Family Planning 1

Global population trends and policy options

Alex C Ezeh, John Bongaarts, Blessing Mberu

Rapid population growth is a threat to wellbeing in the poorest countries, whereas very low fertility increasingly threatens the future welfare of many developed countries. The mapping of global trends in population growth from 2005–10 shows four distinct patterns. Most of the poorest countries, especially in sub-Saharan Africa, are characterised by rapid growth of more than 2% per year. Moderate annual growth of 1–2% is concentrated in large countries, such as India and Indonesia, and across north Africa and western Latin America. Whereas most advanced-economy countries and large middle-income countries, such as China and Brazil, are characterised by low or no growth (0–1% per year), most of eastern Europe, Japan, and a few western European countries are characterised by population decline. Countries with rapid growth face adverse social, economic, and environmental pressures, whereas those with low or negative growth face rapid population ageing, unsustainable burdens on public pensions and health-care systems, and slow economic growth. Countries with rapid growth should consider the implementation of voluntary family planning programmes as their main policy option to reduce the high unmet need for contraception, unwanted pregnancies, and probirth reproductive norms. In countries with low or negative growth, policies to address ageing and very low fertility are still evolving. Further research into the potential effect of demographic policies on other social systems, social groups, and fertility decisions and trends is therefore recommended.

Introduction

For more than a half century of unprecedented growth, the global population reached 7 billion individuals in 2011. This modern expansion of the human population started at the onset of the industrial revolution in the late 18th century with a decline in the death rate in Europe and the USA and Canada. In the 20th century, reductions in death rates in Africa, Asia, and Latin America followed, leading to a population explosion at the end of that century. Nowadays, growth continues in most countries, but declines in birth rates are offsetting declines in death rates and population size is expected to reach 10·1 billion at the end of this century. If this projection holds, the world’s population will have grown by more than tenfold—from 0·8 to 10 billion—between 1800 and 2100.

In this report, we summarise variations in growth and their consequences for different regions of the world and then present policy options for addressing undesirable population trends in developing and developed countries.

Global demographic patterns in the past 50 years

In the past five decades, demographic change has been more rapid and more universal than in any other period of human history. As a result, the world is now more diverse in birth, death, and growth rates than ever. Figure 1 shows this diversity by mapping global patterns of population growth rates. Countries can be divided into groups depending on their current population growth rate.

Rapid growth (>2% per year)

This group includes most of the poorest countries in the world: much of sub-Saharan Africa, parts of south Asia (Pakistan and Afghanistan), the Arabian peninsula (which also includes rich oil-producing countries with small populations), and a few small countries in Latin America. These populations have relatively high fertility compared with the rest of the world, and moderate to low mortality. Population size in this group is expected to double by 2050.

In sub-Saharan Africa, despite substantial mortality from AIDS, the population growth rate is strongly positive and the UN expects no country in the continent to have negative growth because of the epidemic. This is true even in South Africa where the epidemic is particularly severe and fertility is lower than in the rest of the region. Consequently, the population of sub-Saharan
Africa is projected to more than double from 0·86 to 1·96 billion between 2010 and 2050 with some countries (eg, Niger) tripling in size. Such rapid growth has several adverse consequences.

Rapid population growth puts pressure on public services and infrastructure. Low-income countries tend to have limited public services (ie, health care, education, municipal), an insufficiently trained labour force, and weak infrastructure (eg, roads, water supply, electricity). Governments’ attempts to overcome these problems are made more difficult by the rapidly growing number of people that need to be served. New services, new school graduates, and new infrastructure have to be created at a rate of 2–4% per year simply to maintain conditions without deterioration.

A rapidly growing population can result in reduced economic growth because it leads to a high ratio of young to working age people, thus reducing income per head and contributing to low savings. Poor health can likewise result from rapid population increases. Low income countries do not have the private and public resources to ensure adequate health care, and available health-care facilities are often unable to serve adequately the ever increasing needs of the population. Additionally, high birth rates, childbearing at very young and at advanced ages, and short birth intervals increase maternal and child mortality.

