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Global Demographic Change and Its Implications for Military Power

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It is far easier to notice change marked by singular events—the falling of the Berlin Wall, the attack on the World Trade Center—than change that takes place over time. The latter may initially be hard to detect, but such change can profoundly transform societies, influencing a host of social, economic, and political issues.

Demographic change is almost always slow change, but it is quite powerful and, for the most part, inexorable. Barring catastrophe, we know how many 25-year-olds the world will house in 2030 because they have already been born and have all passed infancy (after which point their prospective survival rates are, in most places, nearly 100 percent). Given the limited numbers and persistent patterns of immigration, we have a fairly good idea how many 25-year-olds every country will house in 2030 as well.

To generalize further, we have a fairly good idea of how many people of working age—herein defined as between 20 and 60—will inhabit each of the world’s nations between now and 2030, and a rough idea of how many will by 2050. Working-age populations are what determine the demographic component of national power. The contribution from those under 20 or over 60 tends to be relatively small and is unlikely to reflect the conclusions drawn from limiting working age to those years.

This monograph analyzes the following question: What is the impact of demographics on the prospective production of military power and the causes of war? It addresses this issue by, first, projecting working-age populations; second, assessing the influence of demo-
graphics on manpower, national income and expenditures, and human
capital; and, third, analyzing how the ability to carry out broad mis-
sions is affected by manpower, available national income, and human
capital. The monograph also examines some implications of these
changes for other aspects of international security.

**Numbers**

So, what do the numbers tell us about the future?

The number of people in the world is completely determined
by the number of births and deaths; at the national level, net migra-
tion has to be factored in. In general, births are the most important
of the three determinants of population, in the sense that birthrates
can vary greatly from one decade to the next. Death rates, by contrast,
are relatively predictable in timing. As for migration, most countries
worth migrating to limit how many newcomers they get, more or less
successfully.

Forty years ago, one could confidently assert that the rich got
richer and the poor had babies—and lots of them. Women in almost
all developing countries averaged four to seven surviving children
over their lifetime. Women in developed countries averaged two to
three. With too many people on a planet with fixed resources, many
prophesized doom.

Since then, fertility rates in the richer countries have continued to
fall and now range from just over one child per woman (Hong Kong,
South Korea) to just over two children per woman (the United States),
and they appear to have stabilized at this level or increased slightly
(whether these recent upward blips are only timing effects or fore-
shadow increases in completed fertility is, so far, unclear).

In Communist and former Communist countries, they have fallen
even harder, either from fiat (e.g., China’s one-child policy) or from the
aftereffects of the collapse of Communist rule. Rates in Russia and
Eastern Europe are well below the rate necessary to maintain popula-
tions in the long run.
Births in the middle-income lands—Latin America, northern Africa, Turkey, Lebanon, Iran, formerly Soviet Central Asia, southwestern India, and Southeast Asia—have also fallen sharply to somewhat above two per woman or lower (e.g., Thailand).

The swath between Afghanistan, Pakistan, and the Ganges Valley is still adding population; fertility rates average above three and a half children per woman.

Sub-Saharan Africa, between the tropics of Cancer and Capricorn, is adding population even faster. Fertility rates in most of these countries have been generally falling for 30 years, although the declines have stalled in some during the past decade.

The consequence of what has already taken place in the world’s maternity wards (so to speak) will unfold over the next 20 years.

First, the United States, alone of all the large affluent nations, will continue to see (modest) increases in its working-age population thanks to replacement-level fertility rates and a likely return to vigorous levels of (mostly legal) immigration. Meanwhile, the working-age populations of Europe, Japan, and the Asian Tigers (South Korea, Taiwan, Singapore, and Hong Kong) are slated to fall by as much as 10 to 15 percent by 2030, and as much as 30 to 40 percent by 2050. The United States will account for a larger percentage of the population of its Atlantic and Pacific alliances; to put it another way, the capacity of traditional alliances to multiply U.S. demographic power is likely to decline, perhaps sharply, through 2050.

Second, India’s working-age population is likely to overtake China’s by 2030. Today, China’s working-age population is just under five times larger than the U.S. working-age population. By 2050, it may be only just over three times larger. Conversely, the ratio of India’s working-age population to the U.S. working-age population will evolve in the opposite direction: just over three times larger today, but five times larger in 2050.

Third, the working-age populations of most middle-income developing countries (e.g., Brazil, Indonesia) are likely to reach major inflection, or even deflection, points by or just before 2030.

