

# **The Macro Challenges of Population Aging**

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# The Three Phases of the Demographic Transition

- ❑ **Phase 1:** Declining mortality rates lead to rising youth dependency burdens and rapid population growth. Demographic trends tend to lean against economic growth.
- ❑ **Phase 2:** Fertility rates fall with a lag. Declining youth dependency burdens and rising median ages open up a window of opportunity for rapid economic and social development known as the “demographic dividend.”
- ❑ **Phase 3:** The relative growth in the number of elderly overtakes the relative decline in the number of children. Old-age dependency burdens rise and populations stagnate or contract. Demographic trends once again tend to lean against economic growth.

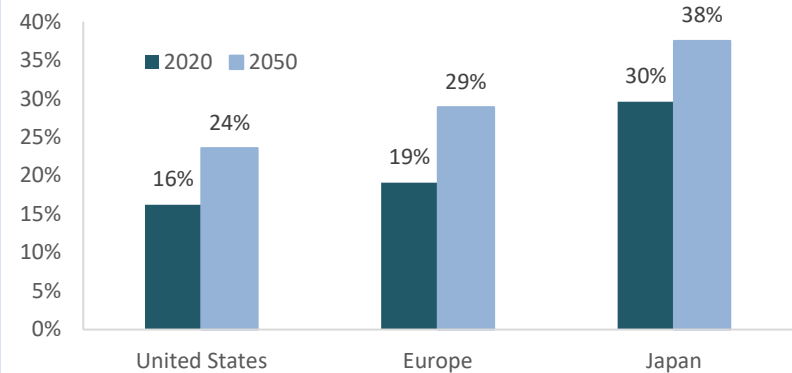
	Life Expectancy at Birth				Total Fertility Rate			
	1950	1975	2000	2021	1950	1975	2000	2021
Europe	63	71	74	77	2.7	2.1	1.4	1.5
North America	68	73	77	78	3.0	1.8	2.0	1.6
Oceania	61	69	75	79	3.7	2.9	2.4	2.2
East & South East Asia	43	61	72	77	5.6	3.7	1.8	1.5
Central & South Asia	41	52	63	68	5.9	5.5	3.5	2.3
North Africa & West Asia	42	56	69	72	6.6	6.0	3.4	2.8
Latin America	49	61	71	72	5.8	4.7	2.6	1.9
Sub-Saharan Africa	38	46	51	60	6.5	6.8	5.7	4.6

	Median Age				Total Dependency Ratio			
	1950	1975	2000	2021	1950	1975	2000	2021
Europe	28	31	37	42	75	77	65	68
North America	29	28	34	38	74	83	69	70
Oceania	26	24	30	32	81	93	77	75
East & South East Asia	21	19	28	36	102	114	71	61
Central & South Asia	20	18	21	27	108	124	104	76
North Africa & West Asia	19	17	20	26	116	136	106	81
Latin America	18	18	23	30	120	127	92	69
Sub-Saharan Africa	18	16	16	18	124	137	141	126

# Shades of Gray

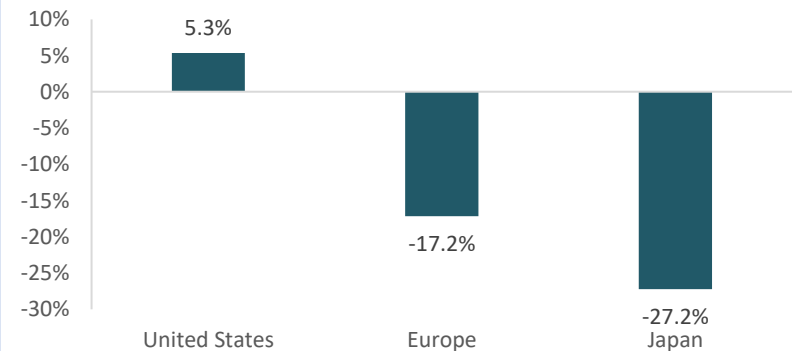
- ❑ The extent of population aging varies greatly across the developed world, mainly because fertility rates have fallen much further in some countries than in others.
- ❑ Until recently, America's relatively high fertility rate, together with substantial net immigration, seemed to ensure that it would remain the youngest of the major developed countries for the foreseeable future. It also seemed to ensure that it would have a growing working-age population, even as those in most other developed countries stagnated or contracted.
- ❑ Since the Great Recession, however, the U.S. fertility rate has fallen sharply, while net immigration has also declined.
- ❑ The latest UN projections still show that America will age significantly less than most European countries and much less than Japan. Yet its demographic advantage over its developed world peers has narrowed considerably compared with previous UN projections.

