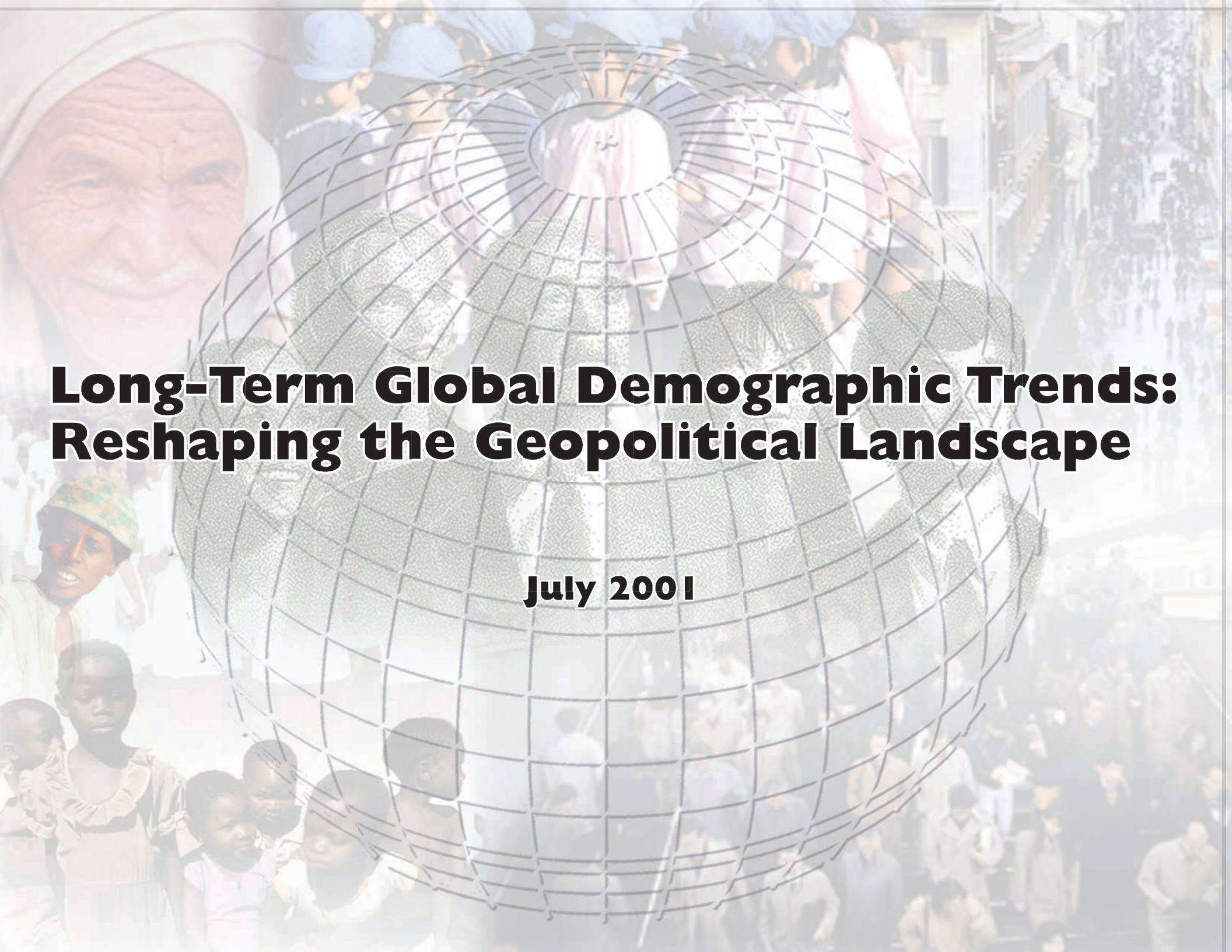
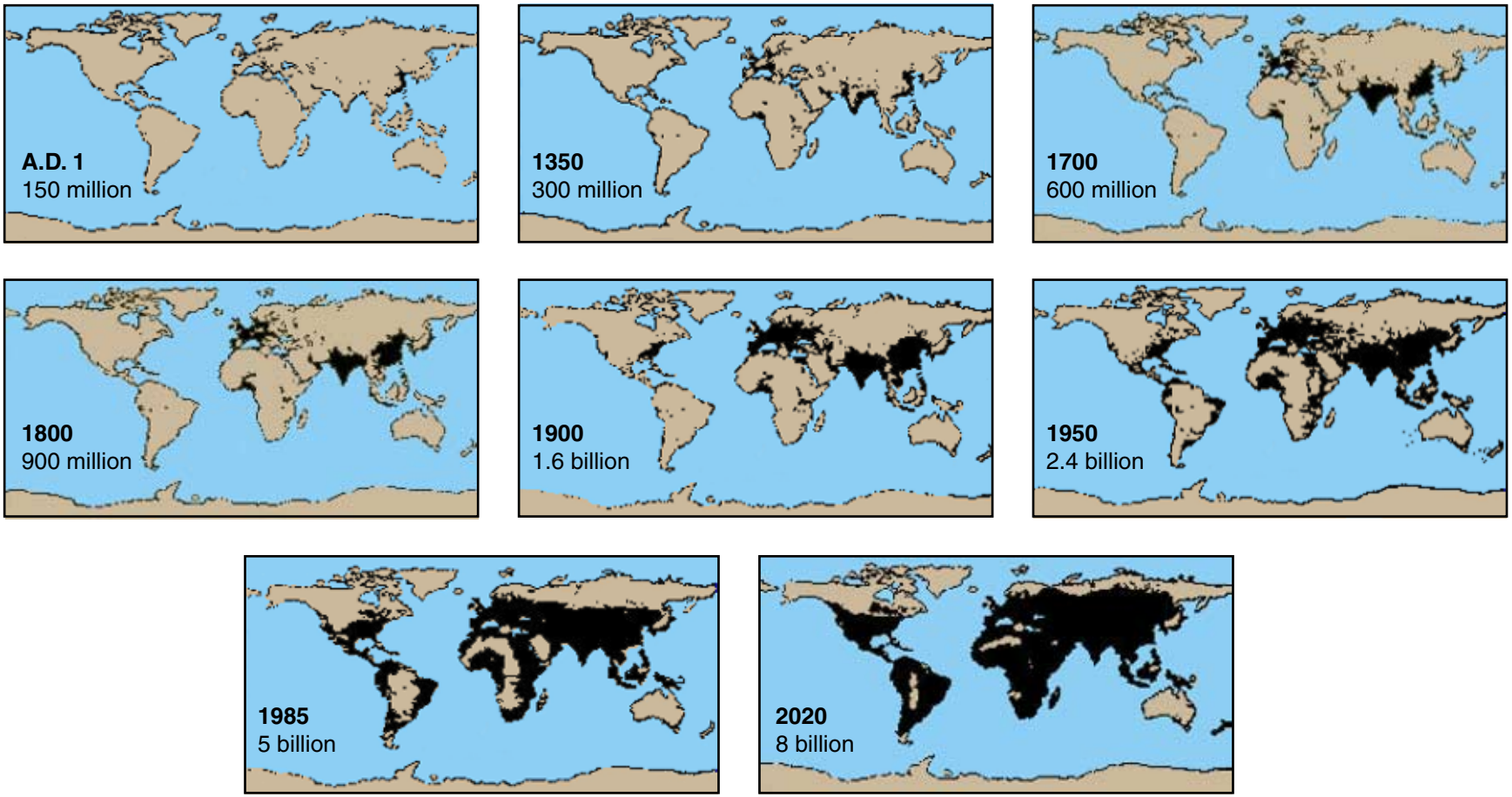


# Long-Term Global Demographic Trends: Reshaping the Geopolitical Landscape

July 2001

**Figure 1**
**Human Population Throughout History, A.D. 1 to 2020**




Source: John H. Tanton, *End of the Migration Epoch*, reprinted by the *Social Contract*, Vol. IV, No. 3 and Vol. V, No. 1, 1995.

## Scope Note

This paper identifies the factors that will be most important in shaping the worldwide demographic landscape in 2020 and beyond. It examines how societies are coping with the broad range of demographic challenges and assesses what conditions may be key to transforming demographic trends into security issues of interest to the United States.

Global demographic trends will have far-reaching consequences for the key elements of national power: economic, military, and political within the larger global community. Allies and rivals alike will cope differently—some better than others. Reforms require advance notice and gradual implementation that, given the immediacy of many of the world's demographic challenges, leave no room for complacency.

This assessment draws on the results of a two-day strategic planning conference in October 2000. Experts from academia, the business world, and the Intelligence Community identified the trends they believed would be most important in shaping the global demographic landscape over the next decade. (See the section Tapping Into Prominent Expertise on page 90 for more details.)

The format of this paper follows the format of the annotated briefing developed by RAND and other institutions. The top pages are briefing slides that outline and summarize the various elements of the paper. The bottom pages provide the analytic details and supporting evidence.

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**Figure 2**
**A Snapshot of Global Demographic Trends**

## Key Findings

Demographic trends that are already largely determined will contribute to a substantial reshaping of the global landscape between now and 2050. US allies and rivals alike will comprise a much smaller share of the world's population. Demographic change will create incentives for a new network of alliances and foreign policy priorities for many of the world's most influential governments.

The population of the region that served as the locus for most 20th-century history—Europe and Russia—will shrink dramatically in relative terms; almost all population growth will occur in developing nations that until now have occupied places on the fringes of the global economy:

- In 1950, Europe and Russia comprised 22 percent of the global population; the share is now 13 percent, and by 2050 it will be 7.5 percent.
- In 1950, six of the 10 most populous nations were in the developed world; by 2020, only the United States and Russia will remain on the top 10 list.
- Of the 1.5 billion people that the world population will gain by 2020, most will be added to states in Asia and Africa.

The world will be older and far less Caucasian, and it will be far more concentrated in urban areas; these population shifts will demand concessions of political influence at the expense of the young and middle aged and at the expense of traditional rural constituencies, as well as from traditional US allies and toward states currently outside our orbit of influence:

- By 2015, for the first time in human history, a majority of the world's population will live in cities.

**Telescoping the Population of the World**

To truly appreciate what the projected population of the world's more than 7.8 billion people would look like by 2020, we have projected their mix into 100 people:

- Fifty-six of them would be from Asia, including 19 Chinese and 17 Indians.
- Thirteen would be from our hemisphere, including four from the United States.
- Sixteen would be from Africa, including 13 from Sub-Saharan Africa.
- Three would be from the Middle East.
- Seven would be from Eastern Europe and the former Soviet Union.
- Five would be from Western Europe.

- By 2050, the global 65+ age cohort will triple in size to about 1.5 billion, or 16 percent of the total.
- Despite the general trend toward aging, many developing nations will experience substantial youth bulges: the largest proportional youth populations will be located in Pakistan, Afghanistan, Saudi Arabia, Yemen, and Iraq.

# Key Findings

- Our allies in the industrialized world will face an unprecedented crisis of aging.
- The aging challenge could reduce Japan's economic power.
- An older Europe will be less willing to face up to global hotspots.

## The Aging Industrialized World

The industrialized world will record an unprecedented crisis of aging beginning early next decade and reaching critical mass in the mid-2020s:

- Italy will have nearly 19 percent elderly (as a reference point, about the same share of elderly as Florida has today) as early as 2003, followed by Japan in 2005, Germany in 2006, and Spain around 2012. France and Britain will pass that mark around 2016, and Canada and the United States in 2021 and 2023 respectively.

- The ratio of taxpaying workers to nonworking pensioners in the developed world will fall. Today, that ratio is about 4:1 in most industrialized nations. In 50 years this ratio will drop to less than 2:1 or even lower in some countries in Europe and Japan unless there are revisions to retirement laws or dramatically increased immigration.

Without rapid growth in productivity, greater participation rates in the labor force, or other aggressive corrective actions, labor force contraction in many of the world's leading economies could depress economic output and boost inflation:

- The OECD projects that, all things equal, the impact of aging on GDP growth rates will be a decrease in Europe to 0.5 percent, in Japan to 0.6 percent, and in the United States to 1.5 percent in the years 2025-50.

- The OECD also projects that the average bill for public pensions and health care in Japan and Europe will grow by 9 to 16 percent of GDP over the next three decades.

For Japan, the aging challenge, combined with its already large debt burden, could reduce its role as a major economic power:

- Over the next two decades the absolute number of people in the household-forming age groups in Japan are expected to shrink by 40 percent. Because these groups are at a time of life when home-buying propels demand for everything from washing machines to baby carriages, their decline could lead to overcapacity and falling returns on investment in such key sectors of the economy as construction, real estate, and durable goods.

- One consequence of a contracting or slower growing labor force for Japan will be slower improvements in living standards. Isolating the effects of the demographic factors, OECD estimates suggest that the cumulative effect of aging by 2050 could be a reduction in Japan's living standards—measured by GNP per capita adjusted for terms of trade effects—by 23 percent.

For US allies in Europe the aging challenge could decrease their willingness to help the United States manage global hotspots:

- If Europeans are unable to successfully substitute capital for manpower in their force structures, their defense establishments will shrink.

The United States' higher fertility rate and its ability to absorb and assimilate newcomers in ways that others culturally reject support the notion that demographic trends will only enhance the United States' ability to maintain its position as superpower on the world stage. With continued superpower status will come continued pressure for leadership and increased challenges.

- Key potential US rivals—China and Russia—face demographic challenges:
  - For China, a large and growing urban population coupled with a looming aging population could mean slower economic growth, increased political instability, and perhaps significant cultural changes.
  - For Russia, an unhealthy declining population—especially among working-age males—could impact economic growth and domestic stability, vulnerabilities that internal political groups or other states could seek to exploit.

## Challenges Bedeviling Potential US Rivals

China's productivity and global standing are deeply uncertain, in part because of the large resources required to deal with its demographic problems:

- In the near term, China is struggling fiscally to keep up the social infrastructure necessary to support its large, growing, increasingly urban population. It also is constrained by the enormous costs required to restructure its state enterprises and failing banking sectors. According to the IMF, China's overall fiscal deficit in 2000 was estimated to be about 4 percent of GDP, up from 1.6 percent in 1996.

- In only 30 years, China will have to expend tremendous resources to deal with its own aging crisis and most likely will not have the same coping mechanisms—sophisticated tax structures, deep capital markets, and developed pension and health-care systems—that developed countries have for dealing with an aging population.

- By 2025, China will have more than 200 million people aged 65 and over and by 2050 more than 300 million—more than the current size of the US population.

As a result of these demographic challenges, China could confront slower growth, increased political instability, and perhaps even pressure for significant cultural changes.

Declining fertility and rising mortality—especially among working-age males—have reduced the size of Russia's population already and will reduce it further:

- According to US Census and Russian census projections, Russia is expected to further contract in the next five decades to somewhere between 118 and 121 million people, the level it achieved in 1960.

- Russia's Far East region is suffering the most sizable population reduction, and its recovery will require imported labor from neighboring Asian countries, notably China. Illegal migration from China is already creating social tensions that are easily exploited by political radicals, and a greatly expanded foreign presence in the Far East could create a series of social, political, and foreign policy tensions.

- Russia's multiple demographic challenges paint a picture of a population that will be working far below the capacity that a literate society of this size would suggest.

The Russian Government's failure to manage its demographic challenges could complicate its ability to manage other issues including foreign relations, domestic stability, and economic growth.

The country's leadership, especially the military, is likely to see the country as exhibiting vulnerabilities that other states—both neighboring and distant—will seek to exploit.

A prolonged, severe social and economic crisis could increase the influence of political groups hostile to Western interests, such as President Vladimir Putin's coterie of advisers from the former KGB.

- As other industrialized countries deal with aging crises, the United States will be expected to assume a larger share of the burden for increased financial and humanitarian assistance, peacekeeping, and military interventions around the world.
- The burden may increase as demographic factors heighten existing tensions and exacerbate other factors that precipitate conflict.
- These pressures will build in regions of the world, like Sub-Saharan Africa, that have traditionally not been at the center of US policy interest.

**Table 1**
**What Demographic Trends Mean for US Interests**

| | US Preeminence | Financial/Humanitarian Assistance | Peacekeeping/Military Intervention | Global Economic Prosperity | Diplomatic Relations |
|---|---|---|---|---|---|
| **Aging** | Preeminence bolstered by US' favorable position compared to other industrialized countries | Greater burden placed on US because allies have fewer resources | Some intergenerational tension; smaller armies among allies increase burden on US to manage global hotspots | Presents greatest challenge to US and global economic prosperity; capital markets, investment, and trade most affected | Frictions may arise with developed country allies over management of global hotspots and burdensharing for assistance |
| **Youth bulge** | Some youth bulge countries may adopt different positions than their elders on policies regarding the United States | US will rely more heavily on foreign militaries to support humanitarian or peacekeeping operations | Intervention possibly required in countries whose youth populations are exhibiting open aggression or conflict | It will be harder for US and global economy to prosper without improvements in education and economic reform in countries with large youth populations | Youth may be less supportive of US; new waves of youth-inspired Islamic activism in the Middle East, for example, could limit Muslim governments' ability to cooperate with the United States |
| **Migration** | US will have more immigrants that can influence US foreign and domestic policies | Foreign diasporas will lobby the US to become more involved in their home countries' problems, particularly if youth bulges lead to upheaval in their home countries | Intervention possibly required as divergent fertility rates between ethnic groups with mixed settlement patterns exacerbate instability | Will alleviate labor shortages to some extent | Foreign governments likely to resent flow of their educated workers to US; treatment of illegal immigrants likely to be contentious |
| **Urbanization** | Preeminence not threatened by urbanization trends as US troops prepare adequately by training in urban areas; possibly bolstered by poor urban management in foreign urban environments | High probability of demands or US involvement by over-burdened megacities and the nations in which internal stability is threatened | Intervention possibly required in cities that have reached crisis in the form of open aggression or conflict between inhabitants; Lagos and Karachi particularly vulnerable | Little effect from individual urban centers on global economic prospects; in affected areas fewer economic opportunities could lead to dissent; successful urban centers could also act as strong competitors for US urban centers | Appearance of indifference to urban plight will create antagonistic relations that may have spillover effects on bilateral or international agreements |
| **Health** | People attracted to the United States as the sole superpower, keeping the US at risk from infectious diseases | Unhealthy populations, particularly in Sub-Saharan Africa, may require immediate US assistance as disease drives poorer people deeper into poverty | Intervention possibly required if people take to the streets perceiving their governments are ignoring the health crisis; militaries around the world may be unwilling or unable to help quell violence | US and global prosperity maintained; health issues will affect Russia and Sub-Saharan Africa's economies particularly hard | Possible embargoes on travel or immigration will create antagonistic relations; continued friction over intellectual property rights protection for drugs |
| **Environment** | As the sole superpower US has greater burden for resolving environmental issues | Greater burden placed on the US to provide assistance for natural and manmade disasters because allies have fewer resources | Intervention possibly required as conflict over scarce resources exacerbates regional tensions particularly in South Asia, the Middle East, and Africa | US and global prosperity maintained; economic growth will be hampered by environmental pressures in affected areas | Frictions between developed and developing countries over who should clean up environmental damages increase as countries have fewer resources |

## Humanitarian Crises, Peacekeeping, and Military Intervention

As other industrialized countries turn inward to deal with their aging crises, the United States will be asked to assume the largest share of the burden on key international issues like arms control, diplomacy, and military and humanitarian interventions—issues that will be further complicated by demographic trends.

While demographic factors are seldom the cause of conflict, they can heighten existing tensions or exacerbate other factors that precipitate conflict. There are at least four types of large-scale demographic shifts that will contribute to social stress sufficiently serious to warrant US intervention:

- Age cohort differences, such as the widening youth bulge in the developing world, could lead to political, economic, and social upheaval as well as external migration because of limited social mobility. Youth bulges combined with low job-creation rates or government indifference provide fodder for conflict and radical movements.

- In some areas population growth will exacerbate environmental degradation, competition for scarce resources, vulnerability to disease, support for extremist political and religious movements, and sometimes violent conflict, as in Sub-Saharan Africa and Haiti. Chronic high fertility rates in developing nations with narrowly based elites and weak institutions are particularly vulnerable. Lagos, Nigeria, is a prime example but Africa, the Middle East, and Asia have many other countries with these problems.

- Movements from rural to urban areas, or legally or illegally across national boundaries, will evoke tensions, discrimination, and violence; strain health-care delivery systems; and contribute to disease outbreaks, particularly in receiving areas.

- The risk is high that some of our key allies in the developing world will be destabilized by migratory population flows.

Divergent fertility rates between ethnic groups with mixed settlement patterns and historical enmity within countries and between neighboring countries will exacerbate instability and conflict, which could ultimately change the balances of power in some regions:

- Countries like Armenia and Azerbaijan, and Malaysia and Singapore, are ripe for border tensions as a result of their widening demographic disparities particularly because they have land borders, no nuclear weapons, and comparable technological levels.

The increasing frequency and scale of humanitarian crises will generate large numbers of refugees and displaced people. As a result, the United States may be called on to support new financial bailout packages and humanitarian operations. Such pressures may challenge the United States to focus more on regions of the world, such as Sub-Saharan Africa, that traditionally have not been at the center of US policy interest:

- High fertility rates in countries, most recently seen in West Africa (Sierra Leone and Liberia —with fertility rates of 6.1 and 6.3 children per woman, respectively), can contribute to humanitarian crises like famines, epidemics, or mass criminal violence that require international military intervention.

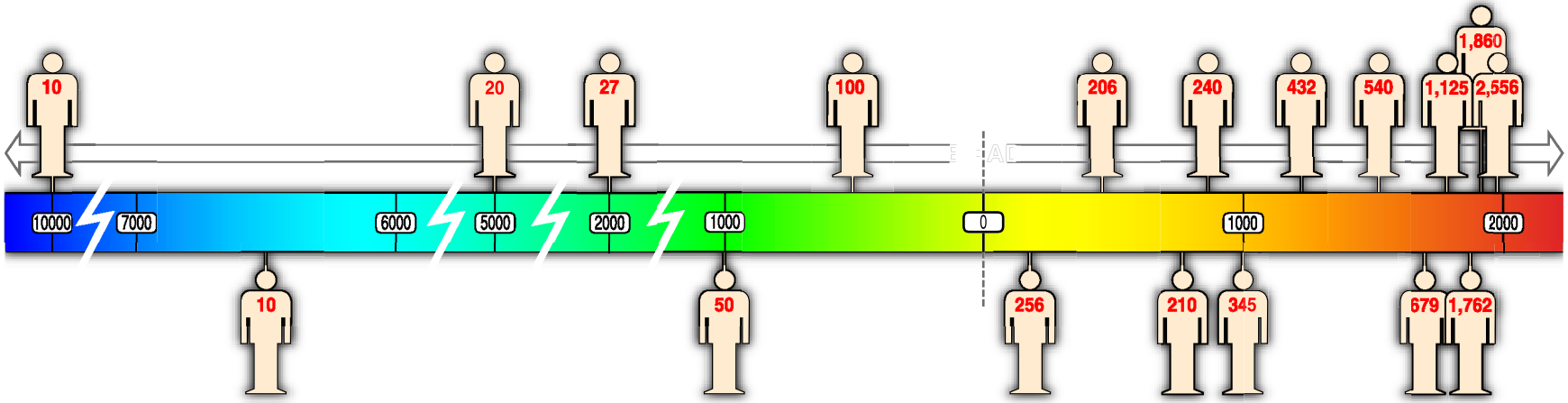
- The growing burden of refugees, asylum seekers, and illegal immigrants on developing countries will spur increased requests to the United States for political, economic, and technical support.