Fourth, barring catastrophe, many of the world’s most populous countries will be in Africa: Nigeria, Ethiopia, Congo, Sudan, and Tanzania.
Despite these trends, the prospects that differential birth rates will lead to cross-border conflict are limited. Rarely do the low-birthrate portions of the world abut the high-birthrate portions of the world; typically, they are separated by countries whose fertility rates have only recently fallen to relatively low levels. Furthermore, the countries from which the rich nations have drawn and are still drawing immigrants no longer have high birthrates. Fertility rates are similar on both sides of the Rio Grande. Fertility rates in Algeria are only slightly higher than in France and comparable to those of Turkey. Fertility rates in Central Asia are only slightly higher than on the Islamic side of the Mediterranean but are much higher than in Russia because of the latter’s birth dearth.

The inevitability of these demographic changes, certainly through 2030 and to a large extent to 2050, can be gauged by examining two different United Nations projections: One assumes that today’s fertility rates stay constant; the other assumes that they converge through 2050 to a universal average of 1.85 babies per woman. Figure S.1 graphs the population (logarithmically) of 15 large countries under both variants. One can see that the two curves diverge after 2030, but never by much—and not enough to alter the underlying trends.

Three factors account for why large plausible differences in birthrates hardly affect working-age populations even 40 years out: (1) The older half of the working-age population has already been born; (2) predicted birthrates do not diverge instantly, but over time; and (3) decades of low birthrates mean that the number of potential mothers is depressed (and the reverse is true after decades of high birthrates).

Two related questions merit note. One is whether developing nations (particularly in the Islamic world) will suffer from a destabilizing youth bulge—specifically, a growing share of the population composed of males between the ages of 15 and 25. The short answer is “no”: This percentage will decline almost everywhere for decades to come, although some countries will see slight upticks in the percentage over one or another five-year period. The second is the prospect of Europe turning into “Eurabia” as the share of its population that is Muslim approaches or exceeds 50 percent. The short answer is “not yet.” If one assumes constant migration rates and that the demographics of
Europe’s Muslim population resemble those of the countries from which it draws its immigrants, then the Muslim share of France’s and Germany’s working-age populations reaches roughly 15 and 10 percent, respectively, by 2050. By contrast, Russia’s Muslim population could double to reach 30 percent of the total.

**Incomes**

To the extent that a nation’s power depends on its gross domestic product (GDP), it is possible that large, putatively unpredictable differences in economic growth rates from one country to another could swamp the slow but predictable international differences in population growth.
rates. If so, population may be quite secondary in evaluating a nation’s potential military power.

To determine whether this might be so, the research reported here looked backward at the rate of change in national per capita GDP from 1980 to 2007 for the 37 most populous countries. The numbers indicate that the standard deviation in annual per capita GDP growth rates (1.94 percent) is only 50 percent larger than the prospective standard deviation in the growth of working-age populations from 2010 to 2030 (on average, 1.29 percent). If China and Congo are excluded, the two numbers are closer: 1.46 percent for GDP per capita and 1.24 percent for prospective working-age populations. Although international economic growth variations are larger, they are not overwhelmingly so. Demographic change can be regarded as a separate and important influence on a nation’s power. Because the per capita GDP growth of rich countries has been roughly the same since 1980, demographic growth assumes singular importance in making international comparisons among them.

However, past income growth and future population growth (which is to say, past birthrates) are negatively correlated to a modest extent: Every 1-percent difference in the former is associated with a 0.25-percent difference in the latter.

**Aging**

Nearly every country in the world (and the rural areas of all countries) is aging, and the number of people above working age will rise relative to the number of working-age adults. Today, Brazil has 18 older individuals for every 100 working-age adults; Japan, 53. Accounting for population aging, projections indicate that by 2050 Brazil will have 59 older individuals for every 100 working-age adults; Japan, today and in the future among the most aged countries in the world, will have 109

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1 GDP is measured in purchasing power parity, as measured by the World Bank (World Databank, “World Development Indicators, 2007,” accessed December 15, 2010), divided by the working-age population.
older individuals for every 100 working-age adults. Just as the proportion of older adults in general will rise, the proportion of those aged 85 or older, the “old-old,” will rise as well. The number of old-old people in Japan is projected to rise from 6 per 100 working-age adults in 2010 to 24 per 100 working-age adults in 2050.

