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THE UN 2010 POPULATION PROJECTIONS: A PROPOSAL

An NPG Forum Paper

By Lindsey Grant

The United Nations Population Division on May 3rd released its 2010 world population projections. The study is the best available collection of current world demographic data, but the projections, as usual, are something of a parlor game. They involve questionable and highly optimistic assumptions about fertility and mortality. They ignore other studies that identify external forces that will shape population growth. They assume political and social stability, and they slight the role of migration and the profound changes that it is generating.

The projections are probably dismissed by observers who recognize that long term numerical projections of complex phenomena are usually unreliable. Among the media, however, they are taken at face value and frequently used to buttress earlier preconceptions.

I would suggest a new approach: Use the present projection as the "no surprises" scenario, and then work with other UN scientific bodies to develop scenarios reflecting the connections between demography and anticipated changes in energy, food supplies, climate, resources, and human health and well-being.

THE PROJECTIONS CRITIQUED

The Population and Fertility Projections. Overall, the projections are roughly in line with earlier UN projections, though the medium projection for the first time embodies the explicit assumption that world growth will continue past 2100. That projection is 9.3 billion in 2050 (35% above the present) and 10.1 billion in 2100. The 2050 figure is 4% higher than was projected eight years ago, and 2% above the 2008 version. The slight rise reflects the failure of fertility in the poorest countries to decline as fast as had been expected, plus a more optimistic view of AIDS.

(There are also "high" and "low" projections, which are calculated simply by assuming fertility levels one-half child more and one-half child less per woman, respectively, than the medium projection. They lead in 2100 to world populations of 15.8 billion and 6.2 billion, respectively. For good reason, the Division emphasizes the medium projection and uses the others simply to underline the difference that a small difference in fertility can make.)

The new projections divide the world into "high", "intermediate" and "low" fertility countries, in an apparent effort to move away from the UN's outdated – and rather pejorative – "least developed", "developing" and "developed" categories. One should read the new divisions as a convenient way to sort the data, not permanent categories. The Population Division does not make the point, but changes – anticipated and not – in fertility, mortality and migration will change the categories and the numbers.

Almost all the anticipated growth occurs in 58 "high fertility" countries, i.e. those with fertility more than 50% above replacement level. Most of them are in Africa, with nine in Asia (including Pakistan, Iraq, and Afghanistan) and 10 elsewhere. Their population is projected to rise from 1.2 billion now to 4.2 billion in 2100. They now represent 18% of world population; that is expected to rise to 42%. (This is a phenomenon called "shifting shares". Barring massive differences in mortality, the more fertile supplant the less fertile.)

The UN calculations start from current patterns but assume that high, intermediate and low fertility regions will all move close to replacement level fertility of about 2.1 children per woman by the end of the projection period, leading eventually to stationary populations. This is a demographers' convention. There is no objective reason to expect that fertility will be so obedient. However, it is understandable. Without some

such arbitrary limit, the projections can run away, as shown below. But the convention imposes an artificiality on the projections. To observe that convention, they had to assume a decline from the present average of 4.9 children per woman in the high fertility countries to 2.1 by 2100. That is an heroic assumption. Their average fertility has fallen by only 27% since 1965-70, despite determined governmental and international efforts to promote lower fertility.

The central unspoken assumption embedded in that projection is that the high fertility countries can support the projected population levels.

Mortality and External Forces. Except for one ill-fated effort to reflect the AIDS epidemic a decade ago, the UN population projections do not embody externalities such as climate or the availability of food.

Other parts of the scientific community, including other UN organizations, have for two decades been reporting the evidence that the ability of the Earth's natural systems to support human populations is under threat from climate change, the decline of fresh water supplies, desertification, salinization and deteriorating soil quality. World food production depends on nitrogen produced with natural gas and petroleum and will decline with the decline of fossil energy, starting now with petroleum. Perhaps one billion people go hungry now, and various writers (this one included) have pointed to the evidence that a world population of no more than one or two billion is likely to be the maximum sustainable at any reasonable level after the fossil fuel era. The countries on the "high fertility" list are the chief victims of those problems. Many are already densely populated, and most already suffer from soil degradation and water shortages. The central question to ask of the UN demographers is "How can they possibly support such population growth?"

If they cannot, we may well see population growth reversed in this century, but driven more by rising mortality than by the predicted declines in fertility.

The Population Division, ever optimistic, assumes that life expectancy at birth in the "high fertility countries" will rise from 56 years now to 77 years in 2100. That failure to incorporate externalities has always troubled me as the Achilles' heel of the UN projections.