- Urban density breeds plagues new and old. If diseases cannot be contained, widespread disability, death, and violence may result.

# Historical Precedence and Power

- The rise and fall of civilizations are linked to demographic trends:
  - Great Britain's population/employment crisis in the 18th and 19th centuries contributed to outmigration and innovation, which eventually led to technological breakthroughs and the Industrial Revolution.
- Population growth has contributed to revolutions and expansionism:
  - Population growth in 18th-century France played a key role in the French Revolution.
  - Japanese imperialism from the 1870s to 1945 was fueled, in part, by its rise in population.

**Figure 3**
**Historical Estimates of World Population**
**(Millions)**[a]




[a]Adapted using upper estimates from US Bureau of the Census compilation of eight different sources.

## Historical Precedence and Power

Ever since Thucydides, historians have observed that the rise and fall of civilizations are closely linked to demographic trends. Contracting populations have often given way militarily, economically, and culturally to expanding ones. Other demographic shifts have carried different but critical geopolitical consequences.

Population growth, particularly in a constrained landscape, has been a catalyst for many things including revolution and expansionist programs:

- Great Britain's large population growth rates in the 17th century resulted in a widespread conviction in the 18th and 19th centuries that it faced a population/unemployment crisis. The government resolved part of the crisis by encouraging both outmigration on a grand scale and innovation, which eventually led to technological breakthroughs and the Industrial Revolution. Both China's and India's Green Revolutions were driven mainly by population pressures.

- Population growth in 18th-century France played a role in the French Revolution, according to a prominent historian. France's population grew from 24.6 million in 1740 to 28.1 million in 1790. More important, the ratio of youth (under 18) to adults increased from 0.6 to 0.8. This helped increase the demand for food at a time of stagnant supply levels, thereby driving up food prices throughout France. Inflation accelerated further as a result of increased urbanization because the velocity of money was higher in the cities than in rural areas. Consequently, the average French wage earner's purchasing power was reduced, which had the ripple effect of creating a business downturn for the growing and increasingly powerful French artisan and merchant classes.

- This situation led to the precursor conditions for social unrest that became even more widespread when the outmoded land tax system, maintained by the monarchy, failed to provide enough revenue to support public spending, thus putting France on the path to eventual bankruptcy, which was officially declared in 1787.

- China's population pressures in the 18th century contributed to its expansion. Chinese moved to the northwest, including Central Asia, Manchuria, and inner Mongolia, and to the south and southwest, where settlers moved into Hunan Province and into Burma and Indochina.

Growing populations have created the reality or perception of declining standards of living. Young people, believing they were not able to live the way their forebears did, looked for solutions, and political leaders took advantage of this mind-set:

- Japanese imperialism from the 1870s to 1945, for example, was fueled, in part, by Japan's rise in population. The Japanese population in the mid-19th century went through a period of relatively large population growth after emerging from a period of 150 years in which Japanese consciously reduced their fertility rates to slow growth. By playing on fears about declining living standards and the need for more land, Japanese rulers were able to garner support for an expansionist policy that included settling the northern island of the archipelago, then moving to Okinawa, Taiwan, and Korea.

- Dramatic population declines have created power vacuums that new ethnic groups exploit.
- Differential population growth rates between neighbors have historically altered conventional balances of power.

**Different Notions of Demographics and Power[a]**

It is not clear that larger armies enjoy as much of an advantage on the modern battlefield as they once did. The results of Desert Storm and the ongoing discussions about a contemporary revolution in military affairs that features improved sensors and information-processing capabilities are causing many to reassess the old paradigm of war and to search for new metrics of combat effectiveness.

In the Industrial Age large conscript armies with plenty of resources battling each other over long continuous fronts was the predominant paradigm. This notion has been changing steadily over time.

***Classical Static.*** Between the late 1940s and the early 1970s a country's population size and density were considered the two independent variables in an aggregate "bucket of capabilities" that determined a country's level of power and influence in the international system.

***Human Capital.*** The academic economist community challenged the static view in the 1960s, arguing that the traditional politico-military notions of security were being rendered obsolete by the growing preeminence of economic and technological innovation capabilities in the new global power equation. This view, which became more popular in the 1970s and 1980s as people witnessed the rise of the East Asian "miracle economies," held that the quality and skill level of a labor force (especially in technology intensive areas such as engineering) were the primary guarantors of property and leverage in the international arena and thus the most important demographic variables contributing to overall national power.

***Dynamic.*** Adopted in the 1980s and 1990s, this "dynamic" paradigm emphasizes that demographic factors such as environmental degradation, mass migration, resource depletion, forced refugee flows, ethnic conflict, hypernationalism, and urbanization are determinants of power and serve as catalysts and shapers of political instability and armed conflict.

*Long-Term Global Demographic Trends* focuses on the dynamic view because increasing globalization of Western economic and security interests is making the spillover effects of demographic pressures, even in regions remote from Europe, North America, or Northeast Asia, hard to ignore. However, the paper combines elements of the classical static and human capital notions as well.

[a]Adapted from *The Security Dynamics of Demographic Factors* by Brian Nichiporuk, RAND.

Sharp population declines have historically created vacuums into which new ethnic groups have stepped:

- The most extreme example of this occurred during the Amerindian catastrophe in the 16th century. Disease widowed the population, which allowed Europeans to increase their strength vis-a-vis the native population.

Neighbors or rivals experiencing different rates of population growth have also shaken things up a bit:

- The relative situations of France and Germany in the late 19th and early 20th centuries are good examples of this. During this time, France grew modestly, while Germany grew much more rapidly. France, anxious about its low fertility after its relatively recent experience of succeeding under Napoleon with huge armies, became a defensive power, and Germany's relative power vis-a-vis France increased exponentially.

- Such demographic imbalances could trigger future tensions particularly in countries that have land borders and relatively even conventional capabilities.
- Areas for future tensions include the borders between Armenia and Azerbaijan, and Malaysia and Singapore, which harbor historical enmity and are projected to have widening demographic disparities.

## Differential Growth Rates, Regional Balances of Power[a]

Under certain circumstances, differences between neighboring states in population growth rate or size can change the existing conventional balance of power, increasing the risk of regional instability and war.

There are two mechanisms by which this could occur. First, the state with the faster growing population or greater size fields more conventional military capability and attacks its neighbor in the belief that it will be relatively easy to win a quick and decisive military victory. Second, the lower growth or smaller state seeks to launch a preemptive attack on its neighbor to take advantage of a still favorable regional military balance. That said, for differential population growth rates or population size to overturn an existing regional balance of power, four conditions need to hold:

- First, competing nations need to be adjoined primarily by land (as opposed to maritime) borders. Two contemporary cases where this condition does not hold best illustrates this point—China-Taiwan in the Taiwan Strait and Greece-Turkey in the Aegean Sea. Both smaller countries maintain solid deterrent postures despite their smaller population sizes and growth rates, in part because both situations exist in primarily air/naval theater operations where air forces and navies rely more on technologically oriented systems than quantities of people to achieve their combat objectives.

- Second, nuclear weapons cannot be present in the region. Demographic shifts are not likely to lead to sudden changes in the balance of power in South Asia, for example, because survivable nuclear arsenals are present in both India and Pakistan.

- Third, the state with the faster growing or larger population has to have the ability to convert its demographic strength into increased conventional power. Many countries in the developing world, particularly Sub-Saharan Africa, that have high population growth rates do not have the financial means to provide basic resources for the additional people let alone invest in a viable conventional military buildup.

- Fourth, the local territorial profile has to be conducive to offensive operations. Aggressor states traditionally seek quick victories when they invade their neighbors, and, if the local terrain significantly favors the defender (mountains or jungles), then all but the most drastic demographic shifts will not change the balance enough to destroy deterrence.

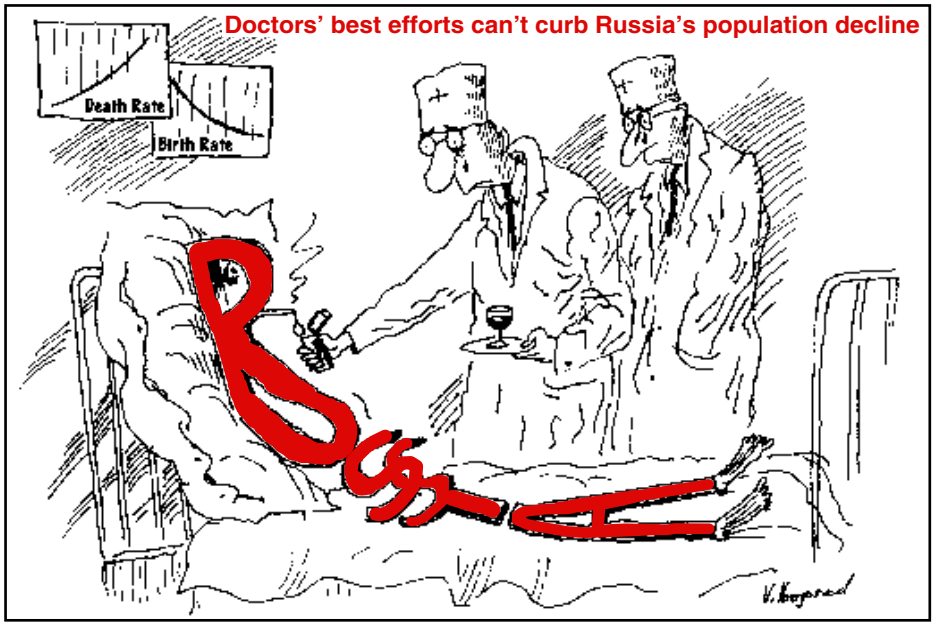
Two regions where different population growth rates could indeed change local balances of power, where all four conditions hold, and where historical mistrust exists are Armenia/Azerbaijan and Malaysia/Singapore. Malaysia and Azerbaijan are nations with both significantly higher fertility rates than their neighbors and the technical/economic potential to build improved conventional military power over the long term—Malaysia because of its growing industrial base in information technology and Azerbaijan because of its potential oil wealth.

[a]Adapted from *The Security Dynamics of Demographic Factors* by Brian Nichiporuk, RAND.

# Historical Precedence and Power

- The Russian population dynamic is especially noteworthy: Russia has an unhealthy population; it is born unhealthy, it grows up unhealthy, and it dies prematurely.
- Declining fertility and rising mortality—especially among working-age males—have reduced the population.
- The country's population will further contract in the next five decades to the level of 1960.

**Figure 4**
**Russians Are Concerned About Their Demographic Situation**



## Spotlight on Russia: As Bad As It Gets

Russia presents a special case, both in terms of the multiple negative demographic trends it manifests and in terms of the potential geopolitical significance of those trends. Russia's geographic position, occupying a vast 11-time-zone swath in the heart of the Eurasian landmass, gives demographic developments there the potential to affect a large number (14) of contiguous states in both Europe and Asia and to alter political balances in Central Asia, the Caucasus, the Baltic states, and potentially Central Europe. Taken together, these demographic factors paint a picture of a population that will be working far below the capacity that a literate society of this size would suggest:

- Declining fertility rates and increasing mortality rates, especially among working-age males, have steadily reduced the size of Russia's population from 148.7 million people in 1992 to just 144.9 million in November 2000. According to US Census projections, Russia is expected to further contract in the next five decades to 118 million people, the level it achieved in 1960.

- Russia's total fertility rate (TFR—the average number of children a woman would have over her lifetime) has fallen to 1.17 (1999), or just over half the rate required for simple population replacement. In the core Russian areas of the country, TFRs are well below the national average, standing at just above 1.0, with some major urban areas even reporting TFRs below 1.0.

- The decline in Russian health care, the wide range of pollutants, the decline in the quality of diet, extensive damage to the environment, widespread destructive personal behaviors, and a rise in infectious diseases (notably tuberculosis [TB] and HIV/AIDS) have combined to reduce the overall health of the population and to increase premature deaths.

The Russian population is an unhealthy population; it is born unhealthy, it grows up unhealthy, and it dies prematurely. The period 1999 and early 2000 were marked by a further decline in public health for most indices and a reversal of 1998 gains in life expectancy for both males and females dropping below 60 years for men and below 72 years for women:

- Beginning in 2007 the surplus of young people will become a deficit and, when added to the expected mortality numbers, will cause the working-age population to contract by more than 1 million in 2010 alone. This will put a premium on labor productivity at a time when Russia's human capital pool, previously abundant, has been decimated by shrinking educational funds, crumbling infrastructure, poor health conditions, and a brain drain of people with the right skills.

- Most regions in the Far North and Far East will continue to suffer sizable population reductions—30 percent by 2010—which began with the collapse of the Soviet centrally directed economic and political system. As these regions slipped into economic recession, a large wave of internal migration was unleashed with many of the inhabitants, especially working-age populations, leaving for more central locations. Rising worker to nonworker ratios raise the social burden. Health-care premiums for retirees are the responsibility of local and regional governments—which will create potentially severe financial stress for regions with disproportionately large elderly populations.

- The Russian Far East's recovery will require imported labor from neighboring Asian countries, notably China. Such migration is already creating social tensions that are easily exploited by politicians, and a greatly expanded foreign presence in the Far East could create social, political, and foreign policy tensions.

# The Aging Challenge: Straining Institutions and Governments

- The world is getting older at a rate unprecedented in history.
- By 2050, nearly 1.5 billion people or 16.3 percent of the world's population will be aged 65 or older compared to about 420 million or 6.9 percent in 2000.
- Even the youngest regions—Latin America, Asia, and Africa—will have substantial elderly populations.
- Europe and Japan will face the most immediate impact of aging.

**Figure 5**
**Aging in 2000, 2020, and 2050**

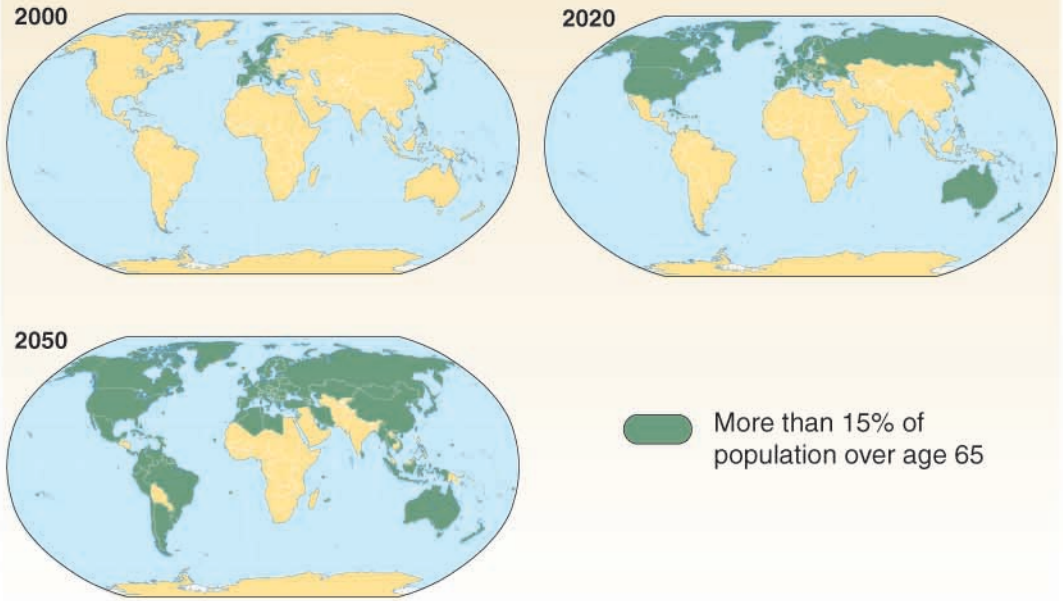
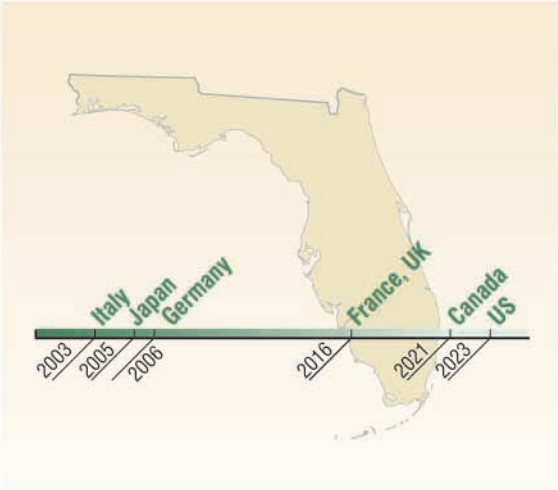



**Figure 6**
**Florida: A Demographic Benchmark**

Year the percentage of the population aged 65 and over will reach 18.5 percent—the share in Florida now.



## The Aging Challenge

There will be unprecedented growth in the number and percentage of older age groups across the globe in the first half of the 21st century:

- By 2050, nearly 1.5 billion or 16.3 percent of the world's population will be aged 65 or older compared to about 420 million or 6.9 percent in 2000, according to the US Census.

- Even the "youngest" regions—Latin America, Asia, and Africa—will have substantial elderly populations. Africa, for example, will have reached the same percentage of elderly as Europe had in the mid-20th century. By 2050, China's elderly will account for 23 percent of its population, Taiwan's 27.5 percent, and South Korea's 27 percent.

The number of people 80 and older will grow considerably:

- In 2000 there were a little more than 70 million people in this group in the world (1.1 percent of world population), and by 2025 that number is expected to more than double to nearly 163 million.

- In the United States alone there will be a 2-percentage-point increase in this 80+ population relative to the 65+ population. It is these oldest old people who consume the most medical services and social benefits.

The median age for the world in the last half century has hovered around 24; it is over 25 now, but by 2050 it will be just under 44. In most developed nations, the median age for the population will be over 51, with Germany and Japan averaging 53 to 55.

The industrialized world will face the most immediate impact of aging, with Europe and Japan experiencing larger disruptions than the United States:

- Italy will have nearly 19 percent elderly (about the same share of elderly as Florida has today) as early as 2003, followed by Japan in 2005, Germany in 2006, and Spain around 2012. France and Britain will pass that mark around 2016 and Canada and the United States in 2021 and 2023 respectively.

**Fertility and Longevity Key Forces Behind Global Aging**

Global aging is the result of two fundamental demographic forces: falling fertility and rising longevity. The first reduces the relative number of the young, while the second increases the relative number of the old.

Worldwide, the total fertility rate (the expected number of children a woman will have during her childbearing years) has fallen from 5.0 to 2.7 over the past 30 years. The fastest aging societies are those with the greatest declines in fertility:

- Japan has seen one of the sharpest fertility declines from a total fertility rate of more than 4.0 children per woman between 1947 and 1949 to an average of 1.4 children per woman in 1995, the last year it was officially reported by the Japanese Government. As a result, Japan will have the largest increase in its 80+ population in the world.
- Forty-five percent of the world's population inhabits countries that are at or below population replacement level (2.1 TFR). Although fertility may rebound in the coming decades, few believe that fertility in most developed countries will recover sufficiently to reach replacement levels in the foreseeable future, thus making population decline inevitable.
- By 2050, Japan could lose as much as one-third of its population, and Germany could lose about 21 percent of its current population (equivalent to all of East Germany), losses historically correlated with devastating wars, famines, or plagues.
- In 1950, six of the 10 most populous nations were in the developed world: the United States, Russia, Japan, Germany, United Kingdom, and Italy. The US Census projects that, by 2050, only the United States will remain on that list.

Since World War II, global life expectancy has risen from around age 45 to age 65, for a greater gain over the past 50 years than over the previous 5,000:

- In the United States, life expectancy has risen from 47 years in 1900 to 66 years in 1950 to 77 years in 2000.

- In Japan, the world's longevity leader, life expectancy has reached more than 80 years.

- Europe generally has longer life expectancy than the United States but not quite as high as Japan. Average life expectancy at birth in Italy is 79.0 years, in France it is 78.8 years, and in Germany it is 77.4 years.

- With advances in the biotechnology of human aging—as well as healthier lifestyles—some even conclude that a life expectancy of 100 years or more is attainable within a few decades.

- Aging combined with large drops in fertility means fewer workers to support retirees.
- Work force issues will be especially problematic for Europeans, who harbor cultural biases against working later in life.

**Table 2**
**Total Fertility Rates for Selected Developed Countries**

| | 1951-55 | 1961-65 | 1971-75 | 1991-95 | 1996-2000 |
|---|---|---|---|---|---|
| **United States** | 3.45 | 3.30 | 2.02 | 2.05 | 2.06 |
| **United Kingdom** | 2.18 | 2.80 | 2.04 | 1.78 | 1.73 |
| **France** | 2.73 | 2.90 | 2.31 | 1.72 | 1.80 |
| **Canada** | 3.73 | 3.60 | 1.98 | 1.73 | 1.60 |
| **Japan** | 2.75 | 2.00 | 2.07 | 1.49 | 1.50 |
| **Germany** | 2.16 | 2.50 | 1.64 | 1.30 | 1.30 |
| **Italy** | 2.32 | 2.60 | 2.28 | 1.28 | 1.20 |

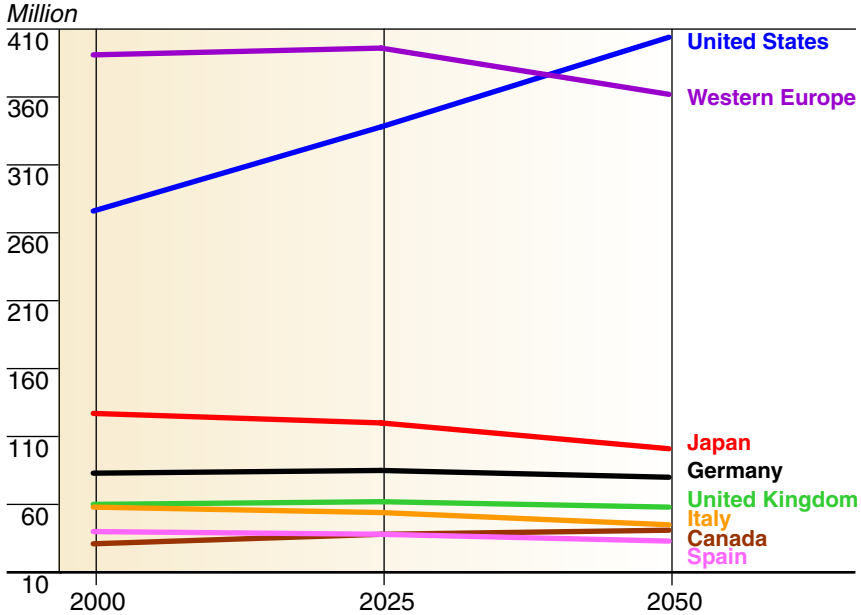
Source: UN Population Division, demographic indicators 1950-2020 (the 1998 revision)

**Figure 7**
**Changes in Working-Age Populations**

Source: US Bureau of the Census, International Data Base.

**Figure 8**
**Changes in Population Over Time**

Over the next 50 years the developed countries are projected to become smaller and the United States is projected to increase by nearly half. As a result, the population of Western Europe, which in 2000 was larger than that of the United States by about 115 million, in 2050 will become smaller by 40 million. Japan's population will steadily drop from less than half of the US population to one-fourth its size by 2050.




Source: US Bureau of the Census, International Data Base.

As populations age and fertility rates continue to decline, our major allies—even those who are currently plagued with unemployment—can expect considerably tighter labor markets:

- The working-age population (15-64) in Japan is expected to decline by 37 percent by 2050, according to US Census projections.
- In Italy, the working-age population will decline by an alarming 39 percent by 2050.
- Germany's working-age population will fall by more than 18 percent during that same period.
- France and the United Kingdom fare better, with projected working-age population declines of 11 percent and 12 percent respectively.