Population aging carries economic costs. Medical costs, on average, rise at the end of life irrespective of age, so a higher proportion of elderly people in the population means a higher proportion bearing end-of-life costs in the short run. Severe age-related disabilities may create further cost pressures. Since the elderly rarely work, paying for their health care has become, in many cases, a government expense.

A second economic cost is pensions. Nearly all developed countries use a pay-as-you-go pension system, meaning that the tax revenues from current workers are used to pay the pensions for the current elderly. As the proportion of elderly to workers rises, fewer and fewer workers will support more and more elderly. Most such systems are not financially sustainable with today’s policies.

On the face of it, the demographic trends affecting the end of life—longer life spans and the imminent retirement of the baby boomers in the developed countries—are likely to exacerbate the effect of trends associated with the beginning of life—lower birthrates (although aging increases the dependency ratio and lower birthrates decrease it, the latter is true only in the short run). The growing ranks of the elderly do this by drawing on public resources to fund their pensions and health care, thereby limiting what can be spent on other national ends. Both effects work against the ability of aging societies to defend themselves or contribute to the defense of others.

But there are policy solutions. Public pension systems currently provide incentives for early retirement, and many societies are unresponsive to older workers. Raising retirement ages, changing the terms of pension systems so that pension payouts are greater for people who retire later, and improving training and workplace laws to make labor markets more hospitable to older workers are three measures that can keep older workers in the labor force. This, in turn, can increase tax rev-

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2 In this monograph, elderly is used as a general term for those who are past middle age.
Drains and the ability of governments to support pension and medical payouts, along with the ability to spend on defense. However, whether these steps will be taken is a matter of politics, and politics is far harder to predict than demographics.

**Demographic Influences on the Tendency Toward War**

The academic literature has examined several types of relationships between overall demographic growth and the tendency of nations to go to war; three perspectives have received a good hearing.

The first argues that population pressures and fixed land resources (the quality of which is deteriorating precisely because of population pressures) may combine to create new causes for war. The second argues that young men, particularly in China but also India, will so greatly outnumber young women that a significant share will remain womanless and hence may be prone to gang violence—or, worse, may serve as fodder for future wars by states just as happy to be rid of them. The third argues that an aging world is a peaceful world, mostly because supporting the elderly draws resources from what would otherwise be spent on military endeavors, and, speculatively, because the old are not as hormonally prone to violence as the young. All three may be true, but the last appears most plausible.

**Implications for Military Power**

A world of states that compete militarily, border one another, and have comparable technologies (but no nuclear weapons) is one in which demographics had a considerable impact on relative national power (e.g., the Franco-Prussian/German rivalry between the mid-1800s and the mid-1900s). Circumstances are different today. Conquest rarely wins riches or even security. The world’s rich countries are allies of one another. Rich low-birthrate countries generally do not border high-birthrate countries. Finally, nuclear weapons can be a great equalizer,
keeping poor small nations from being intimidated by larger and richer ones.

But, then, how do demographics correlate to national power today? To address this, we focused on three core resources of military power: manpower, money (GDP), and the supply of very talented individuals for software and systems integration. The size of a nation’s working-age population is directly related to all three: trivially in the first case, by multiplication with a nation’s productivity in the second case, and through the enlargement of the pool from which technical expertise can be found in the third case.

Many steps separate the raw material of national power from power itself. Each of these three elements has to be converted into military strength. The quantity and quality of warfighters depend on recruitment policies, education and training policies, and cultural factors (e.g., the willingness of people to join the military). The conversion of national income into military expenditures depends on taxes, budget policy, the efficiency of the process by which requirements are formed and converted into product, and the country’s access to technology. The ability to exploit technical experts requires that they work on the right problems. Then military power has to be converted into warfighting (or war-detering) effectiveness, which has to be translated somehow into national security and well-being. The chain is long, but it all starts with resources.

The study then assessed the relative importance of each of these three broad resource components of military power to a canonical set of military missions, as follows:

- Demographics are a relatively minor factor in predisposing the outcomes of nuclear standoffs, particularly when compared to intangibles, such as determination.
- Apart from the manpower requirements of maintaining an air force or navy, building an effective capability to control the commons is largely a matter of having money and technical expertise, rather than manpower.
• The most important factors in enabling surveillance systems are money (to pay for the sensors) and technical expertise (to program the sensors and enable systems integration).
• Manpower, money, and, to a growing extent, technical experts are all important components in conventional warfare. Over the last 50 years, however, the balance has been shifting away from manpower and toward money and, especially, software.
• Raids and seizures require manpower—with an emphasis on quality in the case of raiders and quantity in the case of defenders.
• National institutions to produce highly skilled and worldly wise warfighters are required for many aspects of counterinsurgency, especially as the latter becomes a “thinking man’s” war. Money can also be used to purchase command, control, communications, and computers intelligence, surveillance, and reconnaissance (C4ISR) and signals-intelligence equipment (for support of border-keeping as well as gathering intelligence on high-value targets, attack plans, and so on) and logistics (for rapid intervention). Yet, it is no substitute for skilled manpower, the sine qua non of counterinsurgency.
• Manpower, backed by enough money for logistics, is essential for military operations other than war.