**Elderly (Aged 65 & Over), as a Percent of the Population in 2020 and 2050**



Source: UN Population Division (2022)

**Percentage Change in the Working-Age Population (Aged 20-64), 2020 to 2050**

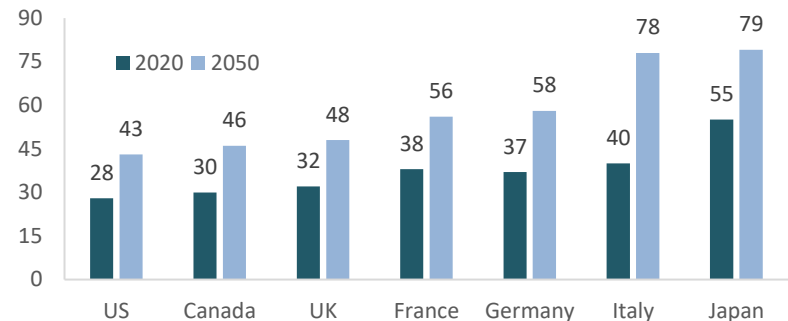


Source: UN Population Division (2022)

# A Rising Dependency Burden

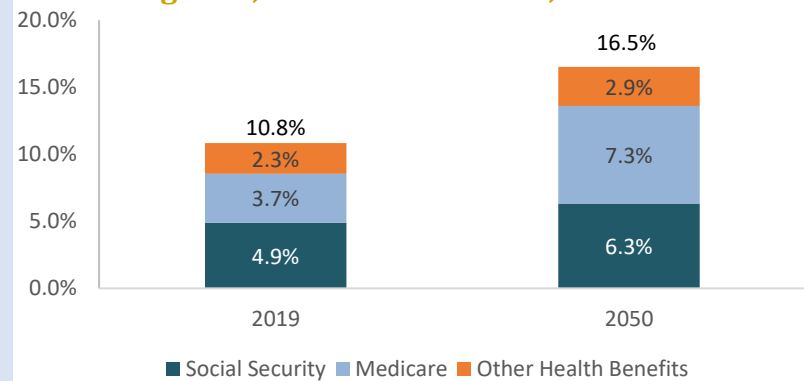
- ❑ Over time, lower fertility and higher life expectancy translate into a higher aged dependency ratio, which in turn translates into a higher cost rate for pay-as-you-go benefit programs like Social Security and Medicare.
- ❑ Higher old-age dependency costs may be partially offset by lower youth dependency costs.
- ❑ However, the youth dependency ratio is projected to fall less than the aged dependency ratio is projected to rise, the old consume more per capita than the young, and most countries have socialized the cost of being old to a much greater extent than the cost of being young.

**Aged Dependency Ratio (Elderly Aged 65 & Over per 100 Working-Age Adults Aged 20-64), by Country, in 2020 and 2050**



Source: UN Population Division (2022)

**Federal Spending on Major Entitlement Programs, as a Percent of GDP, 2019 and 2050**



Source: CBO (January 2020 and July 2022)

# Slower Economic Growth

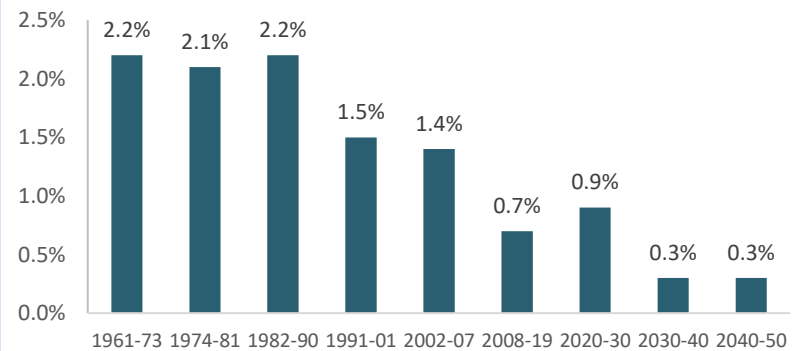
- ❑ Over time, lower fertility also translates into slower growth in the working-age population, which in turn translates into slower growth in employment and GDP.
  