The working populations of the United States and Canada are expected to grow, albeit less robustly than in the past, for the foreseeable future:

- The US working-age population is expected to rise by 33 percent over the next 50 years, a fairly sluggish pace compared to trends in the past half century.
- Canada is expected to gain in working-age population by about 17 percent, aided by net migration rates that are double those of the United States and a projected rise in its total fertility rate from 1.6 to 1.9.

In any case, the ratio of taxpaying workers to nonworking pensioners in the developed world is due to fall. Today, that ratio is about 4:1 in most industrialized nations. In 50 years this ratio will drop to less than 2:1 or even lower in some countries in Europe and Japan. It will fall to 3:1 in the United States. This is critical because most social security systems in the developed world operate on a pay-as-you-go (PAYGO) basis, with current workers supporting current retirees through payroll taxes.

**What If the Elderly Continue To Be Active?**

How countries deal with their aging trends will be heavily affected by how active and productive the elderly population will be in the work force. If advances in biotechnology and health care continue to develop and the elderly are given the right incentives to continue to be active, then this group (especially the youngest old who are less than 80 years old and are generally healthier) could actually be a new set of consumers (or savers) with a longer productive life. This would lead to additional economic growth and continued prosperity. The economic contribution could come in two ways:

- First, as a group, these post-child-support (65+), pre-late-retirement (<80) workers should have more disposable income. This income could either be spent on luxuries (goods and services) or invested in savings to be passed on to subsequent generations.
- Second, by remaining in the work force longer, this group could increase the basic productivity of the overall work force. This will occur because the return to society from such one-time fixed investments as education and early job training will continue to be realized. Further, the continued presence of this group in the work force—even if individual worker productivity declines slightly—will still provide an overall increase in the "experience" base of the work force. Societies may further leverage savings or consumption by these older workers with combinations of tax incentives and changes to retirement plans. However, the most basic strategy will require incentives to keep them in the work force.

In the end this may be more a factor of culture than of the capabilities of countries' individual workers:

- The United States is culturally predisposed to this notion and, as such, is likely to benefit the most from an active elderly population. For example, the United States is the only country to have age discrimination laws, and the US Government recently changed policies to allow people over 65 to draw social security benefits while they continue working. Moreover, labor flexibility—including part-time job options—are more available in the United States than in Europe, and such options may hold greater appeal to the 65+ group.
- In Germany and Italy only 4 percent of males aged 65 and older are still in the labor force. This is compared to nearly 17 percent of American males over 65 who are working.

- Labor force contraction could depress economic output, boost inflation, and curb investment.
- This could lead to overcapacity and falling returns on investment in key sectors of some industrialized economies.

**Demographic Trends Not Quite Certainties**

In most futures work the first set of certainties that scenario builders usually jot down with little thought are demographic trends. As this paper demonstrates, we should be less confident about assuming demographic trends are certain or should, at the very least, dig deeper into our assumptions about them. The confidence that we place in demographic projections can be called into question by any number of issues, making policymaking on such issues particularly challenging.

- For example, the US Census Bureau recently changed its projections for South Africa from a country, two years ago, they had projected would be gaining 6 million people by 2025 to a country that will be losing nearly 9 million people by 2025 because of the devastating impact of the AIDS virus.
- The Japanese Government recently cut pension benefits by 20 percent and subsequently found out that their dependency ratios could be off by 16 percent, causing a negligible reduction.

More broadly, projections that countries make about the budgetary impacts of the global aging trend are linked to long-term projections of old-age dependency ratios. However, such projections depend on demographic assumptions about future birth rates, life expectancy, and migration flows—all assumptions that can produce different results over the long term. To illustrate, the OECD collated population projections for the year 2040 in the mid-1980s, the World Bank conducted a similar exercise in the early 1990s, the UN produced its data in the late 1990s, and the OECD countries, in collaboration with Eurostat, produced the same data again in the late 1990s. All these projections indicate a rise in the elderly population, but the extent of the change differs substantially across the four sets of projections. In nearly all countries the old-age dependency ratios are higher the more recent the projection, in some cases by a considerable amount.

Without tremendous growth in productivity or other aggressive corrective actions, labor force contraction in many of the world's leading economies could depress economic output and boost inflation:

- The OECD projects that, all things equal, the impact of aging on GDP growth rates will be a decrease in Europe to 0.5 percent, in Japan to 0.6 percent, and in the United States to 1.5 percent in the years 2025-50.[1]

- With less manpower to produce domestic goods and services, supplies fall short of demand—increasing some domestic prices and wages. Commodity shortfalls are likely to be met, at least in part, by increased imports, possibly leading to trade deficits in some countries.

- One consequence of a contracting or slower growing labor force will be slower improvements in living standards. OECD estimates suggest that the cumulative effect by 2050 could be a reduction in Japan's living standards—measured by GNP per capita adjusted for terms of trade effects—by 23 percent, the EU's by 18 percent, and the United States' by 10 percent below the level they might have reached extrapolating current productivity trends with unchanged dependency ratios.

As births decline in the coming decades, so too could the number of consumers and producers. Because this age group is in its household-forming years, a time of life when home-buying propels demand for everything from washing machines to baby carriages, its decline could lead to overcapacity and falling returns on investment in such key sectors of the economy as construction, real estate, and durable goods. By 2010, the EU as a whole will experience a 13-percent decline in populations aged 20 to 39, according to UN projections. (Italy could have 30 percent fewer people in this age group by 2020).

[1]All OECD data in the aging section are based on this assumed projection of GDP growth rates.

Over the next decade, the absolute number of people in this age group in Japan is projected to shrink 20 percent (in the subsequent decade it is expected to shrink an additional 20 percent). This is critical since about 60 percent of Japan's GDP currently is generated by domestic demand.

Declining numbers of workers and consumers inevitably would exert a contractionary effect on countries' GDP growth rates, asset values, savings rates, and currencies. If this happens, tax revenues also would fall short, making it harder to fund retirement benefits without big tax increases or large budget deficits. Producers would see declining domestic unit sales. Banks, pension funds, and other institutions that hold mortgage-backed securities could likewise experience deteriorating balance sheets.

Surging retiree populations in the industrial world could also mean that large numbers of affluent households will be spending down their life savings in unison. Retirement alone could depress private savings rates by 8 percent of the combined GDP of 22 of the 29 OECD countries by the late 2020s.

Some current developments in Japan and Europe, although currently not directly related to aging, give us a window into what some of these aging problems could look like:

- Consumer spending has fallen in Japan for 29 straight months. The retail and construction sectors are on deficit-financed life support. The value of debt owed by failed businesses in Japan reached an unprecedented $85 billion in the last half of 2000, piling new losses on lenders almost as fast they could write off old ones. Moreover, sliding stock prices threaten banks' balance sheets.

- Capital is fleeing the EU at an unprecedented rate because of pessimism among European investors about Europe's outlook and slow pace of reforms. Despite today's favorable exchange rates and the supposed overvaluation of US equities, German companies announced $94 billion in US acquisitions in August 2000 alone.

# The Aging Challenge: Straining Institutions and Governments

- At the same time, the costs of public pensions will increase much faster than economic growth in the developed world.
- Health-care costs are also certain to rise unless technology vastly changes the cost of medical care or countries give more recognition to preventative care and ration medical interventions.

**Table 3**
**Graying Means Paying More for Pensions and Health Care**

Public Spending on pensions and health-care benefits (percentage of GDP)

| | 1995 | 2030 (Official projection) |
|---|---|---|
| **United States** | 10.5 | 15.5 |
| **United Kingdom** | 10.5 | 17.0 |
| **France** | 17.6 | 25.8 |
| **Canada** | 12.6 | 22.5 |
| **Japan** | 11.5 | 23.1 |
| **Germany** | 17.3 | 28.8 |
| **Italy** | 19.7 | 33.3 |

OECD (1996, 1997) and US Census (1997)

**Table 4**
**Public Pension Deficits Could Consume Developed World Savings**

Change from 1995 in the G-7 budget balance attributable to projected pension deficits[a] (percent)

| | |
|---|---|
| **2000** | 0.1 |
| **2005** | -0.2 |
| **2010** | -0.9 |
| **2015** | -1.9 |
| **2020** | -3.3 |
| **2025** | -5.1 |
| **2030** | -7.4 |
| **2035** | -9.9 |
| **2040** | -12.1 |

*A deficit of 8.6 percent of GDP would consume the entire G-7 national savings.*

OECD (1995)

[a]Assumes no change in taxes or other spending and assumes all other savings continues at the 1985-94 annual rate.

**Table 5**
**Japan Is the Only Developed Country Where Most Elders Still Live With Their Children**

Percentage of elderly living with their children

| | | |
|---|---|---|
| **Japan** | **1953** 80% | **1985** 65% |
| **France** | **1975** 24% | **1990** 17% |
| **United Kingdom** | **1962** 33% | **1980** 16% |
| **United States** | **1952** 33% | **1987** 15% |

At the same time, the developed world can expect a substantial rise in the share of national income consumed by the dependent older population. The fiscal and societal implications of these demographic trends are compounded by PAYGO (unfunded) public pension systems and the growing costs of health care:

- The OECD projects that the average bill for public pensions in the developed world will grow by over 4 percent of GDP over the next three decades. In Japan and in Europe it will grow by over 6 percent of GDP.
- When health-care expenditures are added in, the total bill for public retirement benefits is expected to rise by 9 to 16 percent of GDP by 2030 in most developed countries.
- Unfunded liabilities for pensions are already almost $35 trillion worldwide. With health care the total jumps to at least twice that much.

Accelerating advances in medical technology, together with rising social expectation about care and cure, guarantee that health-care spending for all age groups will continue to grow faster than the economy in most developed countries:

- In OECD countries health-care expenditures have been increasing at the rate of 5.7 percent per year between 1960 and 1995 in real terms. GDP, meanwhile, grew at 3.4 percent per year, with the result that health care now accounts for nearly 10 percent of GDP, compared to 4.3 percent in 1960.

This pattern will continue unless there is more pressure to contain costs (for example, through rationing medical interventions) and more recognition is given to preventative care, or there are unanticipated changes of policy or technology.

If GDP growth is slower and if improvements in productivity fail to compensate for slower labor force growth, then the health share could be even higher. This cost trend is especially critical because the elderly consume three to five times more health-care services per capita than younger people. Moreover, the older the elderly are, the more health care they consume, and it is the population of the oldest old that will be growing the fastest.

**Global Aging and the Family**

Governments everywhere are counting on families to assume some if not most of the burden of long-term care for the elderly, especially the rapidly growing oldest segment of the population. This burden will grow heavier. Currently, 69 percent of older persons in developing countries, such as China, live in households with family members.

Today's elders typically have two or more children, increasing the odds that at least one will be able and willing to help out. But when today's working-age adults grow old they will be much more likely to have only one child or no children (in Sub-Saharan Africa, children may not survive because of AIDS)—or to be single, widowed, or divorced. When the need for long-term care arises, a growing number will have no alternative to public programs, further increasing the financial burden on the government. Moreover, more women will enter the work force, leaving fewer people available to care for the elderly.

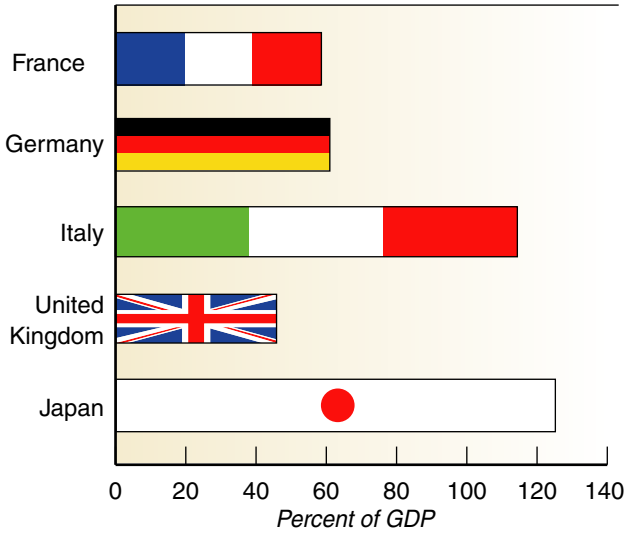
**Can the Elderly Afford Health-Care Innovations?**

Health-care rationing—particularly for new innovations—may become more widespread and systematic and increase inequities among the elderly. Advances in medical technology like genetically engineered organ replacement and gene therapy against intractable health diseases like cancer and Alzheimer's could, according to some researchers and demographers, offer life spans of 150 years or more by 2050. This raises important questions about whether national health plans should cover most of such innovations. As health-care costs of these innovations put upward pressure on budgets, the government may restrict national coverage of treatments to save money. The elderly may find they cannot afford attractive new treatments, particularly if they have not saved sufficiently for additional insurance.

# The Aging Challenge: Straining Institutions and Governments

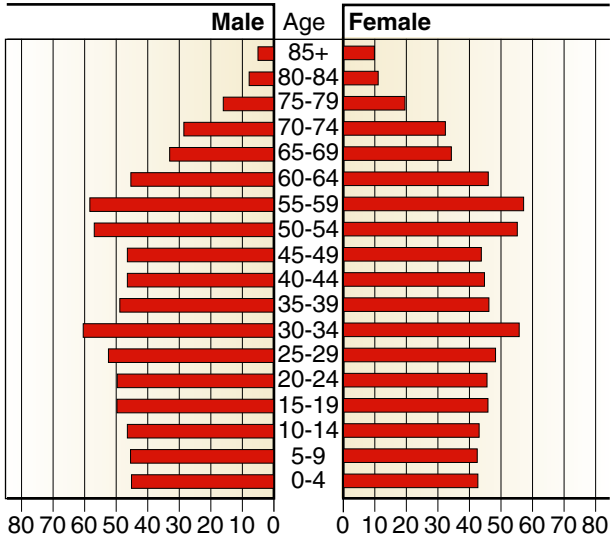
- Aging countries' debt will rise as social safety net spending skyrockets, putting pressure on interest rates and crowding out productive investment.
- Divergent fiscal policies to deal with aging will strain regional economic unions like the European Monetary Union.
- Global financial markets could be roiled by wide swings in capital flows with slower aging countries exporting less capital than fast-aging ones.

**Figure 9**
**Gross Government Debt**




Estimates for 1999 and forecasts for 2000 taken from the European Commission publication *Spring 2000: Economic Forecasts 1999-2001.*

**Figure 10**
**China: Population, 2025**
*Population in millions*




Source: US Census Bureau, International Data Base.

**Demographics a Key Variable in Capital Exports**

The varying pace of aging among the very largest economies will affect their capital flows, with slower aging countries (United States) exporting less capital than rapidly aging countries (Japan). Rapid aging in these developed countries will cause investment to decline more sharply than saving (the economy is not robust so there is less to invest in), so retirees would look overseas to invest their money. This would add to a movement of capital away from investment in developed countries toward developing ones, which could lead to large and destabilizing shifts in the direction of global capital flows—perhaps triggering a financial crisis.

### What Will Happen to the EMU?

Divergent fiscal policies will strain regional economic unions like the European Monetary Union (EMU). Currently, there are few effective circuit breakers in place. The official deficit criteria for membership in the EMU at 3 percent of GDP do not take into account unfunded pension liabilities. As these come due, countries that fail to reform their public retirement systems will find it difficult to meet the EMU's deficit ceiling. Whether the ceiling will be retained at the insistence of countries that have put their fiscal house in order or whether it will be eased in either case could unravel the EMU. Germany's actions on the debt issue will be telling for the rest of Europe.

The fact that all of the rich countries will simultaneously experience a dramatic upward shift in their population age structures, coupled with a world that is likely to be much more integrated via trade, technology, and financial linkages, creates the potential for global economic spillovers. In the absence of dramatic policy shifts within two decades, much of the industrialized world could find itself with few choices but nonetheless some combination of increased debt or higher taxes, which could lead to slower growth worldwide. Some of today's large capital exporting nations may fail to enact timely fiscal reform and begin running massive budget deficits. Because the pool of total saving in the world is also expected to decline, pressure on interest rates will rise and the cost of debt in highly indebted countries will increase:

- Japan is the main concern, as its debt has steadily climbed over the past decade—now officially equal to 12 percent of the world's GDP but unofficially probably 18 percent of world GDP. If Japanese Government bonds were to suffer a long slide in value (i.e., Japanese savers move their money out of bonds into higher yielding investments), driving up interest rates in the process, Japan would be pushed into a debt-driven downward spiral of economic performance. This in turn could cause a prolonged recession in East Asia and weaken growth in the United States and Europe.

- In Europe, rising debt levels in some countries such as Italy, which currently has among the largest debt burdens at 110 percent of GDP, could put pressure on the European Central Bank to raise interest rates, thereby pushing down growth in the euro zone. The currency crises in Europe in the early 1990s were partly the result of the perception of currency traders and speculators that the old-age welfare programs of Europe were unsustainable and most worrisome in countries with high debt levels and sluggish growth.

### Spotlight on China

Population aging for many developing countries, while about 30 years from being at the crisis level that developed countries are currently facing, will be even more critical because developing nations are even less financially prepared to deal with it. The situation will be particularly acute for China, which has more than one-fifth of the world's total population. China will not have the same options available to it to cope with the aging issue that countries in the developed world have:

- It most likely will not have the sophisticated tax structures, deep capital markets, and developed pension and health-care systems associated with mature economic development before its population ages.
- While in some European countries the aging transition has been spread over a century or more, in China this change will take place within a few decades.
- Moreover, China's elderly population is likely to be much less educated—and hence less productive—-and thus more dependent on technology for productivity.

A combination of rapid fertility decline since 1970, a continued decrease in mortality, and the large baby-boom cohorts born in the 1950s, 1960s, and early 1970s is the root of China's unprecedented number of elderly. By 2025 there will be more than 200 million people 65 and over and more than 300 million by 2050—close to the entire current population of the United States.

China's population aging will complicate its ability to sustain robust economic growth because unfunded pension obligations and massive health-care costs will add to a debt stock that is already rising. China has had to deal with retiring large stocks of nonperforming loans as well as employment dislocations and pension recapitalization costs associated with privatization. Moreover, the working-age population supporting the pension system will be shrinking proportionally to retirees; the ratio of population ages 20 to 59 to those 60 and over is projected to decline from the current 6.7 in 2000 to 5.0 in 2010 and 2.7 in 2025. China's pension system is already faltering (some academics call it "actuarially unsound"), and pension costs are expected to exceed 40 percent of payroll by the early 2030s, according to a US think tank. In an economy in which most workers live near subsistence, this could be a crushing burden.

- To alleviate fiscal pressures, the developed world will need to act soon with a combination of policy changes.
- Productivity gains and increasing labor force participation could mitigate the problem somewhat and are less controversial than options to reduce benefits.

**Table 6**
**Labor Force Participation Comparison**

Labor force participation rate, 1993-94
(percent)

| | Male | Female | Males 65 and older |
|---|---|---|---|
| **France** | 74.5 | 59.6 | 2.8 |
| **Germany** | 78.0 | 60.8 | 3.9 |
| **United Kingdom** | 72.7 | 52.8 | 3.5 |
| **United States** | 87.0 | 71.4 | 16.8 |

Source: *Aging Societies*, edited by Barry Bosworth and Gary Burtless.

The fiscal cost of global aging leaves developed countries with few easy choices. No single policy initiative is likely to be sufficient to alleviate the pressures. Improvements are likely to be uneven across countries.

**Increase output and its rate of growth.** A higher level of per capita output would directly limit the negative impact of aging on living standards and provide additional revenue. However, the extent to which raising the level of output eases budgetary pressures depends on how higher output per capita is achieved:

- For example, increasing output through higher utilization of labor (i.e., encouraging more citizens to work or encouraging those who are already in the work force to work more) would yield the most immediate results. This would also lead to a buildup in implicit government pension liabilities for the future, however. Japan has slack in its labor allocation (underemployment) and has yet to include women in its work force in great numbers. That said, according to a simulation model, with female participation rates as high as 85 percent in some age groups, much higher than in the United States today (about 62 percent), a work force decline in Japan can only be reversed for the first decade of the 21st century, with long-term trends asserting themselves in succeeding decades.
- Improving growth performance through gains in productivity could alleviate some countries' pension pressures. However, the effect on the ratio of pension spending to GDP might not be significant for those countries—many of which are in Europe—where pension benefits are directly linked to wages.

**Raise tax rates.** This is an option but a dubious one because few countries have much room to raise taxes:

- In the European Community, for example, the total tax burden already averages 46 percent of GDP. Collecting an extra 9 to 16 percent of GDP might prove economically impossible.
- The overall tax burden on the Japanese people, including national and local taxes, is already expected to rise from 36.9 percent today to a range of 50 to 56 percent over the next half century, according to official Japanese Government projections.

**The New Economy: A Palliative for Demographic Strains?**

Economic reforms and productivity gains associated with the new economy have the potential to offset the macroeconomic costs of aging and declining fertility to some extent:

- The extent to which aging contributes to increased fiscal deficits, lower investment, and slower growth depends on a variety of assumptions that new economy reforms can alter. New economy practices can change the level of technological progress, productivity growth, government policy responses to aging, and a number of other factors that will determine the cost of aging on individual governments and economies.
- Many argue that the new economy will lead many countries into a golden age of productivity growth similar to 1860-1900 when scientists invented electricity, the automobile, the airplane, motion pictures, radio, and indoor plumbing.

Increased productivity growth resulting from new economy reforms could significantly offset the costs of supporting dependent populations. New economy policies tend to increase productivity by boosting the efficiency of labor and capital:

- According to a recent study by two Federal Reserve Bank economists, the US success at innovation—particularly in semiconductor chip technology—and at integrating information technology into existing business operations together account for about two-thirds of a 1-percentage-point increase in US productivity growth between the first and second halves of the 1990s.
- Although productivity growth in Europe and Japan has not kept pace with that in the United States, many observers believe the productivity of these countries could rise as they invent new technologies and integrate them into their economies. Japan, for example, leads the world in wireless connectivity while Europe dominates in digital, both emerging technologies.

- Raising retirement ages or trimming benefits entails political costs.
- Immigration as a viable option requires extraordinarily large numbers of people to maintain support ratios at current levels.
- Pronatalist policies are long-term solutions that have not yet proved effective.

**Raise retirement ages or trim benefits.** Raising retirement ages is often considered too difficult in Europe where the Germans, for example, are retiring between 55 and 60 because of "work-related stress" and French workers have shut down the country in recent years, demanding earlier retirement in a nation where the average retirement age is 59:

- Moreover, to hold dependency ratios steady and therefore benefits and tax rates constant, by 2030 retirement would have to begin at 78 in Japan, 74 in France, 73 in Italy, and 72 in the United States. By 2050, retirement ages in these countries would need to rise to 81, 78, 79, and 75 respectively. Cutting benefits is often a politically charged issue and usually not palatable, especially in Europe.

- In 1995, Silvio Berlusconi's Forza Italia government was buffeted by a number of political storms, all of which it weathered except for pension reform, which shattered the coalition.

- That same year, the Dutch parliament was forced to repeal a recent cut in retirement benefits after a strong Pension Party, backed by the elderly, emerged from nowhere to punish the reformers.

- In 1996, the French Government's modest proposal to trim pensions triggered strikes and riots.

**Increase immigration.** Many aging developed countries are exploring replacement migration in their attempt to maintain support ratios at current levels. For most, however, this strategy will be ineffective and politically unacceptable because of the extraordinarily large numbers of immigrants that would be required:

- From 2000 to 2050 net total number of migrants needed to maintain the size of the working-age population in Japan would be 32 million (nearly 650,000 per year), in Germany 24 million (487,000 per year), and in Italy nearly 19 million (327,000 per year), according to the UN.

