0.23
Canada	0.83	1.51	-1.48
Germany	1.04	1.61	-0.42
Ireland	2.78	3.14	1.13
Japan	0.78	1.32	-0.34
Mexico	0.70	1.04	-2.30
South Korea	4.50	5.25	1.08
Turkey	2.78	3.11	0.03
United States	1.17	1.74	-1.04

consume the most, their savings rate is also the highest. The apparent contradiction is resolved by the fact that they have the highest incomes.

To distribute total consumption between retirees and others, we applied the average consumption profile to the population age

distributions for the countries in our analysis. In our baseline Scenario 1 we allowed the retiree group's income to grow at the pace of worker's earnings productivity improvement – implying that the average retiree's consumption will also grow in lockstep with labor productivity.

As the retiree population grows as a fraction of the total population, it will extract an ever-larger share of productivity gains. Thus, growth in total consumption by retirees will outstrip the growth in consumption for the rest of the population.

In Scenario 1, the burden of population aging falls directly on the workers and their young dependents. Workers' living standards grow much more slowly than the economy as a whole.

In what looks like an anomaly, per capita consumption in some countries grows more rapidly than GDP growth over both decades and, at least during the current decade, the younger population appears to do quite well. But much of this improvement only takes place because the younger population is shrinking – during this decade, the number of people in the under-60 group is expected to decline by 6 percent. In the 2010s, the number of people in

this group is expected to decline another 9 percent.

In the long term, however, developed economies will not be able to improve living standards if productivity gains do not outstrip declines in the number of workers. The increasing portion of those in the 20 to 60 age

range who are working, along with falling numbers of children per woman mask this problem for a while. But as the scenario plays out, someone must take the hit.

One likely reaction to the pressures illustrated by this baseline scenario will be to cut pension benefits. Britain has already moved from wage-indexed retirement benefits to benefits that are fixed in real terms at retirement. Other countries, including Germany, Italy and Sweden, have already adopted alternative measures to restrict the growth of their retirement systems.

In Scenario 2, we show what happen if we make the polar opposite assumption – that the entire burden of slowing economic growth is borne by retirees. We assumed that the workers’ standard of living would fully reflect their improving productivity. Retirees get what is left.

Here, retirees in the United States would see their benefits decline by roughly 1 percent per year over the decade, while those in Canada would see their benefits erode by a whopping 1.5 percent per year. Later, the picture becomes even bleaker for retirees.

While the outlook for the group bearing the risk appears dire in each of the scenarios, policymakers would still have options to cushion the blow. One would be to extend retirement ages – thereby both reducing the number of retirees and increasing total output. To this end, Sweden, the United States and Belgium have all increased the normal retirement age, while other countries (among them, Germany) are slowly increasing the age at which retirees get full benefits. The private sector could also play a part – for example, by designing pension benefits so older workers have incentives to stay on the job.

The problem is that raising labor force participation by seniors will not be sufficient to keep most countries out of trouble. Consider the United States, where about 80 percent of those aged 50 to 54 were in the labor force in 2000, but the numbers trail off sharply thereafter. If this decline could be halved – if 75 percent of 55-59 year olds and 36 percent of 65-69 year olds worked – it

**TABLE 7:  
THE BENEFITS OF KEEPING THE ELDERLY ON THE JOB**

	TOTAL CONSUMPTION GROWTH UNDER CURRENT WORK FORCE CONDITIONS 2000–2010	TOTAL CONSUMPTION GROWTH WITH INCREASED WORK FORCE PARTICIPATION OF 60–64 YEAR OLDS 2000–2010
Australia	2.93	3.28
Canada	2.17	2.51
Germany	1.38	1.72
Ireland	4.42	4.77
Japan	0.84	1.18
Mexico	2.32	2.67
South Korea	5.51	5.86
Turkey	4.25	4.60
United States	2.49	2.84

would only increase the total size of the labor force by about 3.5 percent. Table 7 shows what later retirement could do for other countries.

## CONCLUSIONS

Longer life expectancy and declining fertility portend a prolonged period in which the elderly will become an ever-larger portion of the population. But the implications go beyond that. It now appears that many of the developed economies will experience periods in which the numbers of non-elderly will decline.

Moreover, in some cases, these declines will exceed the rates of labor productivity growth – implying that societies face the prospect of declining living standards. Coping with the resulting problems will require far more substantial changes in society than has been generally appreciated. **M**