- ❑ Productivity may also grow more slowly in aging societies, further dragging down economic and living standard growth:
  - More slowly growing workforces mean less demand for capital-broadening investment and a slower turnover in the capital stock.
  - Aging workforces may be less flexible, less mobile, and less entrepreneurial.
  - Economies will be increasingly dominated by service industries resistant to productivity improvements (“Baumol’s Cost Disease”).
  - Rising fiscal burdens could lead to “crowding out” in capital markets and/or government budgets.
  
- ❑ Real GDP growth in the United States could fall to just half of its postwar average. Japan and some European countries may face “secular stagnation”—that is, zero growth in real GDP across the business cycle.

**Average Annual Growth Rate in the Working-Age Population (Aged 20-64), by Decade**

	1980s	1990s	2000s	2010s	2020s	2030s	2040s
<b>Canada</b>	1.7%	1.1%	1.3%	0.7%	0.2%	0.5%	0.3%
<b>France</b>	1.0%	0.4%	0.6%	-0.3%	-0.2%	-0.2%	-0.3%
<b>Germany</b>	1.1%	0.3%	-0.5%	0.1%	-0.9%	-0.6%	-0.4%
<b>Italy</b>	0.9%	0.2%	0.2%	-0.3%	-0.8%	-1.4%	-1.1%
<b>Japan</b>	0.7%	0.4%	-0.4%	-1.0%	-0.6%	-1.3%	-1.2%
<b>UK</b>	0.7%	0.4%	0.7%	0.4%	0.0%	0.1%	-0.1%
<b>US</b>	1.3%	1.2%	1.1%	0.6%	0.2%	0.2%	0.1%

Source: UN Population Division (2022)

**Average Annual Growth Rate in U.S. Employment, by Period, 1961-2050**

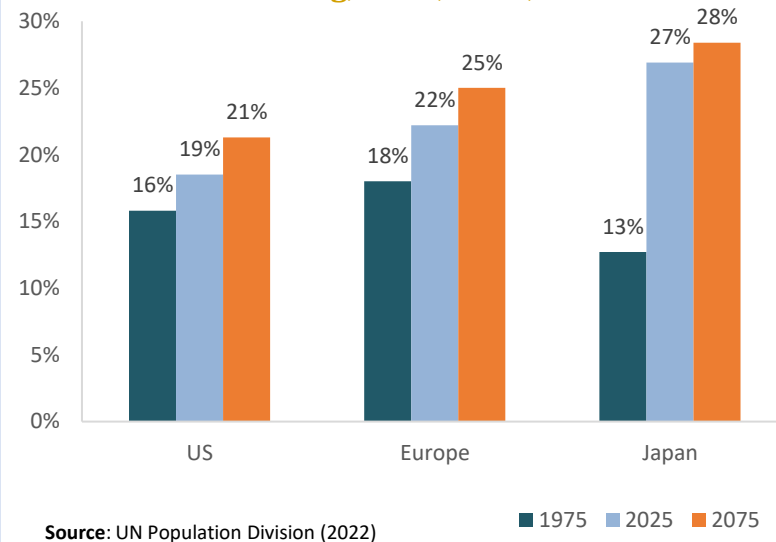


Source: CBO (July 2020 and March 2021)

# The Psychology of Slow Growth

- ❑ Along with the economic dynamics of slow growth, there may also be psychological dynamics that put further downward pressure on living standards.
- ❑ With the size of domestic markets growing more slowly or even contracting, we may see more cartel behavior to protect market share and more restrictive rules on hiring and firing to protect jobs. We may also see increasing pressure on governments to block foreign competition.
- ❑ Shifts in business and market psychology could be mirrored by broader shifts in social mood. Slow-growth, aging societies may become more risk averse, have shorter time horizons, and be less willing to make investments with long-term payoffs.
- ❑ A robust statistical literature establishes that extremely youthful societies are often dysfunctional. Extremely aged societies may also prove dysfunctional in some ways, favoring consumption over investment, the past over the future, and the old over the young.