- In many European countries, non-European foreigners already make up nearly 10 percent of the population.

- One alternative is to generate a population of "guest workers," as is commonly done in the Middle East. Acceptance of these workers in the large numbers that would be needed, however, would still require major cultural changes in Japan, for example, which currently has a negligible number of resident aliens.

**Have more children.** Implementing pronatalist programs in an effort to increase national fertility rates is also an option. Bandai, a leading Japanese toy company, is offering its female employees $10,000 per child after their second child. These programs have generally not been successful and can often aggravate other problems:

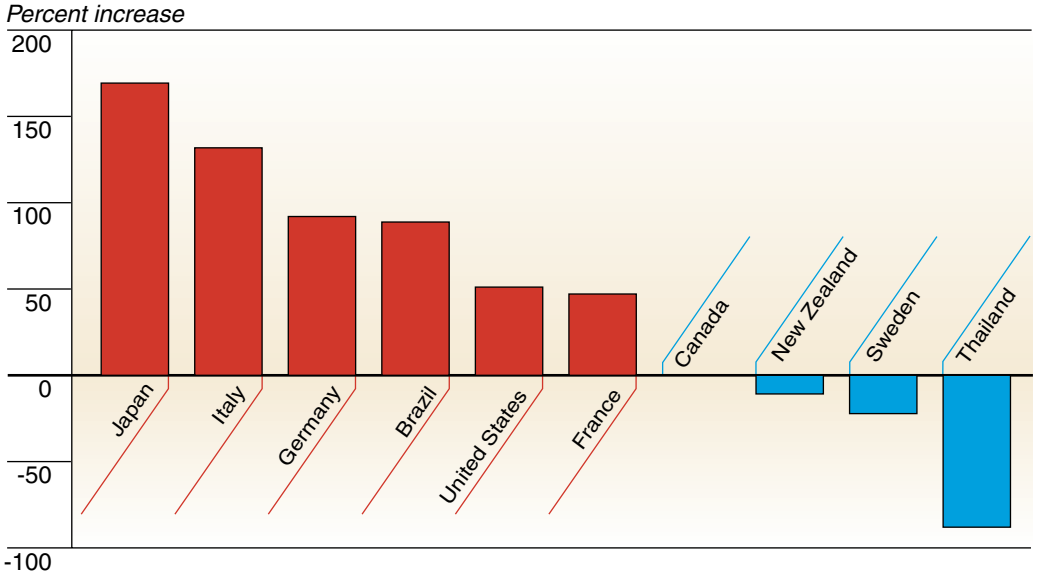
- Sweden, for example, appeared to have substantially increased its fertility rate in the early 1990s as a result of generous government incentives to encourage childbirth, but the latest figures now indicate that Swedish fertility has dropped to 1980s levels. In general, pronatalist programs encourage couples to have children sooner than they would have done otherwise but do not increase the overall number of children born. Even if successful, these policies could not expect to have a significant effect on dependency ratios before 2030.

- Programs to increase birthrates could lead to a drop in participation by women in the work force, further aggravating the situation.

# The Aging Challenge: Straining Institutions and Governments

- The United States is in a better position to cope with the aging issue than most of its developed country counterparts.
- But Europeans and Japanese are beginning to take the issue seriously.
- Unless US allies completely reengineer their entitlement programs, they will have a long, painful road ahead.
- The challenge: develop retirement systems that do not undermine private savings and investment through crippling levels of taxation on the young.
- We are already seeing a rise in polarization among age groups; a rise in intergenerational conflict may not be far behind.

**Figure 11**
**Imbalances Mean Higher Taxes for Future Generations**
Increase in taxes (based on generational accounting) for the future generation of selected countries compared to the current generation.




For Japan and Italy, in particular, unless current generations pay more taxes or dramatically cut their purchases of goods and services, their next generation will face lifetime net tax rates that are more than twice as high as current rates. According to generational accounting methods, all other things held constant, the smaller the size of future generations relative to the current generation, the larger the imbalance.[a]

[a]Adapted from Lawrence Kotlikoff and Willi Leibfritz's NBER Working Paper An International Comparison of Generational Accounts.

The United States is further along in its coping strategies to deal with the aging trend:

- Labor force growth through immigration, a common practice in the United States, is considered a political nonstarter for Japan and Europe. Labor unions are political powerhouses in many countries, such as Italy, where 90 percent of trade union members are retirees.

- Defined contribution plans such as personal voluntary savings plans like US 401(k) and individual retirement plans—which now share equally in satisfying retiree incomes—are rejected by the Japanese and many Europeans, who question the security of such private investment schemes over the long term.

- Moreover, unlike the European and Japanese systems, the US system has been able to switch to a bifurcated system; roughly half of each worker's benefits come from employer-sponsored pensions. In contrast, 80 percent of a German's average retiree income comes from state-provided retirement. Italy and France currently have no employee-sponsored pension systems.

That said, the challenge of global aging is beginning to find its way onto the political agendas of other developed countries:

- In March 2000 Japanese politicians suggested in a white paper entitled "Empowerment and Better Governance in the New Millennium" that the government's major concerns about its falling birthrates and aging population could lead to some easing of immigration laws, but probably not far enough to address the inevitable labor crunch. That said, Japan quietly cut pension benefits by 20 percent for the typical 40-year-old.

- Progressive governments in Europe are putting aside ideology in favor of fiscal expediency. The ex-Communist Massimo D'Alema in Italy and Gerhard Schroeder and his Red-Green coalition in Germany are cutting back on benefit guarantees and instituting systems of private retirement provision.

- Five of the G-7 nations have already scheduled modest future hikes in the full-benefit retirement age. The United Kingdom and the Netherlands are even augmenting unfunded public retirement systems with funded systems based on personally owned savings.

Measures taken to date are likely to be insufficient to resolve the daunting problems. Unless policymakers in these countries are willing to address the aging issue more comprehensively in the near future—by building entitlement programs that can be self-sustaining no matter what happens to fertility or longevity, even in economic downturns—then they face the prospect of having to address more vexing problems in the future. Reforms require advance notice and gradual implementation that, given the immediacy of the developed world's problems, leave no room for complacency.

**Will Intergenerational Conflict Rise?**

A critical uncertainty is what, with ever more electoral power flowing into the hands of the elderly, will motivate political leaders to act on behalf of the long-term future of the young. We are already seeing a rise in polarization among age groups in some countries. A rise in intergenerational conflict may not be far behind:

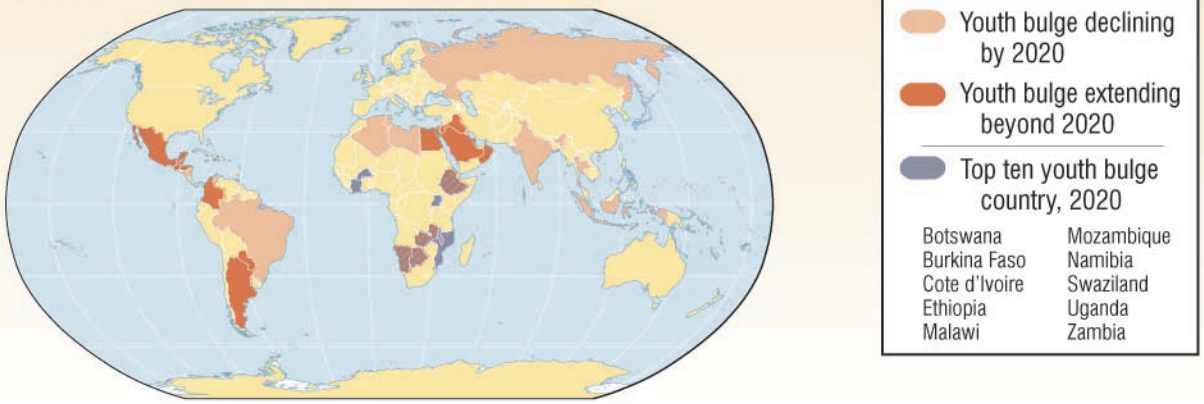
- Senior power is rising in Europe, where it manifests itself less through independent senior organizations (as in the United States) than in labor unions and often union-affiliated political parties that formally adopt pro-retiree platforms. In Germany, many young working people are angry at high taxes and an overly generous social security system that makes unemployment too attractive, placing a larger burden on the employed.

- In Singapore, Senior Minister Lee Kuan Yew once proposed that each tax-paying worker be given two votes to balance the lobbying clout of each retired elder.

# Youth Bulge Bodes Instability

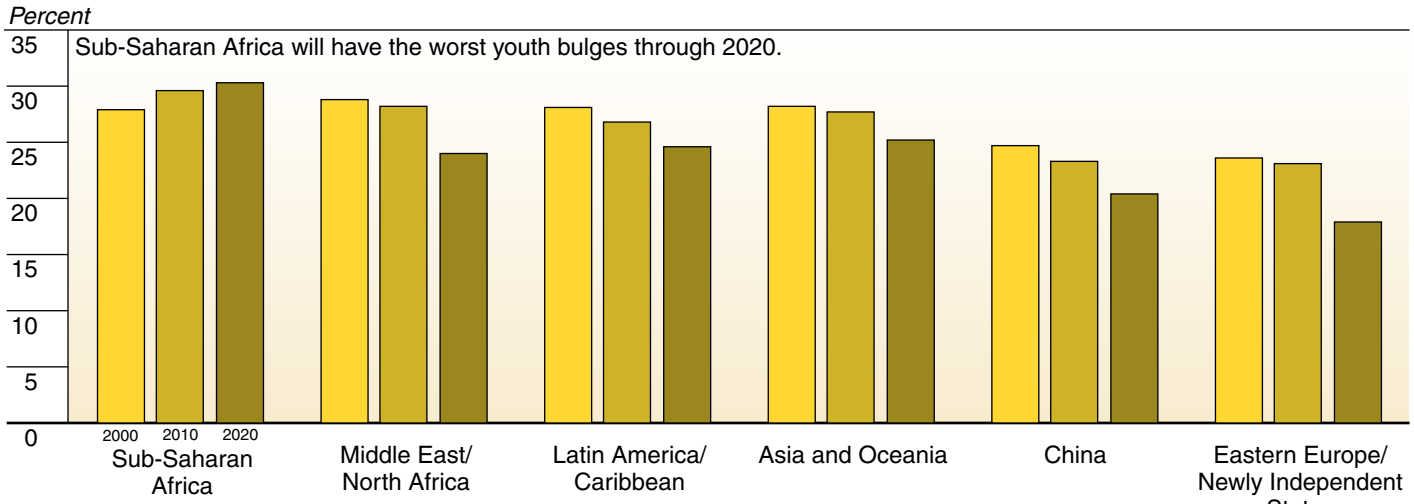
- The world's poorest and often most politically unstable countries—including, among others, Afghanistan, Pakistan, Colombia, Iraq, Gaza, and Yemen—will have the largest youth populations through 2020.

**Figure 12**
**Youth Bulges: Most Prevalent in the Developing World**




- Most will lack the economic, institutional, or political resources to effectively integrate youth into society.

**Figure 13**
**Percent of Population 15-29 Years Old**




Source: US Bureau of the Census, International Data Base.

## Large Youth Populations: Of Greatest Concern in Developing Countries

Several of the world's poorest developing countries will have the world's largest youth populations over the next two decades. We define a youth bulge as a disproportionate concentration of population in the 15 to 29 age range:

- Yemen, Iraq, and other countries in the Middle East and Sub-Saharan Africa will have among the world's largest youth populations, the latter even with the impact of AIDS.

- The size of youth bulges will decrease in all regions of the world except for Sub-Saharan Africa over the next 20 years, but populations of youth in many developing countries will remain large.

Youth bulges peaked in Latin America and Asia earlier and at lower levels than did those of Africa and the Middle East and are now almost entirely absent:

- In Latin America, the youth bulge began in the 1960s, peaked in the 1980s, and ended in the 1990s.

- Asian countries experienced the briefest and least intense youth bulge between the mid-1970s and the mid-1990s. The youth bulge has been in rapid decline since the late 1980s.

Most countries with large youth populations, even those that have relatively more financial resources like Saudi Arabia, are particularly ill-prepared to deal with them:

- Many of these countries have among the world's weakest economies and have political and institutional constraints that discourage the economic activity and private investment needed to generate jobs. Boosting economic growth and job creation requires significant increases in savings and investment, which many of these countries are hard pressed to obtain.

- The International Labor Organization estimates that the global labor force will increase by nearly 1 billion over the next decade—with most growth coming from the developing world—putting significant pressure on already weak economies to create hundreds of millions of new jobs. The shortage of professional entry-level jobs will be a particular concern. Unemployment in the Middle East for example, is most severe among young semi-educated city dwellers who have received enough education to raise expectations and aspirations and are reluctant to take manual low-status jobs.

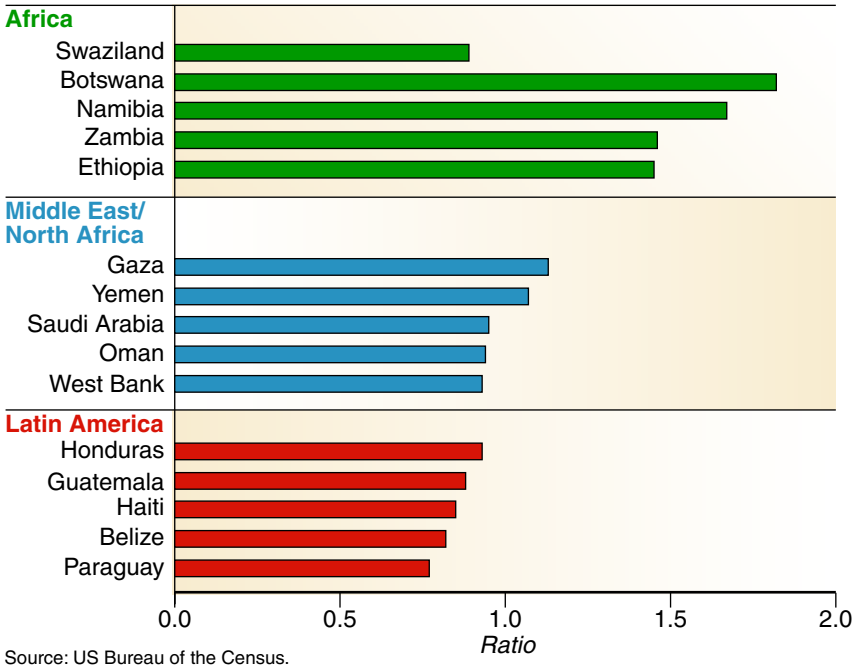
- With fertility rates remaining relatively high in developing countries, pressures will continue on education, health care, sanitation, and economic infrastructures.

- The failure to adequately integrate large youth populations in the Middle East and Sub-Saharan Africa is likely to perpetuate the cycle of political instability, ethnic wars, revolutions, and antiregime activities that already affect many of these countries.

- Youth bulges have generated such political instability in the past in Algeria, Iran, Northern Ireland, Gaza, and Sri Lanka.

- Political instability would make it even more difficult for poor countries with large youth populations to generate economic growth and encourage the foreign and domestic investment needed to generate new jobs.

**Figure 14**
**Ratios of Young to Old in Largest Youth Bulge Countries, 2020**
(Ratio: the number of 15-to-29-year-olds to the number of 39-to-54-year-olds)




Source: US Bureau of the Census.

## Youth Bulges May Contribute to Political Instability

The failure to adequately integrate youth populations is likely to perpetuate the cycle of political instability, ethnic wars, revolutions, and antiregime activities that already affect many countries:

- According to a US Government study, when the cohort of 15-to-29-year-olds exceeds the 30-to-54-year-old cohort by a ratio of 1.27 or more, a country's probability of instability—defined as revolution, ethnic war, genocide, and disruptive regime changes—increases.

- Large youth populations may challenge some governments' long-held political and foreign policy agendas, possibly leading to shifts in the relationship of some countries with the United States.

- A number of political, economic, and social problems provides the principal contribution to civil unrest, but demographic pressures aggravate them.

Numerous scholars have linked youth bulges to unrest in Algeria, Northern Ireland, Gaza, Iran, Turkey, Egypt, Sri Lanka, and elsewhere. For example:

- Turkey's Kurdish population—involved since 1984 in an insurgency against the Turkish Government—emerged from a youth bulge in 1995. High unemployment and educational shortfalls aggravated conditions that led to coups in 1971 and 1980.

- In Sri Lanka, the Sinhalese national insurgency in 1970 and the Tamil rebellion in the 1980s reached peak levels of support when more than 20 percent of their populations were 15 to 24 years old. The government eventually moved 14,000 youth into "rehabilitation centers" to help alleviate the problem.

**A Window of Opportunity for the Middle East**

UN projections for Middle Eastern demographic trends over the next 25 years predict a gradual shift in the age structure away from a high youth dependency ratio and in favor of the economically active (between ages 15 and 64) as a result of a sustained decline in fertility rates:

- On the basis of these trends the Middle East will have an opportunity to raise its GDP per capita growth 2.1 to 2.3 percentage points through increased savings, investment, and productivity improvement.

- To realize this potential, however, the region must devote considerable attention to strengthening its financial, legal, and political institutions while also adopting a coherent set of long-term economic policies.

- Algeria's youth bulge contributed to long-lasting civil strife, as youth lacked adequate educational, employment, and housing opportunities. Algeria's unemployment is still more than 30 percent. Egypt—which has 20-percent unemployment—has some of the same elements at work as in Algeria. According to a noted academic expert on Egypt, many Egyptian university graduates are looking for jobs; they are articulate, indignant, and prime candidates for joining the cause of Islamic radicals.

- By the mid-1970s half of Iran's population was under 16 and two-thirds was under 30. This directly contributed to the street politics of 1977-79 that contributed to the fall of the Shah and the rise of a government hostile to US interests.

- Early in the conflict in Northern Ireland, the Catholic population of Ulster, with a younger age structure than Protestants, was much more active.

In addition to contributing to political volatility in several already unstable regions and countries, youth bulges may:

- Provide large numbers of Afghan and Pakistani youth willing to engage in terrorist activities.
- Empower youth to slowly weaken authoritarian regimes in places like Iraq, a trend that, while beneficial to some US interests in the longer term, would generate serious conflicts between the government and the governed in the shorter term.
- Significantly change the ethnocultural mix of the West Bank and Gaza to include a much higher ratio of Palestinians to Israelis.
- Boost legal and illegal migration from Mexico to the United States.
- Exacerbate other problems in Sub-Saharan Africa.
- Increase the number of human casualties US adversaries are willing to accept in battle.

## Several Potential Costs for the United States

Large youth populations are likely be the most disruptive to US interests in Afghanistan, Pakistan, Saudi Arabia, Mexico, Gaza, and the West Bank, all places where unemployed alienated youth provide fertile ground for radical political movements:

- New generations of unemployed Pakistanis and Afghans—the latter of which see war as virtually the only lifestyle opportunity—will continue to provide a ready source of labor for terrorist groups.

- Saudi Arabia and Iraq could see some instability, at least in the medium term. Although criticism from unemployed youth that are able to mobilize themselves as a group could pressure governments to adopt more economic reforms and more democratic styles of leadership over the longer term, in the shorter term tensions will increase between the governed and the governing.

- An increase in the number of unemployed Mexican youth is likely to generate increased illegal and legal migration to the United States, potentially straining social services and increasing anti-immigrant sentiment, at least in the short term.

- A US academic estimates that at current growth rates the Palestinian population in the West Bank and Gaza—which includes many youth—will increase from 1.8 million in 1990 to 4.7 million in 2020 while Israel's will grow from 4.6 million to 6.7 million over the same period, significantly altering the ethnic balance in the region. Unemployment in Gaza is more than 30 percent, and standards of living are one-tenth as high as in Israel.

In Sub-Saharan Africa, youth bulges are likely to exacerbate already existing problems:

- Increases in youth populations will aggravate problems with trade, terrorism, antiregime activities, warfare, and crime and add to the many existing factors that already are making the region's problems increasingly difficult to surmount.

Large youth populations increase the availability and imperative for governments to draft youth into the military, which can have a positive effect on US interests—the militaries of Bangladesh, Pakistan, and India, for example, have provided critical manpower to international peacekeeping and disaster relief efforts:

- With more youth in the military, unemployment rates stay down and social stability is preserved to some extent. Some developing countries need large armed forces and paramilitary auxiliaries to preserve order. Moreover, armies can be a tool for increasing social cohesion, especially in many multiethnic countries. Many developing nations see the military as a vehicle for imbuing their young with pride and faith in their nation.

US adversaries with large youth populations may be more willing to engage in conventional military confrontations with the United States as large youth labor forces reduce the marginal costs of losing individual soldiers.

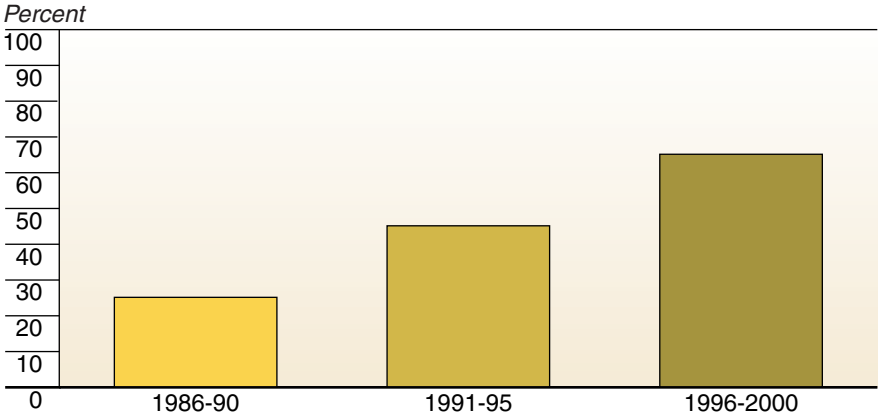
Migration could be a partial solution to demographic imbalances:

- Migration could provide jobs to workers from developing countries and labor for the developed world.
- Developing countries would gain hard currency and greater political influence in countries that receive immigrants.
- The tax and consumer bases of aging societies could increase, helping to alleviate the budgetary strains of supporting aging populations.

**Figure 15**
**Migrants to the Developed World**

The number of persons migrating to the developed world has increased.

**Immigrants as a Share of Annual Population Growth in Developed Countries**




Declines in fertility and increases in aging will increase many developed countries' need for immigrants.

**Countries Whose Populations are Expected To Decline Between 2000 and 2050**

| | *Percent decline* |
|---|---|
| **Austria** | 14 |
| **Belgium** | 12 |
| **Finland** | 5 |
| **Germany** | 11 |
| **Italy** | 22 |
| **Japan** | 20 |
| **Netherlands** | 10 |
| **Spain** | 18 |
| **Sweden** | 3 |
| **Switzerland** | 9 |

## Migration: A Partial Solution to Other Demographic Challenges

Global migration—which is likely to increase over the next 10 to 20 years—could provide a partial solution to problems associated with both aging and large youth populations. An estimated 40 million people now live outside their native country. Migration would increase the availability of workers in aging populations and of jobs for unemployed youth in many developing countries:

- The labor force in the developing world is expected to almost double from 1.7 billion people in 1998 to 3.1 billion people by 2025, according to the OECD.

- According to the OECD, China's working-age population will reach 955 million by 2020 from 732 million in 1995, requiring the creation of millions of new jobs.

- In the developed world, the EU is projected to need some 1.7 million high-tech workers by 2003, according to the press, many of which will have to come from outside the EU.

