THE CONTEMPORARY POPULATION CHALLENGE

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The present is unexpectedly a critical time for population change and policy. We are little more than half way through the great population growth spurt that began in the middle of the twentieth century, but developed-country governments seem to be losing interest in the issue. This loss of interest may have a significant demographic impact. The probable reasons for the declining interest are a vague belief that the present demographic change has a momentum of its own, a reaction to the International Conference on Population and Development (ICPD) in Cairo in 1994 which may misinterpret the complex document that came out of that meeting, and a preoccupation with below-replacement-level fertility in the developed world.

Huge population growth is not now past history. United Nations estimates and medium projections (United Nations, 2001a) show a world population numbering 2.5 billion in 1950, 6.1 billion in 2000 and 9.3 billion in 2050. The next half-century will see almost as many people added to the world's population as the last half-century, and thereafter there may be one or two billion more people before growth comes to a halt. Global fertility decline is believed to have traversed over four-fifths of the journey from a total fertility rate of 5.0 in 1950 to 2.1 in 2050. But because of population growth momentum and an ever-expanding base population, the additions to world population did not peak until the 1990s at around 80 million per year, and are only a little below that now.

There are two main messages for future-gazers and policy makers. The first is that projections are far from certain. The second is that projections are necessarily based on past experience – including past policy experience – and, if this changes, then the projections must do so too.

The lack of certainty is shown by the fact that for 2050 the United Nations provides, in addition to the Medium Projection of 9.322 billion, a Low Projection of 7.866 billion and a High Projection of 10.934 billion. The High Projection is over three billion or almost 40 per cent above the Low Projection. Another recent projection, by Lutz and others (2001), provides a 2050 median figure of 8.797 billion, with an 80 per cent probability of it falling between 7.347 and 10.443 billion. The latter projection's "most likely" figure for 2050 is about half a billion below that of the United Nations but still implies huge growth and great uncertainty about its magnitude.

Most analysts have preferred during recent years to employ the United Nations Medium Projection because it has proved in these years to be remarkably accurate. This period of near-certainty may be passing. Two years after its release in 1999 of the 1998 projections, the United Nations produced revised figures raising the 2050 Medium estimate by 413 million people, 96 per cent of the difference being attributable to new figures for Africa and Asia, mostly in sub-Saharan Africa and South Asia. The United Nations Population Division said that 59 per cent of the upward adjustment was explained by countries (mostly in sub-Saharan Africa) failing to begin fertility declines as early as expected, and 32 per cent was because of greater sluggishness than anticipated in fertility decline in such large countries as Bangladesh, India and Nigeria.

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Twentieth-century projections were based on twentieth-century experience, and that was propelled by a near-consensus among powerful donor countries and their citizens about the need to give population control high policy priority and adequate funding[1]. This played a role in developing-country governments adopting population policies that brought down levels of fertility and population growth faster than socioeconomic change alone would have done. It also played a role in the development of contraception suited to large-scale family planning programmes in poor, undereducated countries. That consensus is now held with less fervour and this is reflected in funding and First World leadership. The result will almost certainly be slower fertility decline and greater population growth which must be reflected in adequate population projections.

The reasons for the loss of fervour are several. One is the initial success in reducing fertility, and its reflection in United Nations and other statistics. The world is less homogeneous than the reaction to these changes suggested. Fertility decline was persistent in relatively well-off and educated Latin America and in rapidly economically developing parts of East and Southeast Asia. However, there was the potential for problems elsewhere which was often not noted, but which can be observed in the three large countries pinpointed in the most recent United Nations projections as being unexpectedly sluggish.