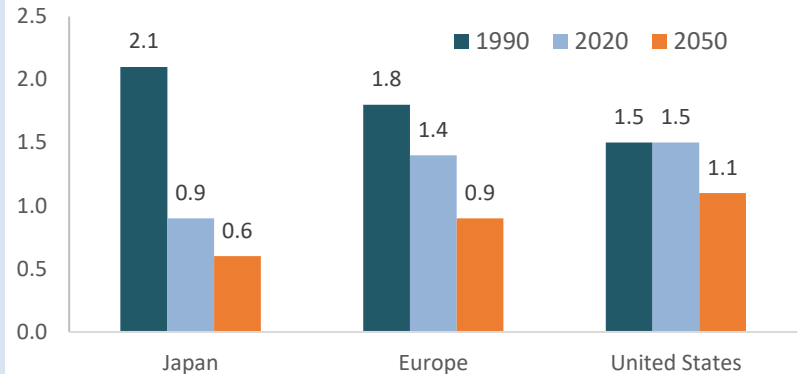
Share of the Population with 20 or Fewer Years of Life Remaining, 1975, 2025, and 2050



# What Happens to Interest Rates?

- ❑ According to the neoclassical growth model, slower GDP growth will reduce real interest rates, while a lower savings rate will increase them.
- ❑ Since population aging can both lower GDP growth (through its impact on employment and productivity) *and* lower savings rates (as a larger share of the population enters the retirement years), it could push interest rates up or down.
- ❑ To date, the growth effect has dominated, pulling interest rates down, while as yet there is little evidence of the decline in savings predicted by Modigliani's "Lifecycle Consumption Hypothesis."
- ❑ The reasons why savings rates have failed to fall may include delayed retirement, rising life expectancy, and growing income inequality.
- ❑ As large postwar baby boom generations more fully enter retirement, it is possible that some countries will reach a tipping point where savings rates fall, pushing interest rates back up.

**Ratio of Midlife Adults (Aged 45-64) to Elderly Adults (Aged 65 & Over), in 1990, 2020, and 2050**



Source: UN Population Division (2019)

## SOLOW-SWAN GROWTH MODEL

Formula for the Equilibrium Real Rate of Return in a Growing Economy

$$r = \alpha * \underbrace{\frac{n+g+\delta}{s}}_{\text{Marginal Product of Capital Stock}} - (\text{Risk Premium})$$

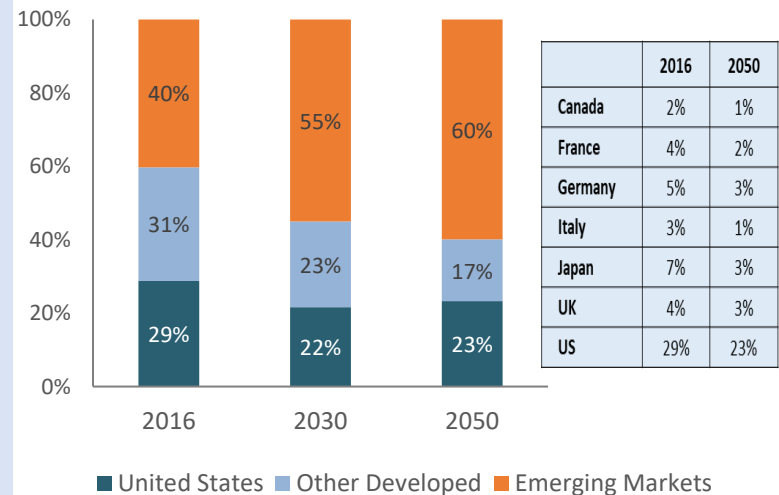
$r$  = Real Interest Rate       $n$  = Employment Growth Rate  
 $g$  = Productivity Growth Rate       $s$  = Savings Rate

$\alpha$  = Capital Share of National Income  
 $\delta$  = Rate of Depreciation

# Does Absolute Size Matter?

- ❑ One school of economic thought stresses that countries with large and growing populations can benefit from increasing returns to scale (mainly involving large public undertakings), while another stresses that absolute size also involves decreasing returns to scale (mainly involving natural resources and the environment).
- ❑ Whatever one makes of the arguments and counterarguments, virtually no one disputes that demographic size and economic size together are potent twin engines of national power.
- ❑ Over the next few decades, the United States and its traditional developed world allies will be shrinking steadily in demographic and economic size relative to a faster-growing emerging world.
- ❑ While history has many examples of demographically small powers that exercised outsized geopolitical sway, it has few if any examples of demographically and economically stagnant or contracting powers that were at the same time geopolitically rising powers.

**GDP by Country and Country Group as a Percent of World GDP, in PPP Dollars, 2016, 2030, and 2050**



**Note:** “World GDP” refers to the GDP of 32 of the world’s largest economies, including the 10 largest developed economies and 22 large emerging markets.