- In the United States, the National Research Council expects labor shortages to leave unfilled 890,000 high-tech jobs out of 1.6 million this year and expects similar imbalances to continue for at least several years.

Migration also could reduce strains on social systems in both aging and youth bulge countries:

- Assuming current trends continue, migrants who choose to remain in host countries with aging populations will help to slightly boost government revenues. Immigrants currently pay $153 billion in taxes in the EU, according to a private economic institute, a small fraction of EU members' annual revenue intake.

- Emigration will help relieve the social and political pressures associated with large populations of unemployed and restless youth.

- Hard currency holdings of some developing countries may increase as workers migrating from youth bulge to aging countries send hard currency earnings to family and friends in their home countries.

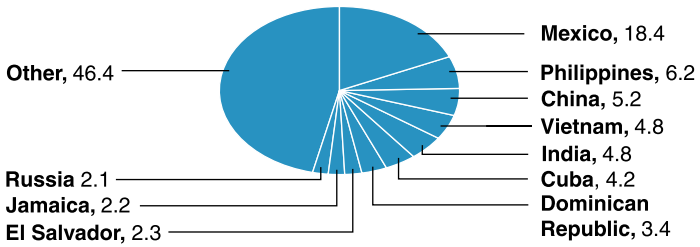
- Remittances have in the past provided a major source of foreign exchange for some governments—including India and Pakistan, among others.

Factors that will increase global migration over the next 20 years include:

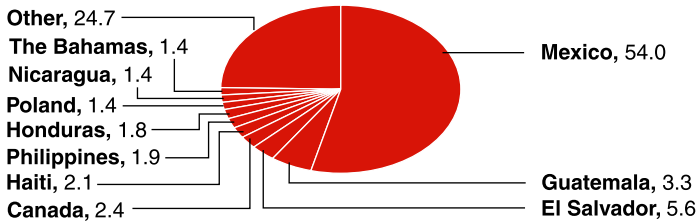
- Economic reform, globalization, and democratization.
- A growth in income differences between wealthy and poor countries resulting from the mixed adoption of new economy reforms.
- Illegal migration, increasingly facilitated by crime syndicates and corrupt officials, which is projected to exceed legal migration.

**Figure 16**
**Migration Movements: Key Trends Through 2020**
Migrants will move mainly from developing to developed countries over the next 10 to 20 years

**Sources of Legal Immigrants, 1997** (Percent)

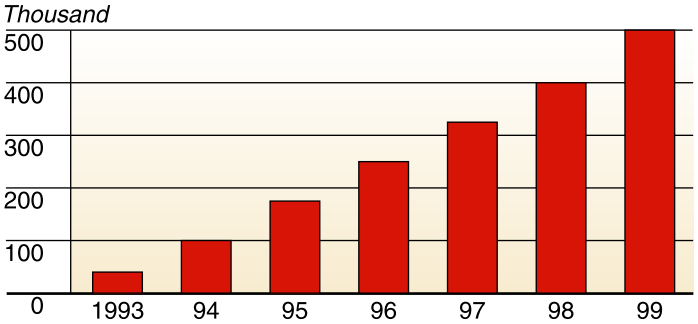



**Sources of Illegal Immigrants, 1997** (Percent)




Source: US Immigration and Naturalization Service, 1997, 1998.

**Illegal Migration Into the EU, 1993-99**




Sources: International Center for Migration Policy Development; *The Economist* estimates.

| Immigrants from: | Will go mainly to: |
|---|---|
| Latin America, Asia | United States, Canada |
| North Africa, Middle East, Asia, and post-Communist states of Eastern Europe and Eurasia | Western Europe |
| Least developed former Communist countries | Most developed former Communist countries |

## Why Will Migration Increase?

A variety of factors will boost global migration through 2020, making even the most homogenous states more diverse:

- Increased privatization and foreign investment, trade liberalization, and enhanced communications will encourage more people to migrate globally.

- Democratization in many developing countries will loosen state control over migration, while the ease of travel and communication will facilitate cross-border movement.

- Immigration laws in receiving countries that give priority to family reunification and the growth of powerful ethnic communities in those countries will boost pressure to increase immigration of certain ethnic groups.

- In Russia and other states of the former Soviet Union (FSU), weak immigration control regimes, fitful economic development, ethnic conflict, and discrimination against minorities will increase migration pressures that already have produced over 10 million migrants since the FSU's breakup, 6 million of them Russians.

The uneven spread of the new economy and increased income gaps between the haves and the have nots, are likely to increase the number of migrants moving to the United States and Europe:

- According to a recent CIA study, the spread of market liberalization and institutional reforms that are crucial for countries to successfully exploit new technologies will be highly uneven, resulting in growing income differences.

- The historical record shows that migration generated from economic pull factors—in which individuals seek better economic opportunities in other countries—is the most common form of "voluntary" migration. We have no reason to suspect that this type of migration—examples of which include the movement of Turkish guest workers to Germany in the late 1970s and the 1980s and the movement of Mexican migrants into the southwest United States in recent years—will not remain strong. High fertility can contribute to these movements, especially if the home country's economy is incapable of providing employment for the masses of youth entering the work force.

Illegal migration, which international criminal alien-smuggling syndicates and corrupt officials increasingly facilitate, is set to approach or exceed legal migration:

- Illegal immigrants in the past comprised some 20 percent of total immigrants, but a number of indicators suggest they amount to well over 50 percent or more of new entrants in many of the more recent immigrant-receiving countries, such as those in southern Europe.

- Some 4 million would-be immigrants on the eastern and southern periphery of the EU are poised to emigrate—mostly illegally—as their finances and opportunities permit.

- Toughened acceptance criteria for asylum seekers prompt more immigrants to move illegally.

# Migration Offers Partial Remedy

- Forced migration—resulting from military conflict, economic crises, natural disasters, or similar catalysts—will remain a critical issue.
- Large-scale migrations can quickly alter ethnic balances, causing instability.

**Causes of Voluntary Migration**

***Outward Movement***
- Labor migrants
- Professional migrants
- Traders
- Tourists

***Return Movement***
- Returning migrants and refugees
- Voluntary repatriates
- Voluntary returnees

**Migration: Quick Facts**

- The number of countries that both send and receive migrants has more than quadrupled since 1970.
- The number of major sending and receiving countries has more than doubled.
- More than one person in 40 is an immigrant dispersed over a growing number of countries.
- Border patrols apprehend 1.5 million illegal immigrants at the US-Mexican border annually.

**Latin America: A Growing Immigration Issue for the United States**

Civil instability or economic deterioration in a number of Latin American countries could boost immigration to the United States in a number of ways:

- The continuing deterioration of the political, human rights, and economic situation in Haiti could lead to a repeat of the immigration crises of the first half of the 1990s.
- The escalating civil conflict in Colombia that has displaced nearly 1 million people already has produced a near doubling of visa applications over the past year. Illegal migration is on the rise and will surge as the conflict intensifies.
- Almost any scenario involving a change of government in Cuba will have the potential for generating substantial migration—during its early phases.
- Another economic crisis in Mexico, the largest source of migrants to the United States, would lead to a surge of legal and illegal immigration to the United States.
- The United States will remain vulnerable to explicit or implicit threats by foreign governments such as Cuba and Haiti to use mass emigration as leverage in bilateral relations or to reduce political pressures arising from domestic policy failures.

Forced or mass migration—often resulting from military conflict, or sudden or prolonged economic crises or natural disasters—will be among the most difficult demographic trends for governments to prepare for and deal with because it often comes unexpectedly:

- Economic emergencies such as the debt and energy crises of the 1970s and 1980s and the currency crises of the 1990s resulted in stepped-up migration to developed countries. In Asia, the 1997-98 financial crisis prompted Malaysia, Thailand, and South Korea to expel substantial numbers of foreign workers.

- The movement of Bangladeshi refugees into the Indian state of Assam is another example of uncontrolled immigrant flow. Population growth in Bangladesh is overtaking the availability of agricultural land.

Governments and political groups use forced migration for a variety of reasons, many of which challenge both host and home governments. Governments induce such flows to preserve homogeneity, to remove politically troublesome groups from the body politic, and to exert pressure on neighboring states:

- The Vietnamese Government in the late 1970s expelled large numbers of ethnic Chinese in an effort to preserve the cultural homogeneity of Vietnam.

- Iraq forcibly expelled Kurds in 1991 to eliminate what it saw as political troublesome elements in the country.

- Fidel Castro used the 1980 Mariel boatlift as a political tool against the United States by sending thousands of Cuban criminals to US soil.

For host nations, large, unexpected populations of refugees burden infrastructure and natural resources, causing economic hardship and accelerated rate of resource usage and sometimes political upheaval:

- If a refugee group moves into a region that is sparsely populated, host government concerns could rise that the migrants may wish someday to colonize the affected region and perhaps have it rejoin its home state. Some Russian elites see the current movement of Chinese migrant laborers into the Russian Far East as posing this kind of threat.

- In 1989, the mass migration of East Germans into West Germany through the suddenly open Austro-Hungarian border was the catalyst behind the collapse of the German Democratic Republic and the unification of Germany.

- In 1991, the flow of Kurdish refugees into Turkey as a result of an abortive post–Desert Storm Kurdish uprising against Saddam Husayn led to NATO military intervention in northern Iraq (with UN blessing) to establish a safety zone for the Iraqi Kurds.

# Migration Offers Partial Remedy

- We nevertheless see several downsides to migration:
  - A slower growing ethnic group may face a closing "window of opportunity" in which the demographic dominance of a rival group will leave it few options for claiming certain lands or political privileges.
  - Migrant flows also affect the ethnic composition of host nations, often with destabilizing results.

If central authority is weak in states with ethnically intermixed settlement patterns and one ethnic group has a faster growing population than another, members of the latter group face a closing "window of opportunity" in which the demographic dominance of the rival group will leave them few options for claiming certain lands or political privileges:

- This kind of demographic impact may have been one of the secondary causes of the ethnic strife that has plagued the former Yugoslavia during the past decade.

- From the late 1960s through the 1980s, Muslim population growth rates in Bosnia outstripped those of Serbs. Over time the increasing Muslim proportion of the total Bosnian population translated into greater Muslim political, economic, and cultural clout at the expense of the previously dominant Serbs.

- Between 1948 and 1981, the Albanian proportion of the total Kosovo population rose from 69 percent to 77 percent. As federal Yugoslavia began to show signs of strain in the late 1980s, Serbs in Kosovo began to agitate more actively for Belgrade to offer them greater rights and protections in the face of growing Albanian control of the Kosovo regional administrative bureaucracy. This was the key issue that Slobodan Milosevic used to take power in Serbia in the late 1980s.

Bosnia and Kosovo are not by any means isolated examples of the dangers of demographic shifts in ethnically mixed environments. The history of conflict in Lebanon and Northern Ireland supports this issue as well. The Lebanese civil war of 1975-90 began when Shiite Muslim population growth threatened Maronite Christian control over Lebanon's national political institutions. Northern Ireland's trouble between Protestants and Catholics began in the early 1970s, just as demographic trends in the province were swinging in favor of the Catholic minority.

**Could Immigration Change the Social Structure of Host Nations?**

Migrant flows could rapidly change the ethnic composition of affected areas, often with unstable results. Immigrants are typically young and tend to bring with them family practices of their native culture—including higher fertility rates:

- For example, in Germany, foreigners will make up 30 percent of the total population by 2030 and over half of the population of major cities like Munich and Frankfurt.

- Foreign-born residents now comprise nearly 11 percent of the US population, up from 6 percent in 1980, with immigration into the United States expected to climb steadily over the next 15 years. Hispanics, who represent the largest single group of immigrants in the United States, have on average about 2.95 children during their lifetime (total fertility rate), compared to 1.84 and 2.24 for white American women and African-American women, respectively.

- Non-Russian ethnic groups represent a small percentage of the overall Russian population, but their higher fertility rates, especially when combined with ethnic outmigration from some non-Russian regions, will create substantial non-Russian majorities in a number of regions, especially the North Caucasus, with potentially important political consequences. A critical outcome might be a greater fear in Moscow about indigenous Islamic fundamentalism and solidarity with external Islamic terrorists.

- Developed countries will need record levels of immigrants to support their retirees:
  - Immigration to Germany would have to far exceed the 1 million immigrants in 1990 that resulted from unification.
- Strong public resistance to immigration—especially in Germany and Japan—will fuel political controversy:
  - Japan will face the greatest political hurdles because of its traditional emphasis on ethnic and cultural homogeneity.
- Sending countries will resent the flow of high-skilled workers to wealthier countries.

**Table 7**
**Number of Migrants Needed To Keep Aging Dependency Ratios From Rising Above 1995 Levels (1998-99 estimates)**

(Thousands)

| | 1998-99 | 1995-2000 | 2001-05 | 2005-10 | 2010-15 |
|---|---|---|---|---|---|
| **European Union** | n/a | 5,302 | 6,171 | 5,095 | 9,012 |
| **United States** | 760 | 37 | -13 | 3,620 | 10,741 |
| **France** | n/a | 842 | 333 | 219 | 1,934 |
| **Germany** | 170 | 1,398 | 3,251 | 1879 | 806 |
| **Japan** | n/a | 5,990 | 5,674 | 6,224 | 7,831 |

## Migration Presents a Myriad of Challenges

Despite its benefits and probable increase, global migration will present several challenges to both sending and receiving governments. The number of immigrants many countries would need to support retirees through 2050 would substantially exceed immigration levels of the past decade:

- According to UN figures, if Germany and Japan were to use migration alone to ensure that the number of retirees each young worker would have to support did not increase above 1995 levels, they would have to boost immigration to record levels through 2050. In the case of Germany, immigration would far exceed the 1 million in 1990 that resulted from unification.

- Migration also would have to increase in the United States and the United Kingdom, although to a lesser extent than in Germany and Japan. The US and UK would face the greatest demand for immigrants in 2010-15 while Germany and Japan's immigrant population would have to be highest from 2030 to 2050.

Governments with aging populations will have difficulty balancing the need for new immigrants with domestic political resistance to greater inflows of foreign citizens:

- Increased immigration to Europe, Asia, and the United States will initially strain their social services, and in the case of Germany fuel anti-immigrant violence. These populations will burden the infrastructure and resources of the host nation.

- Japan will have the greatest demand for immigrants but will face among the greatest political hurdles to increasing immigration because of its traditional emphasis on ethnic and cultural homogeneity. Government attempts to increase migration will almost certainly result in strong opposition from some political leaders, businesses, and workers.

- If political pressures lead Japan—and West European countries to a lesser extent—to put off substantially liberalizing their immigration policies, it would place them at a competitive disadvantage vis-a-vis the United States. This will exacerbate the increasing military, technical, and economic imbalances among the advanced economies.

- It also will skew the "guns versus butter" debate in these countries toward maintaining social expenditures at the expense of defense spending and limit the size of military recruitment pools, both of which could weaken the alliance.

Governments in sending countries also are likely to face political opposition to excessive emigration to the developed world. For many developing countries, emigration will drain them of their already small pools of highly educated elites, making it more difficult for these countries to generate higher growth and "catch up" to the developed world:

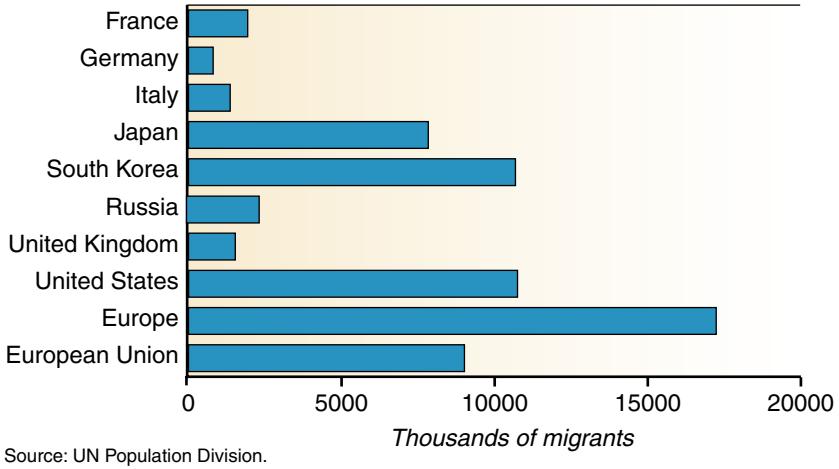
- An estimated 1.5 million skilled expatriates from developing countries currently work in Western Europe, the United States, Australia, and Japan. More than 500,000 students from developing countries are studying overseas, roughly two-thirds of whom do not return.

- Countries in Sub-Saharan Africa will be among the hardest hit. The region already has lost some 20,000 professionals annually over the last decade, including a total of some 30,000 Ph.D.s, according to the 1999 UN Human Development Report.

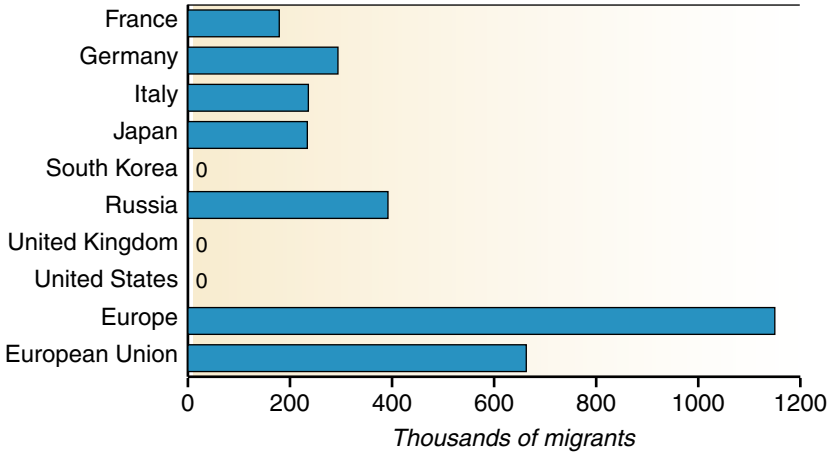
- Immigrants will increasingly seek to effect change and spark debate over host countries' foreign policies.
- Immigrant communities will take advantage of growing global communication networks to rally their geographically dispersed countrymen.
- The sudden upsurge in strength of the Kosovo Liberation Army (KLA) during the summer of 1998 may have been partially due to fundraising efforts by the Albanian diaspora in the West.

**Figure 17**
**Net Number of Migrants To Maintain Size of Population**

2010-15: Annual average net migration required to maintain the potential support ratio, i.e., ratio of working-age population (15-64) to the old-age population (65+) at the highest level it would reach in the absence of migration after 1995.




2010-15: Annual average net number of migrants needed to maintain the size of the total population at the highest level it would reach in the absence of migration after 1995.




Source: UN Population Division.

The immigrants who do move to more developed countries increasingly will seek to effect change and spark new, potentially contentious debate over host countries' foreign policies:

- The growing information links available through robust information, communications, and mass media links, including the Internet, international TV news networks, and global banking nets, are giving activist elements within immigrant communities more rapid and visible means of calling attention to issues of interest in their home countries.

- Immigrant communities can mount international public relations campaigns to demonize opponents of their home state and raise funds for the purchase or transfer of arms. Conversely, immigrants can exert pressure on host governments to turn against the enemies of their home state.

This will add to the already strong influence of many diasporas, examples of which include the following:

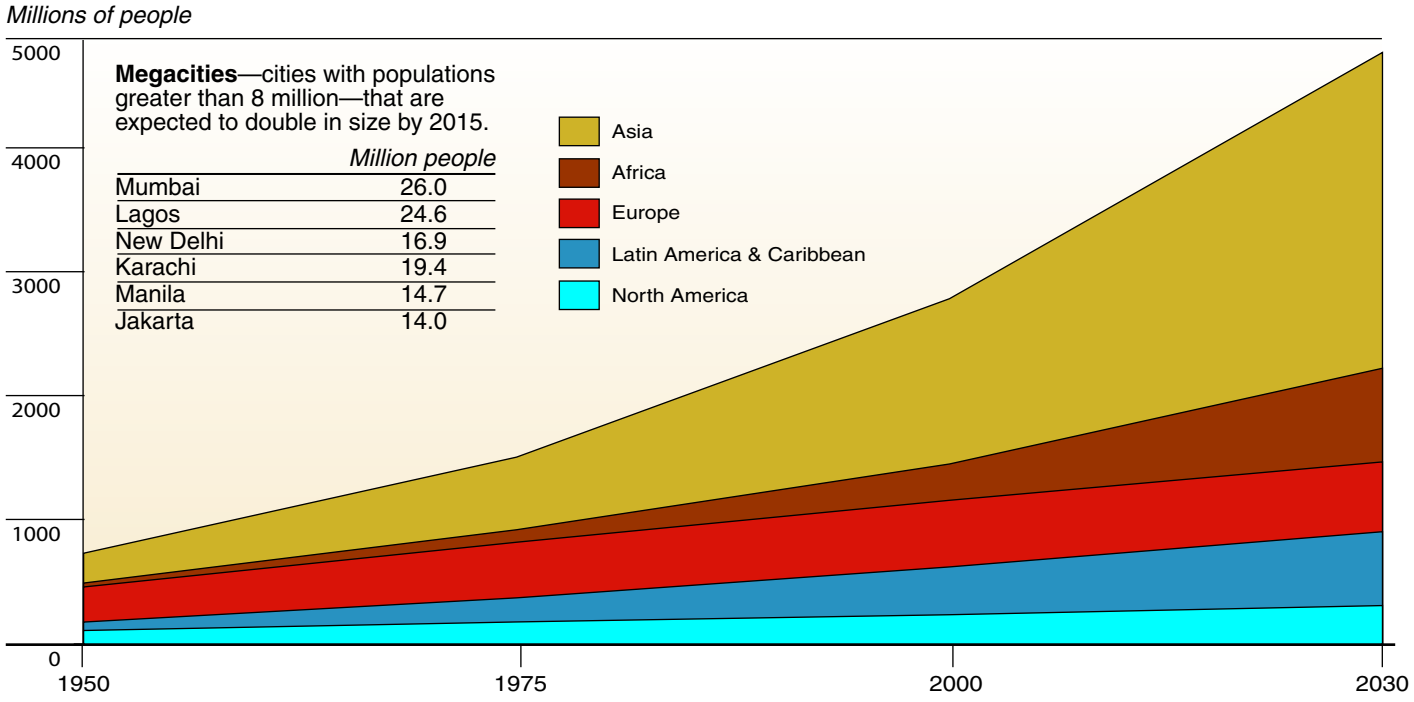
- The sudden upsurge in strength of the KLA during the summer of 1998 at the expense of more compromise-oriented Kosovo elites may have been at least partially due to fundraising efforts by the Albanian diaspora in the West.

- Armenian emigres in the United States have been working hard in the past two years to compel the US Government to halt both its diplomatic overtures to the governments of Azerbaijan and its efforts to help US oil companies secure exploration and drilling contracts in that petroleum-rich Caucasus state.

- The Tamil diaspora in Canada and Western Europe has been active in funneling financial support to the Tamil insurgents fighting Sinhalese government forces in Sri Lanka.

- For the first time in human history, in 2015 the majority of people will reside in urban centers.
- Urban growth will be particularly rapid in developing countries, especially in Asia.