From this one may infer that a military contest between a smaller rich country and a larger poor one will find each side trying to define the war in terms that each can do well in. What starts off as control over the local commons and the attempt by one to impose surveillance regimes on the other may descend into conventional combat and further descend into an insurgency or low-intensity warfare—and perhaps back again. Asymmetric opponents produce asymmetric wars.

Conclusions

Barring catastrophe, the United States appears likely to have the demographic and economic resources to remain the world’s indispensable
nation through at least 2050. Its birthrate and immigration rates are high enough to keep its population rising, albeit in the 0.5 to 1 percent per year range (once the effects of the current recession on immigration rates wear off). The United States, which has 4.7 percent of the world’s working-age population, will still have 4.3 percent by 2050. When the relative flatness of the ratio between U.S. GDP per capita and those of most other nations is factored in, the current share of global GDP accounted for by the U.S. economy is likely to stay quite high.

China is likely to become the most important contender over the next 40 years in terms of national resource base, but its relative GDP has everything to do with how high its per capita productivity gets vis-à-vis the United States. If it achieves Japan-like levels of productivity by 2050, its GDP will be double America’s. If, however, it begins to level off as it approaches productivity levels characteristic of South Korea today, then China’s economy will be somewhat larger than the American economy. Finally, if the many challenges that China has—pollution, corruption, and financing the elderly—are not met, China may reach an economic inflection point earlier rather than later and fail to surpass U.S. GDP levels. Demographics suggest that if China’s economy cannot surpass the United States’ by 2050, it might never do so.

Lessons for the Air Force
The effect of international demographics on what the Air Force does over the next four decades reflects potential differences in the components of national power from one country to another.

The relative power of America’s traditional allies is falling vis-à-vis both emerging economies and high-growth nations. True, the U.S.

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3 This description of the United States became well-known when Secretary of State Madeleine Albright started including it in her speeches.

4 If one assumes that the U.S. fertility rate, which, uniquely, is higher than it was in the last generation, stays constant and that illegal immigration continues at rates characteristic of the last ten years, then the U.S. percentage of total world population might not decline at all.

5 National demographics—e.g., the geographic, ethnic, and educational composition of the United States—were not examined in this study. Yet, they have profound implications for how the Air Force recruits.
share of the world’s power may not be shrinking so quickly, and so the independent capability of the U.S. Air Force (USAF) to carry out global surveillance and global strike may remain. However, to the extent that the success of the USAF depends on its ability to work with others, notably other air forces, the shift in relative power should portend a shift in those countries with which the USAF has to interoperate. It is one thing to accommodate the expansion of the North Atlantic Treaty Organization (NATO) in the sense of having new partners with whom to interoperate, but the new NATO countries have shrinking populations. The harder task for the Air Force is to learn how to interoperate with rising and still-growing countries that have different cultural contexts and value structures. Yet, if the United States and its allies are to retain the same share of global power, then new countries have to be reached out to. Interoperability is likely to be a challenge, but, as with many such challenges, the earlier they are undertaken, the more time is available for working out the kinks. Here, the USAF needs to lean into the future.

The shrinking zone of instability worldwide, for its part, suggests that the current emphasis on counterinsurgency ought not to be confused with the Air Force’s long-term future. The easy tendency to associate the Muslim world with rapid population growth is only partially correct. North Africa, Turkey, Iran, formerly Soviet Central Asia, Malaysia, Indonesia, and even Bangladesh have birthrates that are below or no more than 20 percent above zero population growth levels (2.1 births per female). Muslim may not equate to unstable. If demographic factors explain insurgencies as much as or more than economic factors do, then declining birthrates would, over decades, shrink the number of places heir to insurgencies, irrespective of the future of economic growth. By contrast, issues associated with protecting the air, sea, space, or cyberspace commons or maintaining surveillance are far less dependent on demographic factors and are likely to maintain or even increase their relevance over the next few decades.