**Source:** *The Long View: How Will the Global Economic Order Change by 2050?* (PWC, 2017)



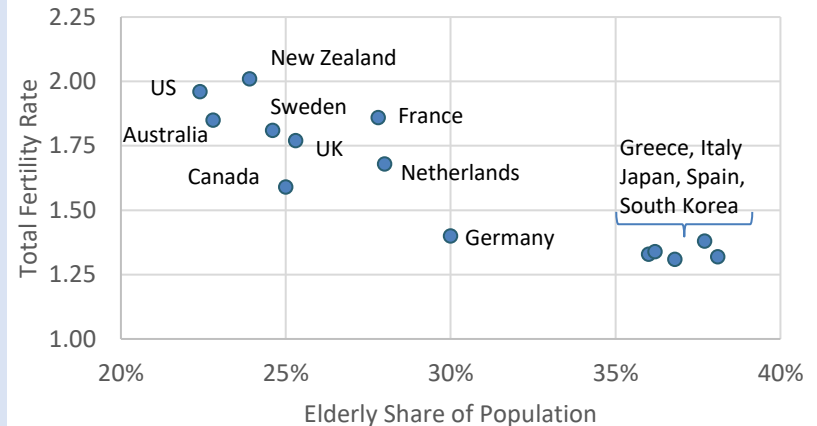
# Four Policy Imperatives

- ❑ **Encourage Higher Birthrates:** Policies that help workers, and especially women, to balance jobs and family could help to reverse the recent decline in birthrates.
- ❑ **Increase Immigration:** Some developed countries, notably Australia and Canada, have made immigration a lynchpin of their strategy to address the aging challenge. So could the United States.
- ❑ **Encourage Productive Aging:** The elderly are not only the fastest growing segment of America's population, but its most underutilized human resource. Removing disincentives to work at older ages and making new investments in the health of the elderly could help America more fully leverage their productive potential.
- ❑ **Promote Globalization:** Maintaining open global labor markets and capital markets will become even more critical to growth and prosperity in an aging world.

# 1. Encourage Higher Birthrates

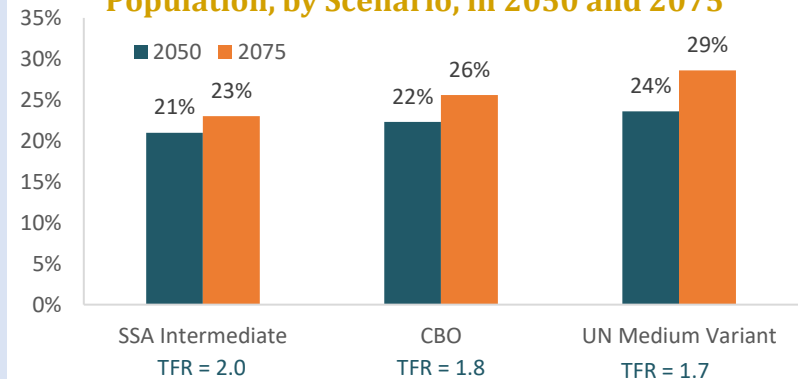
- ❑ With the exception of minor upticks in 2014 and 2021, the U.S. TFR has fallen every year since the Great Recession, from 2.12 in 2007 to 1.66 in 2021.
- ❑ Absent very high levels of immigration, it is the countries with the lowest fertility rates that will age the most in coming decades. It is also the countries with the lowest fertility rates that have or will soon have contracting workforces.
- ❑ The decline in the U.S. TFR is not large enough to put America on the ruinous demographic trajectory of a Greece, Italy, Japan, Spain, or South Korea. Unless birthrates rise again, however, the United States will age considerably more than current SSA projections suggest.
- ❑ The persistent gap between ideal and expected fertility and realized fertility suggests that new policy initiatives which help workers, and especially women, balance jobs and family may be an important part of the solution.