**Figure 18**
**Urban Population by Region**



## Global Urbanization: A Historic First

For the first time in human history, the majority of people will soon (2015) reside in urban centers. Urbanization, like the youth bulge, is occurring primarily in developing countries that lack the economic, social, and physical infrastructure to foster supportive sustainable environments:

- According to UN projections, nearly two-thirds of the developing world will live in cities by 2025. At least six cities will increase population at rates fast enough to double in just 20 years.
- Many cities in rapidly urbanizing regions will experience population growth rates of 2.3 percent per year, as compared to the world average of 1.8 percent for urban areas and about 1 percent for the total world population between 2000 and 2030.
- There may be 33 megacities—cities with populations of more than 8 million—by 2005, and 27 of those will be in developing countries.
- Mega-urban regions—sometimes referred to as extended metropolitan regions (EMRs)—take advantage of lower transportation and communication costs, proximity of in situ labor, and technology parks to link surrounding areas to urban environments that may reach 80 million.

### Reasons for Rapid Urbanization

This increase in urbanization is being driven by many factors:

- Greater access to information and the attendant resurgence of urban centers as economic growth leaders.
- Rural devastation or gradual loss of economic vitality in rural areas.
- Inherent high birth rates combined with lower infant mortality.
- Government- or conflict-generated migration.

***"Push" Migration.*** This may occur because of rural poverty, unavailability or marginal productivity of rural land, and/or hostile rural environments. The urban center may or may not be experiencing economic growth that can sustain the influx of people. Rural poverty in regions of Africa and Asia will drive 40 to 60 percent of urban growth in those areas. In addition, nearly 75 percent of urban employment in Africa is in the informal sector (production and exchange outside the formal job market).

Cultural anthropologists argue that rural to urban migration breaks down religious, family, and social structures, often making it difficult to reinforce positive behaviors among youth and thereby contributing to violence and in some cases ideological extremism. In African cities the communal existence of villages no longer holds, so young men in particular slip gradually into crime. City life threatens family values in the Middle East, often leading to enhanced support for religions like Islam, which promises to resolve societal problems.

***"Pull" Migration.*** Rural residents seek to equalize incomes and quality of life with urban dwellers, many of whom are viewed as better off than their rural counterparts. If an urban area is a primary engine for GDP or a major contributor to the wealth of a region, it may have the economic growth and resources to handle the influx of people:

- As many as 130 million farmers have relocated to urban areas since the early 1980s, drawn by the prospect of higher wages and better lifestyles—often earning in a month their yearly income on the farm.
- The World Bank estimates that 80 percent of future economic growth will occur in urban areas. This offers the possibility of higher incomes and literacy and improved health and quality of life.

- Immigration is a driving force for urbanization.
- Immigrants looking for employment tend to have higher birth rates than host country populations.
- Developing nation megacities have such high population bases that even modest birth rates create alarming increases in population.

***Immigration.*** Countries are loosening regulations to encourage foreign immigration for specific skill sets that they need in light of aging trends or new economy developments. Most of these immigrants settle, at least initially, in urban areas:

- Ireland has relied heavily on immigration to fuel its new economy boom in recent years, but that movement is overcrowding the cities, causing, among other things, urban real estate prices to skyrocket.

- In the fall of 2000, Washington enacted legislation to increase the cap of work visas for foreigners from 107,500 people to 195,000 people.

- Germany (previously one of the most rigid countries in Europe on immigration) is offering special visas for 20,000 foreign-born information technology specialists over the next three years.

***High Population Growth.*** Although birth rates are slowing worldwide, many developing nation megacities have such high population bases that even modest birth rates create alarming increases in total population. Moreover, immigrants, who tend to gravitate toward urban areas because of employment opportunities, generally have higher birth rates than their host country populations:

- Even though population growth rates have fallen throughout much of Asia, past high rates have created an age structure that has a high probability for migration to cities and an urban age-sex structure conducive to population growth.

***Reclassification of Urban Areas.*** EMRs have emerged as de facto cities from the incorporation of high-density rural and industrial development on the periphery of cities. These areas are often called "high-tech corridors" in developed countries, and their rise is particularly disruptive to rapid growth areas of Asia:

- Improved transportation and communications, the ability to decentralize services and manufacturing, and the quest by local governments for revenue have created mega-urban regions.

- Examples include the Tokyo-Nagoya-Kyoto-Osaka development corridor with 43 million people and the Shanghai-Nanjing-Wuxi-Hangzhou-Suzhou area with 76 million people.

**Smaller Cities, Bigger Problems**

While there is great concern over the rapid growth of megacities, a greater danger lies in the excessive growth among cities of 1 million to 5 million people. These cities have nascent infrastructures, largely informal economies that provide few social benefits, and local regulatory bodies that are ill-prepared for the demands of urban planning. Urban populations of LDCs, with the same number of people, will experience a 2.7-percent increase as opposed to 2.2 percent for cities of 5 million inhabitants or more.

- Megacities typically grow faster than local governments can plan.
- More than 1.1 billion people live in urban areas where pollution exceeds healthy levels, 220 million lack access to clean drinking water, and 420 million lack access to the simplest latrines.
- High population density, uneven income distribution, and mismanagement of social services, all prevalent in megacities, are breeding grounds for disease and social upheaval.

These exceptional rates of unplanned growth are responsible for severe resource depletion, environmental degradation, lessened quality of life, crime, and political or social conflict. Successful resolution of these issues is often hampered by conflicting political agendas, ethnic tensions, or extreme social disparities:

- Countries face a typical dilemma of needing foreign investment to employ their citizens, but they are unable to attract foreign investment because their unemployed youth are fomenting dissent and creating unstable environments. Moreover, governments end up spending money on bigger security services that could be spent on creating more jobs.

- In the past 40 years, prime agricultural land in the Beijing-Tianjin-Tangshan area has decreased by 55 percent because of urban sprawl and industrial conversion.

- More than 1.1 billion people (more than one-sixth of world population) live in urban areas where air pollution exceeds healthy levels, while 220 million urban poor lack access to clean drinking water and 420 million lack access to the simplest latrines.

- Diarrheal diseases have killed more than 3 million children in a single year.

- Surveys conducted of residents in newly developing towns in Kenya showed competition for employment, high population density, government mismanagement, and poor urban survival mechanisms to be the leading reasons for excessive rates of urban violence.

Cities in developing countries in both the first tier (megacities of more than 8 million people) and the second tier (urban centers exceeding 1 million people) are increasing faster than local governments can plan, implement, and finance healthy living conditions. New arrivals are forced to live in slums without water or sanitation on the periphery of established cities. Illegal wells are removing ground water and causing substantial subsidence, while unhealthy disposal systems contaminate the remaining drinking water. This, combined with density and medieval living conditions, creates a breeding ground for plagues both old and new. It also increases the vulnerability of these large populations to natural or manmade disasters:

- The outbreak of pneumonic plague in India in 1993 was initiated by an earthquake, which caused a migration of infected rats into densely populated urban areas. Some 855 people died when the infection was carried to New Delhi and Mumbai by air travel.

- The 1984 Union Carbide accident in Bhopal, India, caused nearly 3,000 deaths, primarily in shantytowns near the chemical factory.

- Rapid urban growth and the need for water in Mexico City has accelerated ground subsidence. Parts of the city have sunk 25 feet, while subsidence in Jakarta has allowed sea water to contaminate wells 11 kilometers into central Jakarta.

- Urbanization—particularly squatter settlements—in Turkey and India and in Latin America and other developing regions, for example, often occurs on land highly vulnerable to earthquakes, flooding, and mud slides.

- Urban conflict could occur at any time and for any reason.
- Environmental or health disasters, economic crisis, or longstanding ethnic, religious, or communal/cultural tensions are common causes.

**Table 8**
**Cities With Major Incidents of Social Violence Since 1989**

| Civil/Internal War or Urban Terrorism | | | Riots or Street Protests | External Warfare |
|---|---|---|---|---|
| Baku | Beijing | Bogota | Belgrade | Baghdad |
| Buenos Aires | Cairo | Colombo | Mumbai | Belgrade |
| Kabul | Karachi | Kinshasa | Kolkata (Calcutta) | Groznyy |
| Lahore | Lima | London | Dhaka | |
| Madrid | Manchester | Mogadishu | Jakarta | |
| Monrovia | Moscow | New York | Lagos | |
| Oklahoma City | Paris | Phnom Penh | Los Angeles | |
| Port au Prince | T'bilisi | Tokyo | Rangoon | |

Source: UN Population Division, demographic indicators 1950-2020 (the 1998 revision)

Urban centers provide efficiency by colocating labor, capital, materials, and markets. Cities have long provided exceptional opportunities for entrepreneurship, creativity, and wealth generation. These benefits are accentuated in developing world megacities, which are often a focal point for participation in the global economy and the country's greatest concentration of productive infrastructure and human capital:

- In 1990 the Tokyo urban area produced 36 percent of Japan's GDP, while Bangkok's share was 37 percent of Thailand's GDP. Urban areas, in general, contributed between 30 and 80 percent of national GDPs throughout Asia during the late 1980s (excluding Hong Kong and Singapore).

The overdependency of national economies on specific urban centers that are globally influenced yet locally controlled creates vulnerabilities that can affect a nation and a region. Within these rapidly growing urban areas are wide income disparities that may promote jealousy, animosity, and, ultimately, conflict between urban poor and elites.

Moreover, conflict in these cities could occur for many reasons: an environmental or health disaster, an economic crisis, rising unemployment, accumulated disenfranchising of the populace, or longstanding ethnic, religious, or communal/cultural tensions. Urban conflict is hard to control because of the density of the urban environment and the inability to quickly alleviate the conditions that originally sparked the conflict. Insurgents often employ experienced rural guerrillas and dissatisfied urban youth to leverage the asymmetric advantages in cities of dense neighborhoods, innocent civilians, and international media coverage to accomplish changes in policy or government that otherwise might not occur without months or years of conflict. Protracted violence would certainly disrupt a city's economic activity, with the attendant effects on the region and trade partners:

**Ingenuity: Why Some Urban Areas Prosper and Others Fail[a]**

According to social adaptation theory, as societal conditions worsen some countries will face a widening gap between their need and ability to generate innovative ideas (in the form of new and reformed institutions) to solve social and technical problems. Scarcity often causes intense rivalries among interest groups and elite factions that impede the development and delivery of institutional solutions for resource problems. There is a "threshold of wastefulness," beyond subsistence existence, that provides latitude for experimentation. A society with a serious ingenuity gap will face declining social well-being and civil turmoil. Countries with the lowest levels of ingenuity are those with the highest social friction, the lowest capital availability, limited access to modern education and business practices, and constraints on science. An adequate supply of ingenuity is necessary for social satisfaction and social solutions.

[a]Adapted from Thomas Homer-Dixon's *The Ingenuity Gap: Can Poor Countries Adapt to Resource Scarcity*.

- Lagos has a long history of religious, ethnic, and cultural disputes that often erupt into citywide violence from neighborhood confrontations or protests. In October 2000, at least 100 people died in several days of street violence.

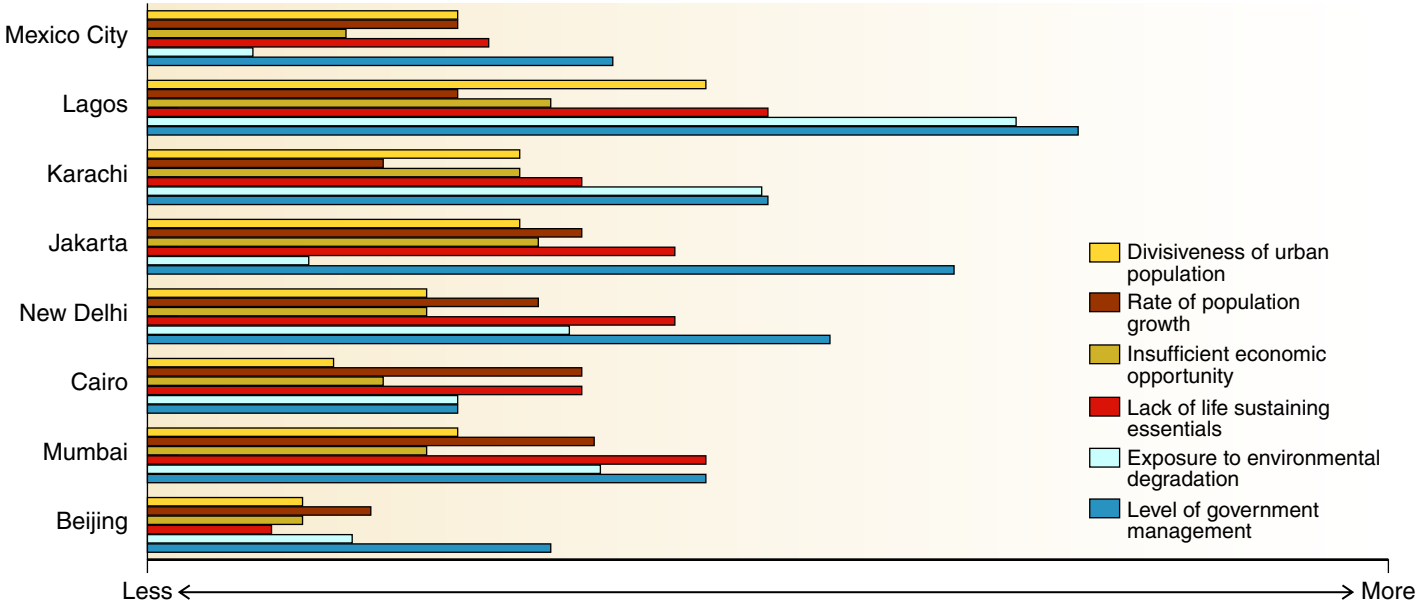
- Urban insurgency in Africa concentrates on resources or seats of power such as Huambo, Uige, Menongue, Kuito, or Monrovia to quickly establish control.

- The 1992 destruction of the Babri Masjid Mosque sparked violence across India; 95 percent of the 1,500 deaths were in urban areas.

- Which urban areas will successfully utilize increases in population?
- And which will degenerate into areas of humanitarian crisis and conflict?

**Figure 19**
**The Urban Century Arrives**

**Potential for Urban Crisis**



We developed a matrix on the "potential for urban crisis" to evaluate key urban areas using the following characteristics that, we believe, release a populace's potential for sustainable development or destruction.

**Divisiveness of Urban Population:** Income inequality and ethnic or religious stresses are important ingredients in urban division. Disparate and excessive segmentation prohibits the general populace from achieving a "critical mass" to organize and influence. Moreover, if a culture encourages selfish individual or group behavior, it will manifest greater social friction. For example, Filipino culture encourages cooperation within rather than among groups, which isolates them from each other (clannishness) and undermines national welfare. Friction may be particularly strong if narrow coalitions have penetrated the state and limited society's ability to reform. For example, Indian democracy encourages narrow coalitions, yet India does not have strong political parties to mediate between these coalitions and the state. The rating is based on heterogeneity of income, ethnicity, and religion, where low heterogeneity scores relatively higher on our qualitative matrix.

**Rate of Population Growth:** High population growth in an already densely populated area creates tension. We used UN statistics for the rate of growth projected between 1995 and 2015, which are more conservative than some regional estimates.

**Insufficient Economic Opportunity:** Less opportunity, particularly when combined with rising expectations (in areas like the Middle East and India where there are a growing number of well-educated, unemployed youth) leads to unemployed people who are prime fodder for groups wanting to foment dissent. This is a qualitative measurement of the ability or inability of individuals to improve their lifestyles, relative to a previous rural or urban existence. It is based on a matrix of rate of growth, cost of housing relative to income, government education expenditures per capita, and unemployment or poverty line estimates where available.

**Lack of Life-Sustaining Essentials:** People without basic life sustenance feel disconnected from their communities, leading them to lash out at their neighbors or government. This is a cumulative valuation of the percentage of urban societies without potable water, sewage system access, or solid waste removal. These three essentials have repercussions on human capital improvement, longevity, and mortality, and, therefore, economic viability.

**Exposure to Environmental Degradation:** High levels of pollution have the same effect as a lack of life-sustaining essentials, and there is typically a correlation between the two that indicates a low commitment to social welfare. This is a cumulative valuation of the percentage of urban populations exposed to harmful levels of water and air pollution, land loss due to encroachment or subsidence, or disease.

**Level of Government Management:** The state plays a central role in establishing the institutions necessary to manage the urban environment, which is critical to maintaining social order. This is a relative measurement of the inability of urban governments to address, manage, and fund their growth rates. Local government participation rates and program fulfillment are good indicators of successful management. While it would seem at first glance that a lack of life-sustaining essentials represents government mismanagement, other variables such as available funds or resources constrain local governments.

Lagos stands out as a city particularly vulnerable to crisis:

- Its population is rising so rapidly that by 2005 it will be one of the five largest cities in the world.
- The basics of adequate shelter, sanitation, and water are lacking for the majority of the populace.
- Religious and ethnic conflicts are fed by high numbers of young people who lack economic opportunities.
- Twenty different councils are attempting to govern the city.

Lagos had the highest score on our potential for urban crisis matrix. The accumulation of its stresses places it in a volatile and dangerous situation.

By 2005, Lagos will be one of the five largest cities in the world:

- It is already the most populous city in Africa with nearly 13 million people.
- Since the early 1970s, after the civil war, massive migration to the city and large numbers of foreign refugees and migrants have pushed annual growth rates as high as 8 percent.

As a result the city will continue to be incredibly dense in certain areas, up to 200,000 people per square kilometer.

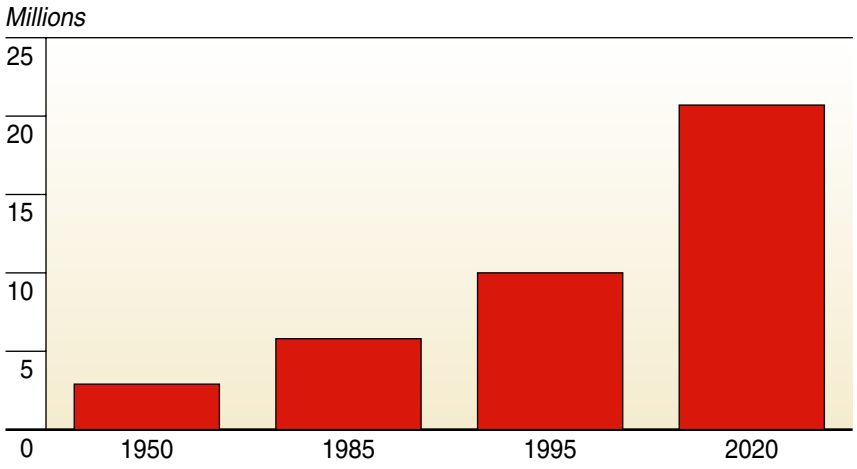
The basics of adequate shelter, sanitation, and water are lacking for the majority of the populace:

- In 1995, it was estimated that only 80,000 consumers out of 10 million residents had direct connection to potable water.
- Sewage is disposed of via open ditches and rainwater, when available, to tidal flats.
- Nigeria possesses over 250 ethnic groups, and Lagos is a microcosm of these dynamics. Lagos regularly experiences religious and ethnic clashes.
- Lagos State is considered a Nigerian "HIV hotspot." It is probable that HIV prevalence rates range between 8 and 21 percent of the population, with the highest concentrations among the 15 to 49 age group.

Religious and ethnic tensions are fed because large numbers of young people lack economic opportunities:

- There are strong divisions between Sunni and Shia Muslims and Christians, and indigenous ethnic groups.
- These religious and ethnic conflicts are fueled by high rates of unemployment, inadequate water and sewage systems, and continued high growth rates.
- Twenty different councils are attempting to govern Lagos at a vulnerable time when the country is transitioning to democracy.

**Figure 20**
**Population Growth in Lagos**



- Shanghai, on the other hand, is a good example of a city that has passed through a difficult period in urban development and now seems to be managing well.
- That said, vulnerabilities associated with integrating new labor into the city's population to support its rising elderly population remain.

Shanghai is one of the largest cities in the world but will move down in rank because of low birth rates and a rapidly aging society. It passed through the difficult high population growth period of the 1950s to emerge as a world trade center with quality of life statistics equal to those of many Western cities. With the exception of informal settlements, almost every house has access to piped water and electricity. A high percentage of waste is collected, sorted, and recycled via authorized programs. The human capital of Shanghai is among the most skilled in China, and the government ranks highly with foreign investors for ease of setting up and running operations. In general the populace enjoys a high standard of living, including amenities, health care, and education.

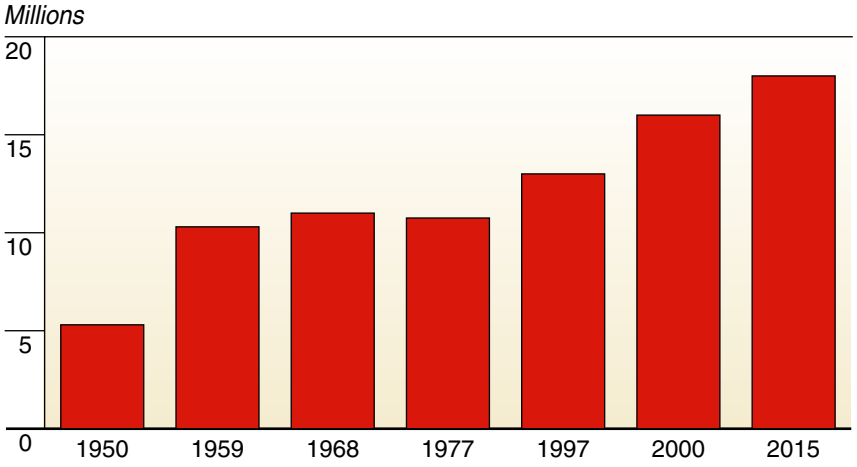
Shanghai's ability to integrate new labor to support its rising elderly population is a concern:

- The combination of improved living conditions and birth mitigation programs have created a life expectancy of 77 and a large bubble of elderly without a younger generation to provide social support. Currently, the population above 65 is about 12 percent.

- The large floating population that is required to maintain economic viability is largely employed in the informal sector—from which tax revenue is difficult to collect—and housed in slums that do not share in the wealth.

The government will also have to keep track of the large economic disparity between the 500,000 to 1 million new immigrants each year and the existing population, which is fertile ground for discontent. The new workers want to share benefits not warranted by their informal standing in the work force, while the elderly want to prolong their social benefits. At the very least, the potential for disagreement exists between these two groups regarding issues of concern for the local government.

**Figure 21**
**Population Growth in Shanghai**



- The infectious disease burden will exacerbate demographic problems in the developing world.
- In the developed world, lifestyle-induced diseases are rising, a major factor in health-care costs for the elderly.

## Health and Environmental Aftershocks

Health issues, particularly those caused by the spread of infectious diseases, are likely to be key factors affecting population trends. Infectious diseases are a leading cause of death, accounting for a quarter to a third of the estimated 54 million deaths worldwide in 1998. Of the seven biggest killers worldwide, tuberculosis, malaria, hepatitis, and, in particular, HIV/AIDS continue to surge, with HIV/AIDS and TB likely to account for the overwhelming majority of deaths from infectious disease in developing countries by 2020. The spread of infectious diseases results from changes in human behavior—including lifestyles and land use patterns, increased trade and travel, and inappropriate use of antibiotic drugs—as well as from mutations and pathogens. These diseases are likely to aggravate and, in some cases, may even provoke economic decay, social fragmentation, and political destabilization in the hardest hit countries in the developing world whose health systems are ill-prepared to deal with them.

While infectious disease rates have dropped in industrialized countries, lifestyle-induced diseases are on the rise, a major contributing factor in the number of elderly requiring costly long-term care. The following are likely to be key health threats around the world:

- **Sub-Saharan Africa**—accounting for nearly half of infectious disease death globally—will remain the most vulnerable region. The death rates for many diseases, including HIV/AIDS and malaria, exceed those in all other regions. Sub-Saharan Africa's health-care capacity—the poorest in the world—will continue to lag.