There are many reasons why the fertility transition may be slow in some parts of sub-Saharan Africa. Among the people there are cultural resistances and among governments a lack of enthusiasm for leadership in the area: for these reasons national family planning programmes are unlikely to be like those of Asia or to have the same effect. There is also a very low level of development, with a high proportion of the population practising subsistence farming. Here extra hands produce extra food, and there will be extra hands where few children go to school. There are 20 countries in sub-Saharan Africa where women still have six or more children and there is little sign of fertility decline. These 20 countries average an infant mortality rate over 150 per thousand, a life expectancy of 45 years, and a per capita gross national income in purchasing power parity of a little over US$850 (1999). Perhaps more significantly, only half their girls of primary school age are in school as are one-third of those of secondary school age (net enrolment ratios). Compared with African countries like Ghana, Kenya and South Africa where there have been marked falls in fertility, their infant mortality rates are two to three times higher, their income levels lower, and their girls' secondary school enrolment level half. Ghana and Kenya laid the foundation of their fertility decline before the African economic crisis which began in the mid-1980s. Their populations already assumed that children's health could be guarded by modern medicine and that both boys and girls would normally go to school. The subsequent economic crisis and the family financial outlays associated with cost recovery in structural adjustment programmes did not reverse these assumptions but rather convinced many parents that their educational and health expectations could be maintained only if they had children more widely spaced. The poorer countries did not participate in this two-step process but are still beset by few and fee-charging schools and health facilities. They are also facing the beginning of demographic transition in an era of AIDS. Except in a few, mostly Southern African countries, the African fertility decline is largely an urban phenomenon, since the nature of families, the occupations of adults and the roles of children and expectations for them are very different in the towns from those in the countryside. The slow movers tend to be less urbanized than the countries where fertility decline is taking place, and especially tend to lack big cities. Finally, the higher-fertility countries have often had more immediate concerns than demographic ones, for they include most of sub-Saharan Africa's war-torn countries: Liberia, Sierra Leone, Eritrea, Somalia, Uganda, Angola and the Congo Democratic Republic.

Threshold explanations are not now popular, but some explanation of this kind is probably relevant to the situation in the large sluggish countries of South Asia. Bangladesh is probably the prime example, a country where a comparatively expensive and efficient family planning programme, assisted by a marked degree of socioeconomic change, halved its birth rate during the late 1970s and 1980s, only to find that the total fertility rate stagnated around 3.3 through the 1990s. As a consequence, the 2000

United Nations Population Projections show it reaching replacement fertility 30 years later than did the 1998 projections. What had not been previously taken into account is that Bangladesh is the poorest country in the world to have reduced the total fertility rate to 3.3, and it has done so with an infant mortality rate around 70, more than twice the level found in East and Southeast Asia. Bangladesh achieved such low fertility partly by overcoming the problems of purdah by having family planning workers call at every house with the hormonal contraceptive methods favoured in Muslim societies, but ironically donors, with less funding for family planning programmes, are now calling for a greater resort to centralized services and the use of permanent or long-term methods. India, which has largely funded its own programme, has long sought cheapness with its concentration on sterilization. It has achieved extraordinary success in its South but to a much lesser extent in its Hindi belt of large northern states (where child mortality is also relatively high). There are similarities in Nigeria where the southern half of the country has paralleled the fertility decline of Ghana and Kenya, but where the poorer, higher-mortality and solidly Muslim north, like neighbouring Niger and Chad, maintains high fertility.

ICPD produced a *Programme of Action*, which, like the product of other international consensuses, was complex, not entirely internally consistent, and easily misunderstood. It proclaimed that the population movement was no longer to be driven by demographic fears, while at the same time devoting a good deal of space to population growth and its implications. It placed its main emphasis on improving the female situation, especially in the areas of education and reproductive health, while partly justifying or at least noting that this would mean demographic gains in terms of lower child mortality and declining fertility. It sought to achieve reproductive health programmes of a type that the best family planning programmes had always hoped for. Nevertheless, it discouraged many involved in existing family planning programmes by seeming to condemn what they had hitherto regarded as past successes and by appearing to ask for more than their countries' health services could provide in the foreseeable future. It has almost certainly also confused donors who had not previously considered that the much more expensive national educational and health services warranted the same proportional support as did the family planning programmes.