**Average TFR from 1990 to 2020 versus Share of the Population Projected to Be Aged 65 & Over in 2050**



Source: UN Population Division (2019)

**Elderly (Aged 65 & Over) as a Share of the Population, by Scenario, in 2050 and 2075**

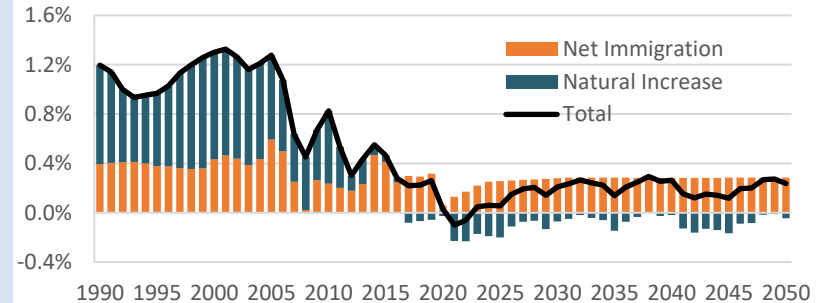


Source: SSA (2022), CBO (2022), and UN Population Division (2022)

## 2. Increase Immigration

- ❑ Immigration is already the only reason that the United States still has a growing working-age population. By the 2040s, it could be the only reason that it still has a growing total population.
- ❑ Over the past fifteen years, U.S. net immigration has followed a roller-coaster course, plunging in the wake of the Great Recession, partially recovering in the early 2010s, declining again starting in 2016, then once more plunging in 2020 amid the pandemic border closings.
- ❑ Current projections by the UN, the CBO, and SSA all assume that net immigration will soon recover to levels that are somewhat higher than its average since the Great Recession.
- ❑ Ensuring that net immigration increases at least this much should be an explicit policy goal. There is room for principled disagreement on how best to structure America's immigration system. What is not in question is that an aging America needs more immigration, not less.

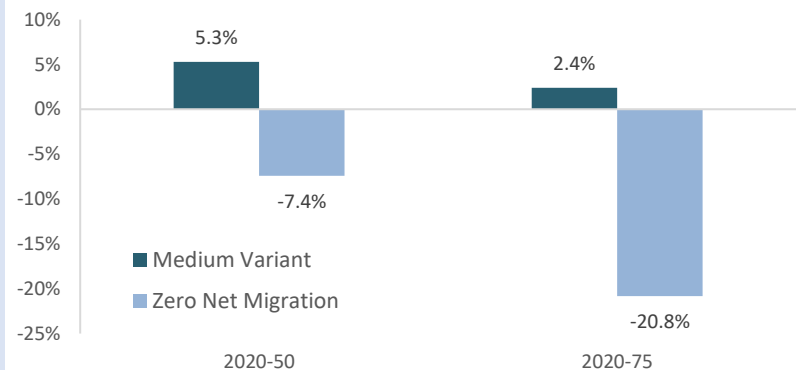
**Growth Rate in the U.S. Working-Age Population, Total and by Component, 1990-2050**



**Note:** Natural increase is here defined as the number of 19-year-olds who turn 20 minus the number of 64-year-olds who turn 65 and the number of adults aged 20-64 who die.