- **Asia and the Pacific**, where multidrug resistant TB, malaria, and cholera are rampant, is likely to witness a dramatic increase in infectious disease deaths, largely driven by the spread of HIV/AIDS in South and Southeast Asia and its likely spread to East Asia.

- **The FSU** and to a lesser extent Eastern Europe are also likely to see a substantial increase in infectious disease incidence and death. In the FSU especially, the steep deterioration in health care and other services owing to economic decline has led to a sharp rise in diphtheria, dysentery, cholera, and hepatitis B and C. TB has reached epidemic proportions throughout the FSU, while the HIV-infected population in Russia alone could exceed 2 million by the end of 2002.

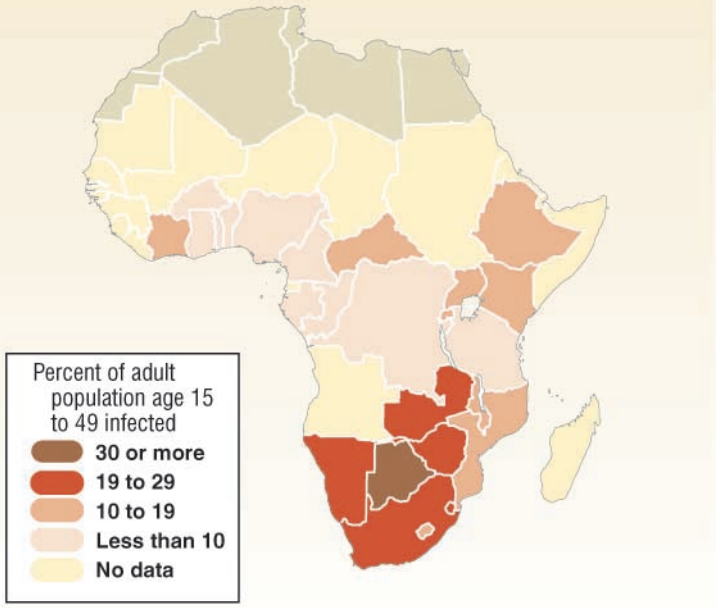
- **Latin American countries** generally are making progress in infectious disease control, including the eradication of polio, but uneven economic development has contributed to widespread resurgence of cholera, malaria, TB, and dengue. Brazil has a model HIV/AIDS program that dispenses free antiretroviral therapy to all who need it, but this strategy is based on bending or breaking the rules of intellectual property rights on Western pharmaceuticals, leading to trade friction with the United States.

- **The Middle East and North Africa** have substantial TB and hepatitis B and C prevalence, but conservative mores, climatic factors, and the high level of spending on health care in the oil-producing states tend to limit some globally prevalent diseases such as HIV/AIDS and malaria. The region has the lowest HIV infection rate among all regions, although this is probably due in part to the above-average underreporting because of the stigma associated with the disease in Muslim societies. That said, increasing use of injected drugs and loosening sexual mores among the youth of Iran are encouraging the spread of HIV there and concerning the government.

- **Western Europe/North America.** The developed countries' greatest health threats are from heart disease, cancer, and diabetes. However, the large volume of travel, trade, and immigration to these regions increases the risk of importing diseases like TB, HIV/AIDS, and hepatitis B and C.

- Ninety-five percent of people living with HIV and/or AIDS live in the developing world.
- Seventy percent of those live in Sub-Saharan Africa.

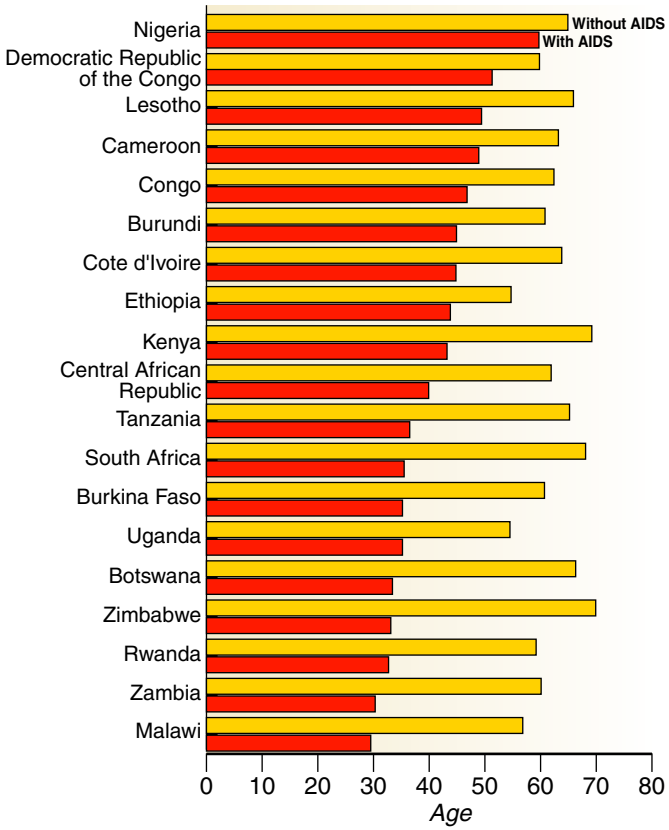
**Figure 22**
**Sub-Saharan Africa: HIV Prevalence Rates, 2000**




*Source: US Census Bureau.*
*These are preliminary results from a revision effort in progress.*

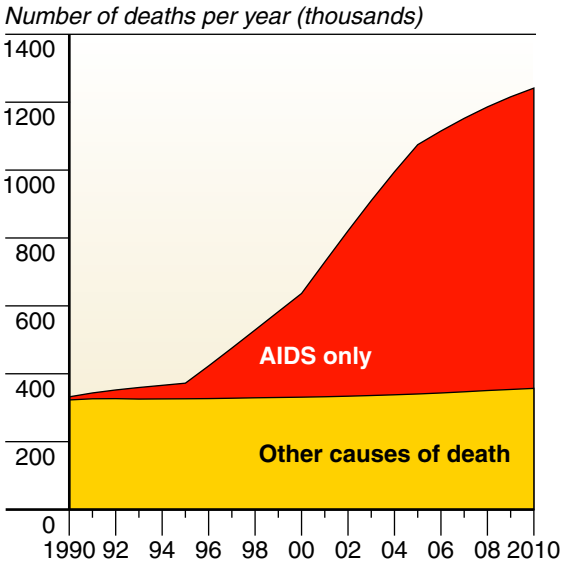
Boundary representation is not necessarily authoritative.

**Figure 23**
**Africa: Life Expectancy in 2010 With and Without AIDS**




Source: US Bureau of the Census, January 1998, except South Africa, revised January 1999. Note: US Bureau of the Census is revising these estimates based on new HIV prevalence information. These figures—with the exception of South Africa's—understate future reductions in life expectancy.

**Figure 24**
**South Africa: Projected Annual Mortality**




Source: US Census Bureau

Sub-Saharan Africa is by far the region hardest hit by HIV/AIDS and is home to almost 70 percent of all HIV-positive people worldwide. In 1998, AIDS became the leading cause of death in Africa, according to the World Health Organization:

- Some 17 million have already died from the disease—2.4 million in 2000 alone—and another 25.3 million are infected with HIV/AIDS, according to the Joint UN Program on AIDS (UNAIDS). This is more than all of the continent's armed conflicts combined.

- By 2010, AIDS mortality will reduce the national average life expectancy in hard-hit countries like South Africa, Rwanda, Zimbabwe, and Botswana to nearly half of the expected rate when AIDS is factored out.

- A US Census Bureau study on South Africa shows that, by 2002, AIDS will kill more people there than all other causes of death combined.

**Widespread Impact**

Academic studies and diplomatic reports show that AIDS' greatest impact is at the individual and household level, driving poor families deeper into poverty and undermining local family structure:

- UN Development Program (UNDP) studies and anecdotal reports show that AIDS-related illness and death of parents reduce family income sharply.

- AIDS also is detrimental to the welfare of the elderly. Those whose adult children die of AIDS are often forced to support both themselves and their grandchildren on limited pensions.

The effects of HIV/AIDS on African macroeconomies remain controversial and are still being studied. Scholarly, official, and nongovernmental organization (NGO) observers differ widely in their findings.

According to a UNAIDS study, although the effect of HIV/AIDS is often severe on households and individual firms (the costs of health benefits increase as more employees become sick), macroeconomic repercussions are hard to measure. For example, AIDS may take a heavy toll on subsistence agriculture and the informal economy without the effects being captured in macroeconomic data.

**South Africa: Political Firestorm Over AIDS**

South Africa's mishandling of the HIV/AIDS crisis combined with its vibrant democracy has made it the only country in the world thus far where HIV/AIDS has become a highly contentious political issue. The government virtually ignored the epidemic until 1998 and has bungled its efforts since then, prompting domestic and international criticism: contributing to the further spread of the disease.

HIV infection is generally higher among young males serving in military forces, who are often stationed away from their families and have ready access to casual sexual encounters. AIDS has consequently had the well-documented effect in Africa of reducing military effectiveness. The loss to AIDS of large numbers of midlevel and senior military careerists will be a key stumblingblock for nations attempting to modernize and professionalize their armed forces.

A growing population of orphans contributes to rising crime. South African authorities and others have raised the concern that increasing numbers of AIDS orphans will grow up on the street and turn to crime, as they have in Nairobi. More than 300,000 AIDS orphans are in Kenya alone.

Although we currently see little direct linkage between AIDS and widespread instability, as the epidemic worsens over the longer term, populations that perceive their governments to be ignoring the AIDS crisis or refusing to take specific ameliorative actions may take to the streets.

- HIV prevalence in Africa is expected to increase over the next 10 years.
- Prospects for progress, particularly in Sub-Saharan Africa, are dim:
  - Infection levels remain high even in countries that have instituted HIV/AIDS education and prevention efforts.

With the exception of Uganda—which has implemented an aggressive effort to fight the disease—and Senegal, immediate prospects for progress against the disease in Sub-Saharan Africa are dim. The most disturbing trend is that infection levels remain high even in African countries that have instituted HIV/AIDS education and prevention efforts, such as South Africa and Botswana. Despite widespread efforts to disseminate information about HIV/AIDS and how to prevent it, sexual behaviors remain unchanged. UNDP studies and diplomatic reporting suggest that the taboo of discussing sexual issues, a cultural aversion to condom use, and a human proclivity to pursue short-term gratification in the face of long-term risks—witness tobacco use in developed countries—contribute to high-risk behaviors. The same UNDP studies have found such risk-taking behaviors to be particularly true among the extremely poor. In addition, some governments remain variously in denial, apathetic, or overwhelmed in the face of the HIV/AIDS crisis:

- The US Census Bureau projects increasing HIV prevalence for nearly all African states over the next 10 years. According to the recently updated projection for South Africa, for example, HIV will infect nearly 40 percent of the adult population (age 15-49) by 2010.

- Recent survey data and anecdotal information from Ghana, Nigeria, and Cote d'Ivoire suggest the disease is beginning to emerge as a serious health threat in West Africa, where it has not been a significant issue for most of the decade.

Absent a medical breakthrough, the ability of governments and NGOs to dissuade individual Africans from high-risk behavior will be the chief variable affecting the spread of the disease. That said, Uganda and Senegal have shown that government intervention can succeed, and we cannot rule out that programs now in existence simply need more time or resources to obtain similar results.

**Estimating and Projecting HIV Prevalence**

Widely differentiated behavioral, epidemiological, demographic, and even political factors affecting the course of the AIDS epidemic make projecting the future course of HIV/AIDS in each specific African country particularly complicated. The US Census Bureau model from which this paper draws is a complex mathematical construct that extrapolates from "observed" HIV infection rates and allows for country-specific variance based on the estimated dates that the disease was introduced into populations. These values are then fitted to an epidemiological curve to project them into the future:

- Alternative epidemic scenario curves take into account the average duration of incubation periods in different countries; the frequency of sexual contact—premarital, marital, and extramarital; factors that enhance vulnerability to infection (such as the incidence of venereal diseases, which facilitates HIV transmission); the probability of at-birth or blood-transfusion-related transmission; and varieties of behavior change, such as increased condom use. Such assumptions correspond to actual changes in behavior that are now beginning to occur in some countries.

- The US Census Bureau has made implicit assumptions about the capacity of different governments to implement aggressive public information campaigns. For example, the Census Bureau has assumed that Uganda will sustain its relatively effective public health program and that the programs of countries such as Botswana and Zimbabwe will not succeed in changing key sexual behaviors.

These projections are under continual review and revision as more and better prevalence data become available. Sustained measurements of decreasing prevalence in a country would lead to a revision of its projection, as would a faster-than-expected increase.

- Environmental degradation will increase in developing and transitioning countries that have already experienced some of the world's worst environmental problems.
- Environmental pressures often contribute to conflict.

Environmental issues disrupt population projections in ways that are often not readily apparent:

- For example, in Russia, 70 years of treating air, land, and water as "free goods" has left a severely degraded environment and high levels of pollution that are likely to have a long-lasting impact on the health, including reproductive health, of the population.

- The World Bank estimates that India loses 57,000 people yearly to respiratory illness caused by particulate emissions. In 1991, World Health Organization standards on particulate matter and sulfur dioxide were exceeded in New Delhi on 294 days; Kolkata (Calcutta), 268 days; and Mumbai, 100 days.

- Deforestation in West Africa has led to soil erosion, flooding, and more mosquitoes, which make malaria—a life threatening disease—so prevalent.

Demographic challenges in many key countries will increase environmental degradation in areas that have already experienced some of the world's worst environmental problems. Russia, Mexico, India, and China are having the most notable problems:

- Russia's vast but aged defense and industrial physical infrastructure is deteriorating at an alarming rate, and Russians have demonstrated scant willingness to allocate sufficient resources to address the safety issues. The spectacular Ostankino TV tower fire in 2000 is a visible reminder of this poor state of affairs.

- The infrastructure of the Mexico City Metropolitan Area (MCMA) is already inadequate, and population growth will only worsen the urban environmental problems. The city's aquifer—seriously damaged by large-scale subsidence—cannot keep pace with the water requirements of its 20 million residents. Land subsidence has made the city prone to more floods and has damaged its infrastructure. In addition, the lack of wastewater treatment and hazardous waste controls in the MCMA threaten the aquifer and distribution system with microbiological and chemical contamination.

- Population growth, industrialization, poverty, unenforced environmental laws, inconsistent governance, and a focus on economic development have stressed India's environment with significant economic, political, and societal consequences. It is not uncommon in any given year for thousands of Indians to perish and hundreds of thousands to suffer economic losses from disasters.

- Seven of the world's 10 most polluted cities are in China, and Chinese scientists estimate that 30 to 40 percent of the country is affected by acid rain. Excessive logging contributes to frequent disastrous floods, and the World Bank estimates that almost every river and lake in China is polluted to some extent.

Population growth in developing countries will continue to increase the use of, and in some cases deplete, natural resources such as water and forests. It will also adversely impact the environment by:

- Increasing pressure on arable land, which in turn can lead to soil erosion and increased siltation and flooding.

- Increasing the use of fertilizers and pesticides, leading to water and soil contamination.

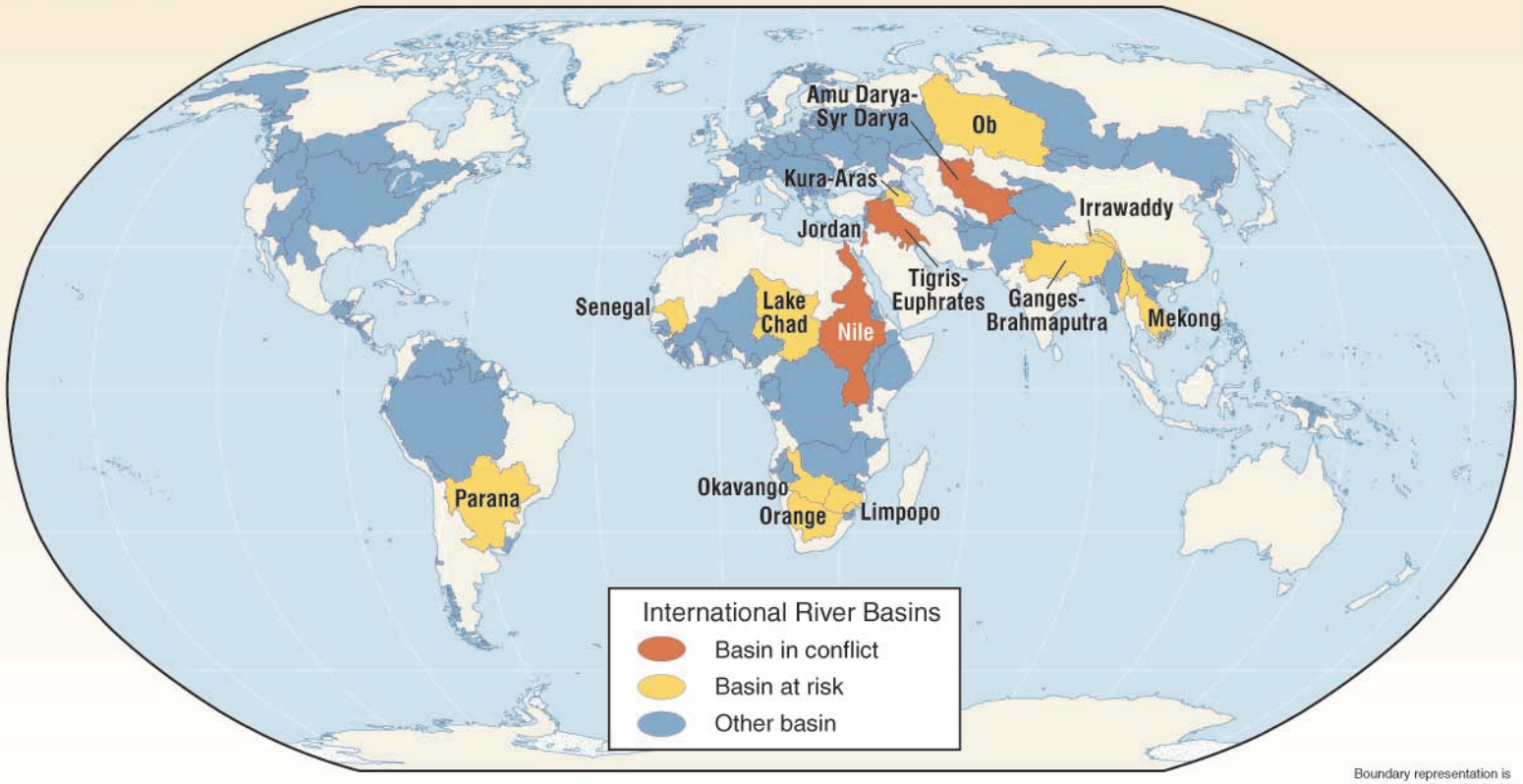
- Encouraging the growth of urban squatter settlements, which can contribute to water and air pollution and provide a breeding ground for disease.

- Increasing industrial and transport activities that contribute to air and water pollution.

Such pressures, according to academic Thomas Homer-Dixon, often contribute to violent intergroup conflict. For example, demographic pressures on natural resources can combine with skewed resource-distribution policies to promote increasing friction between socioeconomic classes.

- Water availability is likely to become one of the most pressing and contentious resource issues of this century.
- Rising populations will also lead to accelerating destruction of forests.

**Figure 25**
**Basins at Risk**



## Freshwater Scarcity

Global water consumption is rising quickly, and water availability is likely to become one of the most pressing and contentious resource issues of this century, according to the World Resources Institute (WRI), a prominent US environmental NGO. This situation will only be exacerbated by population growth. Water scarcities and allocation will pose significant challenges to governments in the Middle East, Sub-Saharan Africa, South Asia, and northern China, with regional tensions over water heightened by 2015:

- By 2025, 48 countries containing 3 billion people will face freshwater shortages; 20 countries of the Near East and North Africa face the worst prospects. In those areas, water supplies could run out by 2100 if per capita consumption and excessive use in agriculture are not controlled, according to the UN Environment Program (UNEP) and other experts.

- A contractor report lists 17 water basins with the greatest potential for disputes in the next 10 years because they lack or have inadequate international water management entities.

- High rates of population growth in several strategically important Middle Eastern states, for example, have increased pressure on already meager water supplies, many of which already originate outside their borders, making them more vulnerable to the "water weapon."

## Deforestation

Over the past 50 years nearly half of the world's original forest cover has been lost, and each year another 16 million hectares of virgin forest are cut, bulldozed, or burned, according to the UN Food and Agricultural Organization. The pressure of increasing populations will continue to challenge all countries with remaining tropical forests, where about 60 percent of the world's population growth will occur this decade. Because many in developing countries depend on wood for cooking and heating and need to clear more land for crops, forests will continue to be destroyed at an alarming rate. By 2025, an estimated 4.6 billion people will live in countries with less than 0.1 hectare of forest cover per capita, according to Population Action International, compared to 1.7 billion people today:

- Deforestation rates in some countries increased from 1990 to 1995 despite a surge of public awareness about the loss of forests. Deforestation in the Amazon doubled from 1994 to 1995 before declining in 1996, and forest fires in Indonesia and the Amazon took a heavy toll in 1997 and 1998. Tropical forests are vanishing at the rate of 250 acres per minute, according to the US Department of State's Bureau of Oceans, International Environmental and Scientific Affairs.

- Although deforestation has been halted and even reversed in parts of Europe and North America, demand for wood and wood products in developed countries will continue to put pressure on forests there and, in particular, on those in developing countries.

- World food production will be sufficient to meet the world's growing population but:
  - Production could increase environmental problems.
  - Land degradation will negate productivity advances.
  - Poor infrastructure and distribution systems will lead to malnourishment in parts of Sub-Saharan Africa.
- Developing countries' energy use will increase, causing higher emissions of greenhouse gases, which are likely to surpass the emissions of developed countries.

## Soil Deterioration

Population growth in developing countries will increase stress on soils from erosion and poor fertilization and irrigation practices. Lower classes are farming barren tracts to survive, which increases environmental damage, leading to a vicious downward cycle of productivity and opportunity. Land degradation already has reduced fertility and agricultural potential in many parts of the world, negating advances made through expanding agricultural areas and increasing productivity, according to UNEP:

- Overall food production will be adequate to feed the world's growing population through at least 2015, but poor infrastructure and distribution, political instability, and chronic poverty will lead to malnourishment in parts of Sub-Saharan Africa.

- The WRI predicts that, without a transition to more resource-efficient and less toxic farming methods, it will be difficult to meet world food needs in the future without increasing agriculture's environmental burden.

- With continued population growth, the amount of biologically available ("fixed") nitrogen, for example, may double over the next 25 years, increasing the current excess. Over the past 50 years, excessive nitrogen, principally from fertilizers (some 86 percent), human sewage, and the burning of fossil fuels began to overwhelm the global nitrogen cycle, with a range of ill effects from reduced soil fertility to eutrophication in lakes, rivers, and coastal estuaries, according to the WRI.

## Climate Change

If developing countries follow the model of developed countries, their energy use—spurred by population and economic growth—will continue and with it greater emissions of greenhouse gases, according to the OECD. The developed world produces some 60 percent of emissions today, but the developing world will be producing 60 percent of them by 2015, according to the UNDP:

- With more frequent droughts and floods resulting from rising global temperatures, there is additional potential for increased adverse health consequences like increased incidences of water-borne diseases and a resurgence and spread of infectious diseases, particularly in the developing world.