But Western donor support for family planning programmes has also been weakened by the realization that the end of demographic transition may not take the form of equal birth and death rates but of below-replacement fertility. This appears to have been achieved already in countries where 44 per cent of the population of the world lives, and began to manifest itself in sustained fertility declines in developed countries from the 1970s. It is partly a product of more girls going to school and more women being in the work force, but it is also the product of forces released by the global effort to limit population growth, namely the invention of better contraception, and the moral support for young couples or young women having few children. Many policy-makers have now heard the argument that the move to limit population growth in developing countries was either never necessary or no longer necessary. Indeed, the impression has been given that ultimately fertility decline would be a disaster for all countries in that they would move towards a situation where over 30 per cent of the population would be aged, in the sense that they were over 65 years of age (Japan is to reach this level in 2030), and that this would place an unbearable burden on the working population in supporting old-age pensions and health services by means of high taxes.

The demographic situation is, in fact, much more complex than this, although these complexities have been insufficiently, or unconvincingly, spelled out to governments. First, not everyone is convinced that China is below or far below replacement-level fertility, and without its inclusion the proportion of the world's population in this category is halved to 22 per cent. Secondly, very low fertility (total fertility rates under 1.6), with little chance that completed cohort fertility will eventually come close to replacement level as older women continue to have births deferred from their younger years, is largely confined to Central, Eastern and Southern Europe, Japan and South Korea, and possibly Canada, around 750 million or one-eighth of the human race. Thirdly, population momentum ensures that crisis even in

these countries is not imminent. If the present situation continues, it will be one-third of a century before Italy, Spain and Japan experience population decline of half of one per cent per annum and 30 per cent or more of their populations over 65 years, and half a century before Germany does.

My point here is that the rich nations should still be primarily concerned with world population growth. By 2050 global population could be 8.9 billion, as the 1998 United Nations Revision Medium Projection calculated, or 9.3 billion as calculated in the 2000 Medium Projection. It could also be the 10.9 billion of the 2000 High Projections or, increasingly unlikely, the 7.9 billion of the 2000 Low Projection. The peak global populations could range between 9 and 12 billion; or, according to the Lütz and others (2001) 80 per cent probability projections, between 8 and 12 billion. With regard to the long-term stability of the world's ecosystems and our ability to feed everyone adequately and to give them a reasonably good life, that margin of 3 or 4 billion extra people may be critical. We may well be able to achieve these aims with 12 billion people but we are much more certain of being able to do so with 9 billion, and risking the additional 3 billion does not seem to be a worthwhile experiment.

Just what is likely to happen in the rich countries? The simple answer is that low fertility will continue to characterize these societies. But the situation is far from simple. Because total fertility rates are at present depressed by a continuing deferment of the age of women at marriage and childbearing, most overstate the threat to population replacement. In Europe, Scandinavia, France, Britain, Ireland and perhaps even the Netherlands will probably come close to replacing themselves, as will the United States. In any case, the traditional countries of immigration, the United States, Canada, Australia and New Zealand are unlikely to experience declining population. On the other hand, much of Southern, Eastern and Central Europe, as well as Japan and South Korea, will face declining population if present trends continue. But two points are important: first, even with present trends, substantial declines are in most cases decades away; second, fertility rates may not remain so low.