Lower Fertility, Better Prospects. At the other end of the spectrum, the "low fertility country" projections pose fewer problems. The report documents a dramatic recent decline in fertility in much of the so-called developing world. Fertility has been below replacement level in most of the traditional industrial countries. They are now joined by China, Brazil, Iran, Vietnam, Thailand and various smaller countries. The Population Division expects fertility to stay there, and the group is projected to experience a population decrease of 20%, to 2.4 billion, by 2100. Bravo! We can only hope they will keep pace with the prospective decline of food production.

The primary journalistic reaction to the report has been, not joy that these countries may have population growth under control, but the fear that they will be unable to support aging populations. I think the fear is overblown. Aging is a transient problem, generated by the shift from traditional societies to modern ones with longer lifetimes. It will happen, barring a return to rougher times and shorter life expectancy. If people live longer, many of them will work longer. That fear of aging ignores the real dependency ratio, which is the ratio of the truly old, the young and the unemployed to the working population. And it ignores the rise in labor productivity that has made unemployment more of a problem than labor shortages. I have dealt with the aging issue at length and will not return to it here. (See for instance Chapter 13 of *Too Many People.*)

The U.S. Anomaly. A number of countries are in the "intermediate fertility" category, with fertility between replacement level and 50% above it. In order of size, the largest are India, the United States, Indonesia, Bangladesh, Mexico and Egypt. This category is projected to rise 26% to 3.5 billion by 2100.

It is no honor that the United States (along with Iceland) is the only traditional "developed country" that falls in the "intermediate fertility" category. Indeed, the projection for the U.S. is among the more troubling of the national projections. The projected growth itself is troubling: a 30% increase to 403 million people by 2050 and a 54% increase to 478 million by 2100 – a higher rate of increase than the projection for the whole world. But that projection is *low*, compared with the U.S. Census Bureau projection of 439 million in 2050. When the experts can differ that much, one is tempted to dismiss all projections.

Neither the projected growth nor the difference between the two estimates is explained by fertility. The Population Division puts recent U.S. fertility at 2.07 and projects it to creep gradually up to 2.1 by 2100. (One wonders why, with those figures, they didn't put the U.S. in their "low" category.) The Census Bureau uses a figure of 2.1 until 2015, then drops the rate to 2.0. Such levels do not drive growth.

Migration, the Underestimated Variable. This takes us to the issue of migration. Migration is and probably will be a principal driver of population changes as people flee poverty for richer lives. Where the United

States and Europe are heading will be determined in large degree by the levels of immigration from poorer societies.

Estimates and forecasts of migration are particularly weak because much migration is illegal and unrecorded in official statistics. The Census Bureau derives its estimates and projections from a "2006 survey and administrative data", and does not elaborate. The official U.S. data for immigration are irrelevant, since they record persons legally admitted, whether or not they were already here illegally. The Population Division should have better data, since it uses records from both sending and receiving countries, but their data from Mexico (our principal source of migration) do not tally with those for the United States.

For what they are worth, the two projections of net U.S. immigration differ enough to explain much of the difference in the population projections. The Population Division shows a peak of 1.7 million per year in 1995-2000 and a decline to 991 thousand in 2005-2010; it projects annual immigration at 900+ thousand through 2050 and a decline to zero in 2095-2100. The Census Bureau shows similar figures for the past decade, but net immigration rises to 1.318 million in 2010 and thereafter is projected to rise steadily to 2.055 million by 2050. Note that these are net figures, but the U.S. Government has not attempted to measure emigration since 1957 – and migration figures are hopelessly entangled with non-migratory flows. I have no idea where either organization got its figures.

Until the 1980s, the Population Division and the U.S. Census Bureau ignored migration as a factor in population growth, and both are still trying to come to grips with it. Both groups have regularly had to raise their U.S. population estimates and projections as the decennial Census has shown them too low. And the Census itself is hardly the final answer, since illegal immigrants are likely to avoid enumeration.

Immigration raises the present population numbers. It also raises growth rates, since much migration typically is from poorer groups in poorer countries, with higher birth rates. The real expert on U.S. fertility is the National Center for Health Statistics (NCHS), which assembles the raw data. It thinks that the U.S. total fertility rate (TFR) dropped to about 1.7 – far below replacement level – in the 1970s. It has risen gradually since then but has stayed below replacement level except for 2006 and 2007. It went back down slightly to 2.08 in 2008, and down another 4% to 2.007 in 2009. Hispanic women drove much of the post-1970s increase in fertility. The TFR for non-Hispanic White women is still only 1.78. (National Vital Statistics Reports vol.59, No.3, 12-21-10: "Births: Preliminary Data for 2009", Table 1)

But NCHS knows the numbers of births, not the rates. It uses Census Bureau population data. If the population figures are too low, the imputed fertility rates will be too high. This phenomenon is usually ignored, but it is particularly important with regard to U.S. Hispanics because of their surging numbers and high fertility. The 2008 TFR among U.S. Hispanics is given as 2.91, declining (fortunately!) to 2.73 in 2009. Both figures are remarkably high. If, as I have suggested, we have failed to count all that growth, and if we speculate that the Hispanic population is 10% larger than has been counted, that would lower its 2009 TFR to 2.49.