- The latest (early 2001) projections of the Intergovernmental Panel on Climate Change indicate an average surface temperature increase of between 1.4 and 5.8 degrees Celsius and a sea level rise of between 9 and 88 cm by 2100 unless immediate steps are taken to limit emissions. In 2025, 12 of the 19 megacities in developing countries will be located on coasts and will be particularly vulnerable to sea level rise.

- Natural or manmade environmental disasters are likely to cause more loss of life and economic disruption because populations are burgeoning near vulnerable areas:
  - For the top 10 most disaster-prone countries of the Asia-Pacific region, there were a total of 1,312 disasters during 1966-90, which killed 1.7 million people and affected more than 2 billion.
  - In India, nuclear power reactors are already contaminating surrounding soil areas with dangerous levels of cesium. Similar effects are expected as Russia tries to extend the lives of several of its aging nuclear power reactors.

**Natural or Manmade Environmental Disasters**

These events are likely to cause more loss of life and economic disruption because populations are burgeoning near vulnerable areas or facilities—such as nuclear reactors, active faults, volcanoes, coastlines, and rivers subject to flooding—and in countries with few resources for disaster mitigation:

- For the top 10 most disaster-prone countries of the Asia-Pacific region—Australia, Bangladesh, China, India, Indonesia, Iran, Japan, New Zealand, Philippines, and Vietnam—there were a total of 1,312 disasters during the 25 years during 1966-90, which killed 1.7 million people and affected more than 2 billion, according to the Centre for Research on the Epidemiology of Disasters.

- In India, nuclear power reactors are already contaminating the surrounding soil with dangerous levels of cesium. Management that tolerates poor operating practices and measures its level of success in terms of building new projects rather than running existing ones safely supports the notion that contamination will most likely continue. Similar effects are expected in Russia, which will be forced to try to extend the life expectancies of several aging nuclear power reactors because it does not have sufficient alternative electrical generation.

- Turkey, Honduras, and others recently victimized by geophysical hazard or extreme weather events have done little in the aftermath to disperse vulnerable populations, thus remaining at risk of repeat catastrophes. Istanbul's 8 million inhabitants live along the same fault that caused the earthquakes in 1999.

**Future Technology Improvements: Impact on the Environment**

Advances in energy and agricultural technologies could significantly reduce the impact of population growth on the environment in coming decades. Cleaner fuels and more efficient engines—including fuel cells—being developed by Japan, the United States, and others will help reduce air pollution, including greenhouse gas emissions. Better irrigation, fertilization, and cultivation practices may limit water consumption and curb soil erosion and deforestation. Biotechnology—through genetically modified foods—may increase yields and reduce the need for the expansion of agricultural areas:

- The effectiveness of technological advancements, however, will depend to a significant degree on how rapidly they are adopted by developing countries. Technology transfer to developing countries, therefore, will increase in importance.

- Threats to technological advancements in developing countries—such as those toward biotechnology posed by consumer mistrust, particularly in Europe—further delay their adoption by developing countries that may receive the greatest benefit from them.

# Strategic Implications of Demographic Trends

Global demographic trends will pose challenges to US interests:

- The United States will probably be expected to assume a larger share of the burden for increased financial and humanitarian assistance and military interventions needed around the world.
- More immigrants will seek to enter the United States.
- Slower economic growth in the developed world could threaten US exports, US interests in global capital markets, and US investments.
- US equities at home and abroad will be at risk from increased violence and widespread infectious disease.

## Implications for the United States

Violence in countries with large disenfranchised youth populations, large influxes of refugees, unhealthy populations, environmental powder kegs, and densely populated urban areas will increase and create demand for the United States to support additional multilateral peacekeeping and humanitarian operations:

- Such pressures will challenge the United States to focus more on regions of the world, such as Sub-Saharan Africa, the FSU, and rogue states, that traditionally have not been at the center of US policy interest.

- Unmanageable urban stresses are likely to slow socioeconomic development in the hardest hit developing and former Communist countries and regions. This will challenge democratic development and transitions and possibly contribute to humanitarian emergencies and civil conflicts.

- The infectious disease burden, for example, could weaken the military capabilities of some countries—as well as international peacekeeping efforts—as their armies and recruitment pools experience HIV infection rates ranging from 10 to 60 percent.

At the same time, the demands of supporting increasing elderly populations will strain government coffers of other industrialized country allies who will expect the United States to assume more of the burden for managing global trouble spots.

Western Europe's and Japan's more restrictive immigration and asylum policies and detrimental tax structures will continue to prompt more migrants to enter the United States, especially if their home countries are unstable or fail to offer employment opportunities:

- The rapid growth of the working-age population in a number of developing countries and the reduction in real wages that will result in many of them will contribute to increased migration for economic reasons.

- Immigration and the treatment of illegal immigrants—given their vulnerability to human rights abuses—will be among the most sensitive issues in international diplomacy.

Slower economic growth in the developed world and other spillovers—many as a result of widespread aging—could threaten US exports, interests in global capital markets, and investment:

- For example, as more Japanese live on fixed incomes—currently they are among the largest consumers of a wide range of US goods and services, including semiconductors, software, heavy machinery, movies, apparel, and agricultural goods—they could have less of an appetite for goods in general.

As a major hub of global travel, immigration, and commerce with wide-ranging interests and a large civilian and military presence overseas, the United States and its equities abroad will remain at risk from violence and infectious disease:

- At highest risk will be US military forces deployed in support of humanitarian and peacekeeping operations in developing countries.

Closer to home, baby boomer retirement threatens to exacerbate labor shortages in the private and public sectors of the United States where retirement plans allow for retirement long before age 65:

- Within five years 30 percent of the 1.6 million full-time employees in the US federal government will be eligible to retire, and another 20 percent would be eligible for early retirement.

- Some US allies will be weakened by the trends.
- Both Europe and Japan stand to lose global power and influence.

## Implications for US Allies

Historically, the richest developed nations have been growing, capital-exporting, philanthropic giants that have projected their power and mores around the world. A quarter-century from now these countries may instead be demographically challenged, fiscally starving neutrals who maneuver to avoid expensive international entanglements:

- Elder-dominated electorates may be more risk averse, shunning decisive confrontations abroad in favor of ad hoc settlements.

- Reduced conventional capabilities of our allies in the developed world, because of manpower shortages, raise the value of tactical and strategic weapons, which could make it more difficult to restrict arms growth.

Without radical changes the very existence of Japan as a major economic power may indeed be at stake:

- In 2010 the world could see a Japan that will have completed its second decade of chronic underperformance compared to other advanced industrial democracies.

- Aging could decrease household savings, potentially leading to a current account deficit in the next 10 to 20 years.

- Japan's demographics work against a major economic renaissance for the country fueled by the new economy because adopting new technologies and pushing technological boundaries forward are critical components that require young people. Japanese corporations will be starved for young, new employees who bring with them the latest ideas.

- Budgetary constraints will almost certainly force the Japanese Government to abandon its "checkbook diplomacy" and rein in its generous spending on foreign assistance.

As a result, Japan will probably pursue a stronger alliance with US security structures.

If Europeans are unable to successfully substitute capital for manpower in their force structures, invest wisely in the human capital that remains, and solidify multinational defense linkages, their military capability may even decline in the next 10 to 20 years and their influence in the security realm would suffer:

- European armed forces will experience chronic manpower shortages—both because the number of youth will be declining and because tight civilian labor markets will make military careers less attractive.

- Most Europeans will most likely forego large conscript armies oriented toward territorial defense in favor of smaller, high-tech, professional forces focused more on expeditionary operations on the European periphery.

This could either scuttle the European Defense Initiative or make it more necessary:

- Britain's recently completed Strategic Defense Review mandated a leaner, more technologically advanced force that is better able to operate in multinational coalitions.

- France, under Lionel Jospin's government, is moving forward with efforts to end conscription and cut back the number of its uniformed military personnel from 502,000 to 352,000.

- Germany may be the major exception in this area, as Berlin continues to hold to the notion of a conscript army.

In any event, skyrocketing costs of advanced military procurement projects make it likely that these countries will seek to leverage multinational cooperation to maintain military power.

- Key allies in the developing world could be destabilized.
- Unemployed youth provide exceptional fodder for radical movements and terrorist organizations, particularly in the Middle East.

The risk is high that some key US allies in the developing world will be destabilized by population flows. The fragile political institutions of these states would be sorely tested by such events:

- Because migration pressures tend to be the greatest in countries that have inadequate education and health care, large numbers of these migrants will be difficult to absorb. Increased immigration will almost certainly make nation-states' foreign policy making more complicated.

- Indeed, large influxes of refugees often create highly charged emotions about territorial integrity, ethnic identity, and equitable distribution of resources that can lead to armed conflict between states. Turkey is a prime example.

High structural unemployment at a time when the national age distribution is highly skewed in favor of 18-to-24-year-olds provides exceptional fodder for radical movements in many developing countries. New waves of Islamic activism in the Middle East—capitalizing on alienated youth populations—could threaten to limit the ability of many Muslim governments to cooperate with the United States.

# Strategic Implications of Demographic Trends: For Potential US Rivals

- But demographic challenges will also bedevil potential US rivals:
  - Russia faces demographic vulnerabilities that other countries and internal leaders will seek to exploit.
  - China's productivity and global standing are uncertain because of the large resources required to deal with its demographic challenges.
    - China is struggling fiscally to keep up the social infrastructure necessary to support its large, growing, and increasingly urban population.
    - The aging challenges will be even more difficult for Chinese planners because demographics surface issues that are without precedence in the Chinese experience.

## Implications for Potential US Rivals

Over the next two decades, and probably well beyond, Russia's population will continue to shrink and age. Were that the country's only problem, it could be more easily managed. Unfortunately, Russia is beset by a myriad of problems, each requiring significant resources to address. A prolonged, severe social and economic crisis could increase the influence of political groups hostile to Western interests, such as President Vladimir Putin's coterie of advisers from the former KGB:

- The worldwide growth in per capita income will be felt in Russia—but the spread between winners and losers will be pronounced, further exacerbating difficulties in forging a shared view about Russia's political and economic future.

The country's leadership, especially the military, is likely to see the country as exhibiting vulnerabilities that other states—both neighboring and distant—will seek to exploit. The demographic imbalance with China is one example, but the general perception of weakness could also foster challenges to Russia on its southern rim:

- The weakness of Russia's current and likely future conventional forces has already driven military doctrine toward reliance on nuclear weapons to solve a broader range of military problems.

- In any event, Russian concern over Chinese migrants in the Russian Far East could lead to tense relations between these two large powers over the long run, increasing instability in Asia.

Meanwhile, the inability of the Russian state to ensure public health, control infectious disease, or fund basic infrastructure both ensures continued weakening and shrinking of the population and presents clear and present dangers to populations outside of Russia.

The productivity and global standing of China's economy are uncertain, in part because of the large resources required to deal with the country's demographic challenges.

China is struggling fiscally to keep up the social infrastructure necessary to support its large, growing, increasingly urban population. At the same time, it will be fiscally constrained by the enormous costs required to restructure its state enterprises and failing banking sectors:

- According to the IMF, China's overall budgetary deficit in 2000 was projected to be 3.6 percent of GDP, up from 1.6 percent in 1996.

Moreover, in anticipation of its own aging crisis in the next few decades, Chinese leaders have been actively formulating policies to overhaul the country's social safety net and transition the country from a PAYGO retirement system to a partially funded model.

The aging challenges will be even more difficult for Chinese planners to tackle, in part because they surface issues that are without precedent in the Chinese experience. Moreover, China does not have the same coping mechanisms—sophisticated tax structures, deep capital markets, and developed pension and health-care systems—that developed countries have for dealing with aging issues.

That said, should China get over this daunting fiscal hump and implement the policies it is proposing to overhaul its social safety net, the changes will serve to deepen its capital markets and reduce some labor market rigidities—policies that are beneficial for US investment in China.

- Our October 2000 conference, “Demographic Trends: The World’s Long-Term Economic, Political, and Security Landscape,” engaged 14 experts on a variety of issues.
- Participants were asked to give a short presentation and then discuss specific topics.
- Several times during the conference, participants in small groups discussed in more detail the implications of the trends on regional or topical issues of interest to the United States.

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- At the conference we developed three scenarios of what the world might look like in 50 years given the demographic trends:
  - *Fertility Drives the Trends.*
  - *Orderly Progress.*
  - *What Can Go Wrong Will Go Wrong.*
- In the *Fertility Drives the Trends* scenario:
  - Increased migration in Europe and Japan slows but does not reverse the pattern of aging in those countries.
  - The correlation between GDP per capita and total fertility rates is high.
- In the *Orderly Progress* scenario:
  - The world is depopulating.
  - The population of the region that served as the locus for most 20th-century history—Europe and Russia—shrinks dramatically in relative terms.

## Tapping Into Prominent Expertise: Conference Highlights

### *Fertility Drives the Trends*

This scenario uses a model to project the world's future population, with a strong focus on the impact of fertility. The International World Futures Modeling System goes beyond traditional models of population projections that the UN and others use because it incorporates issues like migration rates, HIV/AIDS rates, and economic growth rates, in addition to TFR and life expectancy projections. The model yielded some interesting results:

- By 2050 the world's population could be as low as about 7.3 billion people or as high as about 10.7 billion. AIDS and fertility are the most important factors in determining the lowest population scenario, and life expectancy and fertility are the most important factors in projecting the highest population figures.

- Increasing migration in countries in Europe and Japan, for example, would slow but not reverse the pattern of aging in those countries. The slower rates would be because migrants generally have higher fertility rates than host populations.

- Economic growth can have an effect on fertility, but by itself it is not a critical factor. However, the correlation between GDP per capita and TFR is very high.

- Over the last 40 years there has been a reduction of two births per woman; this is a uniform shift of 0.05 births per woman per year. Historically, the median scenarios have been wrong because they did not take into account this systemic shift.

### *Orderly Progress*

This is a scenario where the world reaches a population peak and then permanently declines under noncatastrophic conditions. In this scenario the two most important issues are the health explosion and the secular fertility decline. The health explosion is a given and is a positive phenomenon, so more emphasis is placed on the action and play of the secular fertility decline. The scenario follows.

This is a future depopulating world:

- Using inputs from the UN World Population's low fertility, the scenario shows life expectancy, to 2050, increasing about 10 years globally.

- It posits a total fertility rate change from 2.6 births per woman to 1.56 births per woman per lifetime. There will be subreplacement fertility at 1.4 births per woman in more developed nations and 1.6 or 1.7 in less developed regions.

There will be a huge change in the distribution of the world population:

- Developed countries as a whole will drop from 32 percent of world population in 1950, to 21 percent now, to 14 percent in 2050. The United States pushes that rate up because it is the largest developed country to remain at the top of the population list. In 1950, Europe, including Russia, represented 22 percent of the world's population; now it is 13 percent, and by 2050 it will be 7.5 percent. Japan will go from 3.2 percent of the world's population in 1950, to 2.2 percent now, to 1.2 percent in 2050.

- The very least developed countries will go from 7.8 percent of the world's population in the 1950s, to 10 percent today, to 19 percent in 2050.

- *Orderly Progress* (continued)
  - The median age in developing countries, which increased only two years in the last half century, goes up by 20 years in the next half century.
  - There is the possibility for a large economic divergence between old rich countries and old poor countries.
- In the *What Can Go Wrong Will Go Wrong* scenario:
  - Democratization without institutional reform and the presence of a large middle class lead to instability.
  - There is the possibility that breakdowns occur in bigger, developed, urban places where the United States may not be able to intervene.

***Orderly Progress* (continued)**

There will be an unprecedented aging of the world's population:

- Over the last half century, the median age in LDCs has gone up two years, and it will go up by 20 years over the next half century.
- Even populations in the less developed world will be older than any national population is today. In some countries, such as Angola, the Democratic Republic of the Congo, and Ethiopia, the median age will be, at the very least, as old as the United States was in 1985.

The youth bulge will no longer be a concern because global populations will be much older.

Aging could go either way. It could translate into a more informed, cautious, and level-headed approach to international disagreements. It could, however, lead to sclerotic and miscalculating decisionmaking like we have seen in Japan. There are economic implications of aging in areas such as savings rates, investment rates, and capital transference in either case.

There is the possibility for a large economic divergence between old rich countries and old poor countries. Historically, elderly countries have achieved a mature level of economic development before they got old, but, starting with China, countries now will get old before they get rich. It is difficult to predict the effects of this. It will depend mainly on the pace of medical innovation and cost structures and on pension arrangements.

Even if the fertility decline slows, we could see this scenario:

- We do not know how low fertility can go, although some convincingly argue that we are close to the bottom of fertility declines. This is because, biologically, humans have an impulse to nurture, leading us to have more children.
- Taking that argument to its logical conclusion, however, the majority of women only need to have one child, which is zero fertility.

***What Can Go Wrong Will Go Wrong***

Times will be rough, particularly over the next 10 to 15 years. One cannot assume that democratization will lead to a less violent, more peaceful world. Democracy will never be applied under perfect circumstances, so a democratizing world will almost certainly be a messier world. The scenario follows.

Globalization means there could be breakdowns in bigger, developed, urban places where the United States may not be able to intervene:

- The real immediate problem would involve a breakdown in a place where moral intervention is not possible but where there are greater strategic consequences. Pakistan is the best current example of this because it seems to encompass the worst of everything.

While the world's middle class is growing in absolute terms, in relative terms, it is not growing at all and might even be declining. This will lead to greater instability:

- A large middle class means stability and predictability because parliamentary democracy comes easier after a sizable middle class has been established, after the big questions of the state have been solved, and after the state has achieved literacy and working institutions.
- The conflict in Rwanda and the war between Armenia and Azerbaijan were both caused by democratic breakdowns. The latter war only came to an end after there was a military coup in one of those countries.
- Because Sudan had no developed institutions, its election created a power vacuum.

- *What Can Go Wrong Will Go Wrong* (continued)
  - The "natives will get restless" and governments will respond by expanding their security services instead of imposing institutional reforms, which would be more difficult.
  - Technology will empower both state and nonstate actors, making adversaries more difficult to identify.

There will continue to be a variety of mixed or hybrid regimes, with various elements of democracy and military regime that will only officially be called democratic for the sake of stability. Indonesia and Pakistan are current examples, as are Peru and Bulgaria where crime families share power.

Wars will continue to be fought by unemployed young men:

- With the absolute numbers of working-age people rising in the developing world, no government programs and institutions can keep up with demands, so there will be upheavals.

- Businesses will not invest without public order, so governments will need bigger security services under the façade of democracy.

- The Middle East will be particularly vulnerable because the region has a lethal mix of unemployed educated youth and its political systems are calcified, but its societies are changing rapidly.

The world has not yet dealt with the collapse of the Ottoman Empire, which will continue to cause problems:

- Iraq and other countries in the Middle East are artificial, and their ethnic groups are dynamic. This will create a more fractious society where ethnic identities are still very relevant.

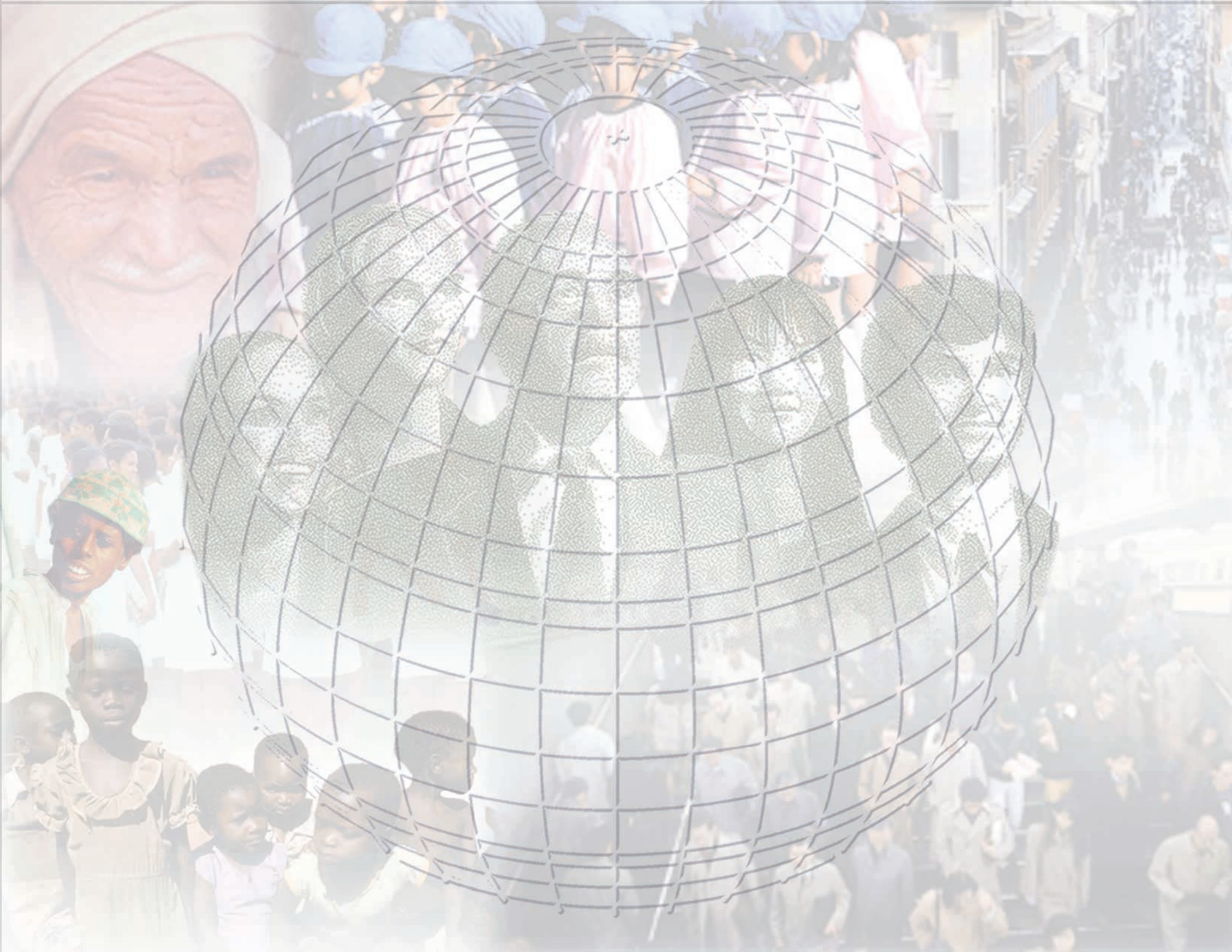
US adversaries and attacks against the United States will surprise us more. Just as industrialization made Hitler and Stalin, the postindustrialization world empowers state and nonstate actors:

- Instead of large despots the challenge will be the proliferation of smaller scale problems like terrorists and crime groups.

- A future dictator will be an autocrat who has figured out how to use drugs and terrorists for an undeclared war against the United States and how to lower its population's expectations for social improvement.

Globalization has been successful, but the spread of capitalist management techniques will contribute to conflict because, while living conditions will get better, expectations will also rise:

- Global standards of living are rising, and world inequality is declining. A study done in Norway by noted academics shows Gini coefficients for world income distribution declining between 1965 and 1997. They argue that this has a lot to do with the increasing prosperity of India and China. As a result, in 30 years the income inequality gap may widen as developing countries—China included—struggle to deal with the implications of aging along with other demographic challenges.

- There will be large pools of angry people who are unable to get what they want through interest groups, which is a fertile petri dish for well-armed terrorists who will have better technology but who will be disenfranchised.

- The number of people with access to information technology is slated to go up from 2 percent to 10 percent of the world's population. The rest of the world, however, will not have access to technology, perhaps not even to a basic telephone, and this discrepancy will anger people.