The reason that fertility may not remain so low is that nationalism is not dead. When real decline is experienced, policies and popular sentiments are likely to turn towards espousing motherhood in a way that may make similar efforts in the 1930s or in Eastern Europe between the 1950s and 1970s look puny. The post-1960s fertility declines were the result not merely of economic change, but also of a changing attitude to small families and even childlessness, partly arising from the "population explosion" debate. My guess is that in the coming decades we will see the opposite occurring, with popular and governmental lauding of two- and even three-child families, and quite dramatic policy changes to make them possible. The present very low fertility is less the realization of parental family building aims than the product of the financial difficulties experienced by families in high-consumption societies not having two breadwinners, and by the massive problems faced by mothers in continuing with their education or work or maintaining their position and rate of promotion in employment. These difficulties arise from insufficient support from governments, employers and husbands. We know that, when Sweden poured money into free pre-school support in the 1980s and early 1990s (for gender-equity, not demographic reasons), fertility rose to replacement levels, only to fall again by one-third when these expenditures were cut back as Sweden met the criteria for joining the European Union. The time may come when it is the achievement of motherhood that is linked to getting university scholarships, paying house mortgages and remaining on the fast promotion track.

Such policy and social changes may not be promoted merely by demographic nationalism but also by a variant of the women's movement and by powerful forces aiming at greater gender equity. Italy is already becoming introspective about the causes of its very low fertility as social scientists link it to husbands' failure to share domestic duties and child care, and relate this in turn to men marrying late after years of living as young adults in their parents' homes with mothers teaching them to expect to do nothing in the way of domestic tasks. What is to be hoped is that governments in developed countries can

become sufficiently sophisticated to deal with a bipolar world, so that their domestic population policies are separated from their technical aid attitudes to high-fertility countries.

Low fertility is rapidly changing the age structures of developed countries and demographers will continue to monitor this. Whether this portends economic disaster is open to question. The main employed age group, 20-64 years, a more sensible definition for rich countries than 15-64 years, remains a constant proportion of the population at around 56 per cent. The only change is that the burden of dependency shifts from supporting the young to doing the same for the old. This is an important emotional issue in the West where the young tend to be a family responsibility involving direct family expenditure while the old are a state responsibility paid for by family taxation. This picture is not universal, and, in any case, the changed effect on the national economy is probably not as great as most of the debate has suggested. Moreover, there is a tendency to underrate the efficiency of the modern economy and to overrate its potential for employment. It has shown itself quite capable of producing rising standards of living while up to 10 per cent of the work force is unemployed and another 5-10 per cent prematurely retired. Thus, although the tax base for supporting the aged could be adequately broadened by increasing the retirement age to 70 years, this may not be necessary. In fact, the economy may be at its healthiest if we do not do this, carrying with it, as the policy would, the need to provide unemployment relief for 65-69-year-olds.

Intermediate fertility level countries

I now wish to turn briefly to the larger "intermediate-fertility-level countries". These are defined by the United Nations Population Division as countries with total fertility rates in the range 2.2-4.9. For this analysis, I have defined "large" as being characterized in 2000 by a population of 30 million or more (United Nations, 2001b). This group constitutes 18 countries (Algeria, Egypt, Morocco, Sudan, Kenya, South Africa, Mexico, Argentina, Brazil, Columbia, Turkey, Bangladesh, India, Iran, Indonesia, Myanmar, Philippines and Vietnam) with a total population of 2.260 billion or 46 per cent of that of the developing world, 63 per cent without China. India alone constitutes 45 per cent of their population. For analytical purposes I will add three more large high-fertility-level countries to form an "extended" group: Nigeria, Tanzania and Pakistan. Thus extended, the 21 countries constitute 53 per cent of the population of the developing world (72 per cent without China), and India forms 39 per cent of the total.

The United Nations Population Division has been right to be cautious about overstating the speed of fertility decline. In comparison to other sources (DHS, INED, PRB), however, it seems now to be overstating the Bangladesh TFR, given as 3.6 in *World Population 2000* and 3.7 by averaging the 1995-2000 estimate and 2000-2005 medium projection in the 2000 Review of *Population Prospects* (United Nations, 2001a). A more probable estimate would seem to be around 3.3. Conversely, the TFRs of North Africa (Algeria, Egypt, Morocco, Sudan) appear to be understated, although less so in the averaged projections than in the *World Population 2000* sheet (United Nations, 2001b). It might also be noted that some countries are difficult to treat as a single unit. In Nigeria the TFR in the relatively poor Muslim north is still around 7.0 while in the richer, more educated and predominately Christian south it is in the 4-5 range, comparable with Ghana and Kenya. Conversely, in Sudan it is the richer Muslim north that is characterized by lower fertility.