**Source:** CBO (March 2021) and GAI calculations

**Percentage Change in the U.S. Working-Age Population, by Period and Scenario, 2020-2075**

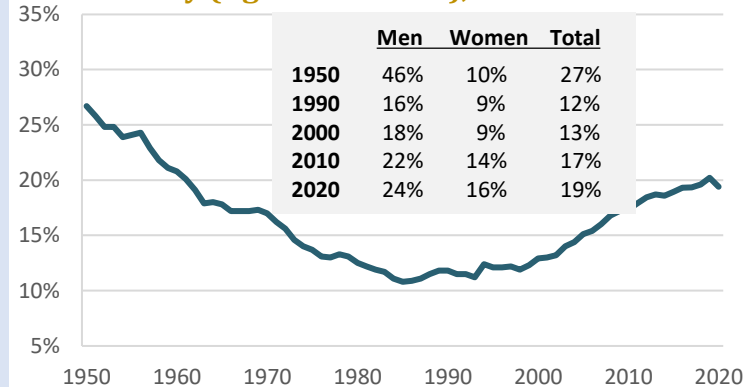


**Source:** UN Population Division (2022)

# 3. Encourage Productive Aging

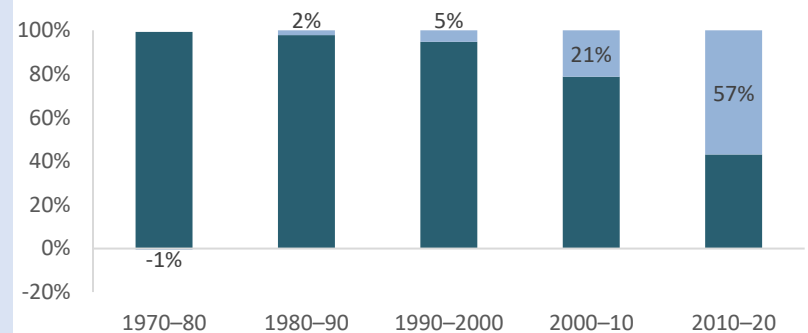
- ❑ After falling steeply from the 1950s through the 1970s, the elderly labor-force participation rate bottomed out in the 1980s and 1990s. Since then it has risen substantially, with elderly workers accounting for nearly two-fifths of all growth in U.S. employment during the 2010s.
- ❑ The trend toward longer work lives could have many benefits for an aging America:
  - In economic terms, longer work lives could help to offset the drag that slower growth in the working-age population would otherwise have on economic growth.
  - In fiscal terms, the extra tax revenue they generate could help alleviate the burden of rising old-age benefit costs.
  - In individual terms, a growing literature suggests that continued productive engagement may have a large positive effect on the physical health, cognitive function, and emotional well-being of older adults.
- ❑ More fully leveraging the productive potential of the elderly may require adjustments to policies that continue to discourage work at older ages, as well as large new investments in the health of the elderly, and especially of the future elderly.

**Labor-Force Participation Rate of the U.S. Elderly (Aged 65 & Over), 1950-2020**



Source: BLS (various years)

**Contribution to Labor-Force Growth, by Age Group and Decade, 1970-2020**



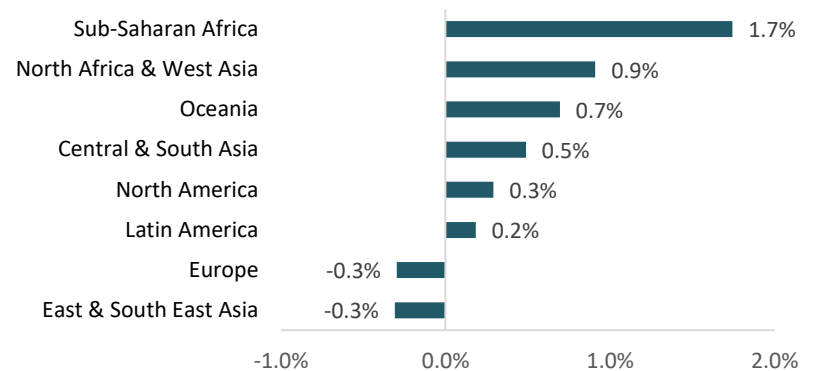
Source: BLS (October 2021)

■ Age 16-64 ■ Age 65 & Over

## 4. Promote Globalization

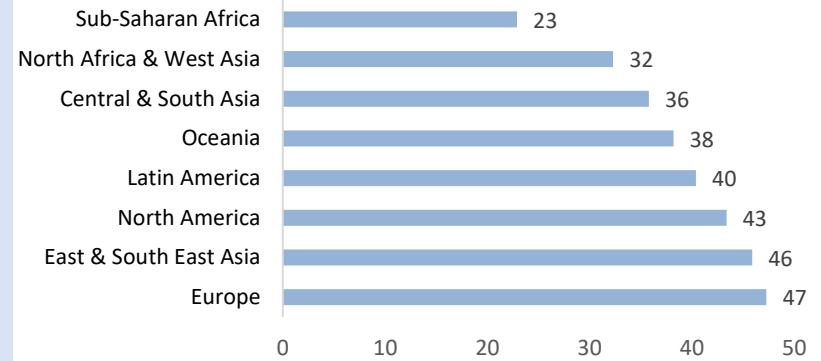
- ❑ The differential pace and timing of global aging across the countries and regions of the world creates important economic opportunities.
- ❑ Open global capital markets can allow savings in older and more slowly growing developed countries to flow to investment opportunities in younger and faster growing emerging markets.
- ❑ Open global labor markets can allow workers in countries where labor is abundant and capital is scarce to be matched with jobs in countries where just the opposite is true.
- ❑ As the world ages, globalization will become ever more critical to maintaining growth and prosperity. The danger is that aging, slow-growth economies will succumb to protectionist pressures and shut the door to free trade, open markets, and a liberal world economic order.

### Average Annual Growth Rate in the Population, by Major Region of the World, 2022 to 2075



Source: UN Population Division (2022)

### Median Age in 2050, by Major Region of the World



Source: UN Population Division (2022)



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