That is good news, and it is bad news. It would mean that Hispanics are a bit less fertile than we thought, which is good if we don't want population growth. But it would mean that the total present U.S. population is larger than we think.

The Population Division is having comparable problems with its estimates and projections for Europe. Italy is the prime example, both because of its extremely low fertility (1.2) and its role as the favored pathway from the Arab lands into Europe. In 1998, the Population Division thought that Italy's population had peaked in 1995 at 57.4 million and would be declining past 55.8 million in 2010. The new figures give the 2010 population as 60.6 million, and rising. The difference is 9%, and the continuing growth markedly changes the perspective. The surge of Arabs through Italy into Europe, driven by the present instabilities in the Middle East, has led to a sharp debate within the European Union as to whether it can afford to keep the Schengen accords, which eliminated border inspections within much of Europe. Denmark has announced that it is reimposing the inspections.

In short, the demographic landscape of both the U.S. and Europe is being profoundly altered by levels of immigration that are not recognized by the statisticians. And that alone makes the forecasts about as useful as a parlor game.

THE PROPOSAL

What Use Are Such Forecasts? This exercise suggests that it is unwise to put much reliance on long-term population projections. In 2004, The UN carried its projections out to 2300. The Population Division itself warned at that time that projections beyond 40 or 50 years are "little more than guesses", and the projections got increasingly wild as they were extended. The 2004 medium projection peaked in 2075 and eventually settled at just under nine billion, but the high projection reached 36.4 billion in 2300, while the low projection was 2.3

billion. When the originating office itself puts out such a spread of estimates, they are of very little use.

The "What If" Approach. There is a remarkable number of international organizations (to say nothing of academic and national governmental groups) doing their separate projections of world economic and social indicators. The world is interconnected, but our efforts to understand it are compartmentalized. The problem is to get them in communication. The Food and Agriculture Organization (FAO) alone has done many studies on agricultural acreage, irrigation, fertilization, yields, technology and trade. It could be enlisted to develop alternative estimates of food production, country by country, for perhaps 50 years. The Intergovernmental Panel on Climate Change (IPCC) studies the impacts of climate change on human interests, including food production. There are parallel groups working on issues such as energy, water, forests and other environmental and resource problems. The UN Statistical Division collects data on a wide range of social and economic matters. The World Health Organization could be enlisted in a project to spell out the consequences of the current worldwide growth of urban slums for human health and the likelihood of epidemics. (There is a bitter urgency to that last proposal. If population growth cannot be controlled by conscious policy, it will probably be controlled in part by epidemics arising in those urban slums.)

There is thus a wealth of information about prospective changes that will influence and be influenced by population change. It awaits systematic use. The Population Division could propose joint projects to these sister organizations. Using the 2010 medium population projections as the default – "no surprises" – scenario, they could then develop alternative population scenarios that could be supported by the prospective availability of food, water, energy, etc.

These alternative scenarios would not seek spurious precision. Rather, they would offer broad estimates of the adequacy of anticipated food production (for instance) to meet the needs of projected population growth, of countries' ability to import food, of the worldwide availability of food under different demand assumptions, and how those pressures would affect migration. They would be transparent, in that each scenario would specify the assumptions on which it was based. For the first time they would offer some serious demographic projections for the futures they present.

Such an effort should be well within the capabilities of the Population Division. The present biennial projections could be spaced out to provide time to do these more sophisticated scenarios. The present two year spacing is much too close, anyway, because the changes are far smaller than the range of uncertainty and of little practical use.

The Population Division generates the best synopsis we have of the official wisdom about present population data and trends, country by country. It is widely used. If its projections were connected to other real world trends rather than representing a demographers' exercise, they too would become valuable policy tools for governments and scholars. They would provide quantitative answers to the questions: "What would a decline in population growth do to address this problem?" and conversely: "What population will this level of food production support?" Such quantified analyses would be the strongest possible inducement to the development of policies that fit real needs. It would serve all countries. The United States might even look at the demographic implications of its policies on labor, trade, the budget, capital flows, foreign aid, and especially on population and immigration. It's about time.

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His books include: *VALEDICTORY: The Age Of Overshoot, The Collapsing Bubble: Growth and Fossil Energy, The Case for Fewer People: The NPG Forum Papers (editor), Too Many People: The Case for Reversing Growth, Juggernaut: Growth on a Finite Planet, How Many Americans?, Elephants in the Volkswagen,* and *Foresight and National Decisions: the Horseman and the Bureaucrat.*

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