There no longer seem to be any barriers to most countries reaching replacement-level fertility and subsequently falling below that level; certainly not an income barrier, for Moldova and Armenia, with per capita purchasing power parity incomes(pci ppp) similar to that of India, exhibit TFRs of 1.4 and 1.1 respectively. Similarly, religious barriers are not insuperable, with fertility in Catholic Italy and Spain being little more than half replacement level, and in Muslim North Africa declining persistently. Threshold analysis has fallen into some disrepute, but low fertility levels are significantly correlated with high per capita incomes, low child mortality, high female educational and employment levels, and

urbanization. Employing such measures (pci ppp over US$2,000; under-five mortality below 75 per 1000 births; over 30 per cent of girls in secondary school; and over 40% urbanization), 13 of the 21 countries examined here seem likely to exhibit below-replacement-level fertility well before 2050: a group in South America (Argentina, Brazil, Colombia and Mexico), another group in North Africa (Algeria, Egypt, Morocco), five Asian countries (Indonesia, Iran, Philippines, Turkey, Vietnam) and one in sub-Saharan Africa (South Africa). Those less likely to do so by these criteria are Sudan, Nigeria, Kenya, Tanzania, Bangladesh, India, Pakistan and Myanmar. If another factor is added, government resolve in the form of an efficient family planning programme likely to be kept in place as fertility declines, then India, and possibly Bangladesh, could be transferred to the first group. Latin American fertility decline may have been retarded by the Catholic Church, as is evidenced by Argentina, which has a pci ppp around that of Hungary or the Czech Republic, but has been characterized by a TFR which over half a century from 1950 to 2000 fell only from 3.2 to 2.6. Nevertheless, there may be a delayed parallel with the experience of Italy, Spain and Portugal, where TFRs were in the range 2.5-2.9 in 1965-1970, above those of Northern and Central Europe, but where now, at 1.1-1.5, they are below those of Northern Europe. Very low fertility may not even require employment for all women. Ever-higher levels of children's education, enforced by the principle of keeping up with the Joneses, may be enough. The foundation for fertility decline in Africa was laid by economic development, but subsequently the major force in reducing fertility seems to have been the costs of providing education and health care for children as African economies found themselves in trouble, and ensuing structural adjustment programmes imposed user-pays fees for these services. Among the Indian urban elite single-child families are no longer rare.

Other factors may be more important, particularly the globalization of markets and the consumer society, the aim of giving all girls a good education, and the belief that educated women should be employed outside the home. This has been given a new twist by the analysis of the factors determining Italy's very low fertility. It has been argued that many women cannot manage to stay successfully in the workforce in a patriarchal society where husbands give little help with child care and other domestic work, and where the state does not intervene to help with pre-school child care or employment provisions that do not penalize women for dropping out of the workforce while they have young children. It has also been argued that men are conditioned not to help in the household by their mothers during the long period of being in the parental house until marriage at, on average, almost 30 years of age. This has been compared with supposedly more helpful husbands in Northern Europe and the United States and more helpful governments in Northern and Central Europe. The irony of this comparison is that the Mediterranean patriarchal model is far more common in the world than the Northern European model and characterizes Latin America, North Africa, sub-Saharan Africa, Western Asia, South Asia and East Asia. If the analyses of the Italian situation are correct, then below-replacement fertility may characterize most of the world by 2050.

My hunch about the 2000 Revision is that it is largely on the right track except for the medium projection bottoming so widely at a total fertility rate of 2.1 which is unlikely to prove the lower limit for the majority of countries. My interpretation of the evidence is that the caution about Bangladesh was justified but that it has now been somewhat overdone in terms of when replacement fertility will be reached. I suspect also that replacement fertility will be reached earlier than the 2000 medium revision postulates in the cases of Argentina, Colombia and Mexico, and possibly South Africa and Pakistan.

But, as argued earlier, the whole situation could be changed by the development in Europe of strong pro-natalist attitudes and policies.

CONCLUSIONS

Will the whole world move toward below-replacement fertility? The experience of such non-Western societies as Japan and South Korea suggest that this will be so. Nearly the whole world is heading towards agreement that ever-higher educational levels are needed, that females should be educated as much as males, and that educated women should be in the workforce if they wish to be; and it seems that most wish to be. Both China and India are likely to keep national family planning programmes in position even with below-replacement fertility, and each would probably be sanguine about some decline in population size. Such movements will not stop the world's population reaching 8, 9 or 10 billion, but they will help achieve an ultimate stationary or declining total.

The most painful aspect of the world's future demographic behaviour is likely to be international migration. International migration has until now been restricted by the fact that much of the world's population was illiterate and rural and practised subsistence farming. Such people usually do not want to leave home especially for very different societies, and know that they would find it hard to cope with the inevitable social and psychological transitions. Economic and social globalization and the spread of education have changed this position dramatically and until such time as the developing world is developed we face the distressing situation where the pressure from both legal and illegal migrants to enter the rich countries will be far greater than the numbers these countries are willing to admit. The efforts taken by the rich countries to restrict the flow threaten to change the nature of these societies and to increase racism. The settlement countries will certainly take enough immigrants to sustain population growth. The reaction in Europe is less certain. In European countries where the indigenous population is declining, a considerable immigrant stream would certainly sustain numbers but the faster indigenous numbers declined the greater would be the ethnic diluting effect of immigration.

Demographers will also have more routine work to do in important but less politically fraught areas such as morbidity and mortality change and internal migration and urbanization. The two are not totally independent, for the growth of huge cities in poor countries raises questions about the health levels of the poor that must be answered by quantitative inquiry in order to give direction to remedial measures. Even in developed countries there is a growing interest in health differentials by social class, extent of education and residential environment, and the demand for such information will certainly rise. Specialized work will also be needed for specific crises, such as delineating and measuring the impact of the AIDS epidemic. The urbanization of the world is an extraordinary phenomenon, from little more than one-third of the human race living in towns in 1970, to about two-thirds in 2025, and perhaps 80 per cent not long after the middle of the twenty-first century. We are monitoring this growth but are doing little about elucidating its nature or its effects.

The immediate challenge is to maintain some of the attitudes, policies and expenditure patterns that have so far sustained the developing world's fertility decline. If this does not happen, then slow or stationary population growth may be attained not with 8 billion people, but with 9, 10, 11 or 12 billion. The differences in long-term environmental sustainability could be huge. The lower figures are likely to be attained if the West does not become too fixated on population decline over the next two or three decades. The minor concern is that technical aid for developing-country family planning programmes will continue to fall if declining population becomes an all-absorbing policy concern. The major concern is that the whole world is likely to follow the new policies and strategies for stabilizing population numbers in low-fertility countries, even in those countries with moderately high fertility.

We once thought of the end of demographic transition being a stationary population, around 10 billion. More recently we have thought in terms of a maximum population, followed by a long period of perhaps accelerating decline. This might not be a bad outcome. There is now a real possibility that measures to halt population decline will have a global impact in the second half of the twenty-first

century, leading either to continuing modest population growth or to an oscillating global population as ideologies and policies replace each other. In the long run much depends on environmental evidence and ideologies.

Population concerns, practitioners and university courses are unlikely to disappear. This could happen if population stasis were to be achieved, but this seems increasingly unlikely.

NOTE

[1]My own analyses of experience are to be found in Caldwell and Caldwell (1986).

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