Another result of rapid population growth is stress on the environment. Expanding populations and rising consumption contribute to several worrying environmental trends: shortages of fresh water; depletion of soils; pollution of air, water, and soil; rising food and energy costs; deforestation; and loss of biodiversity. Prospects are worst for the poorest countries (most of them in sub-Saharan Africa) which have very rapid population growth and limited agricultural resources such as water and arable land. For example, Niger’s population is projected to more than triple (from 16 to 55 million) between 2010 and 2050. Whether this growth is feasible is not clear, since available arable land is very limited and threatened by desertification, and much of the present population lives on the edge of famine.

Moderate growth (1–2% per year)
This group includes large countries such as India and Indonesia, and north Africa and western Latin America. Most have relatively low death rates compared with the rest of the world, and fertility that has been declining for some time. In these populations the adverse consequences of very rapid growth are being reduced. In particular, the decline in fertility has several benefits with time: stresses on public services and infrastructure become less acute, maternal and infant mortality benefit from the widespread use of contraception, the economy receives a boost (the so-called demographic dividend) as the labour force grows more rapidly than the young and old dependent population, and women can start working for wages outside the household instead of devoting most of their time to childrearing.

Low or no growth (<1% year)
This group includes the most advanced-economy countries (eg, the USA and Canada and much of Europe) and several large middle-income countries (eg, China and Brazil) which have completed their transitions to low fertility and have near zero growth rates. Although the stresses of rapid population growth no longer exist in these countries, they have high consumption levels and hence are major contributors to global environmental problems such as climate change. Additionally, these countries now face a new demographic challenge—population ageing. Ageing has been underway for several decades and is expected to continue at a rapid pace for the foreseeable future. For example, between 2010 and 2050 the proportion of elderly people (aged more than 65 years) is projected to rise from 16·3 to 27·4% in Europe, from 13·1 to 22·0% in the USA and Canada, from 22·6 to 37·8% in Japan, and from 8·2 to 23·3% in China. These trends have major implications for the welfare of elderly people and for the economy. In rapidly developing countries (eg, China) support has traditionally been provided by families, but this support is under threat because parents have fewer children than...
in the past and children increasingly move away from home. Unfortunately, few developing countries have created formal institutions to take over this care. By contrast, in developed countries much of the support for elderly people is now provided by public pensions and health-care programmes. These programmes are popular and have successfully reduced poverty for elderly people, but their sustainability is being threatened as their costs become increasingly burdensome to taxpayers. Developed countries with ageing populations are now struggling to address the fiscal stresses in these systems because failure to do so could have severe economic consequences.

Population decline (<0% per year)
A small but growing number of countries have defied earlier projections and are now declining in size. Japan, Germany, Russia, and much of eastern Europe had negative growth in 2005–10. By 2050, Russia is projected to have 17% fewer people than in 2010 and Japan 20%. Additionally, these countries will have the greatest ageing, with the proportion of people aged older than 65 years reaching more than 30% by 2050.

The key demographic cause of negative growth is fertility below the replacement level of 2·1 births per woman. With such low fertility each generation of women is smaller than the previous one thus leading to population decline. Two fifths of the world’s population now lives in countries with fertility below replacement (eg, Europe’s 1·5 and China’s 1·6 births per woman). However, three offsetting demographic factors can keep below-replacement countries temporarily growing: rising life expectancy, because the longer people live the more people are alive; immigration; and population momentum, which refers to the boost in growth produced by a young population age structure. Together these factors explain why the number of countries with below-replacement fertility nowadays is much larger than the number of countries that have negative growth. However, the UN expects the list of countries with negative growth to increase as the role of the offsetting factors diminishes with time.

Future population trends 2010–50
Figure 2 shows trends in projected global population to 2050 based on the low, medium, and high variants of the UN projections. These variants differ only in the assumptions regarding the future path of fertility. For the medium variant projection, fertility trends are based on a new probabilistic method that uses empirical fertility trends estimated for all countries of the world for the period 1950 to 2010. The low and high variant projections assume fertility will remain half a birth lower or higher, respectively, than the medium variant rate for the projection period. As shown in Figure 2, a slight change in assumed fertility leads to a substantially different population trajectory. In the high variant assumption, population size in 2050 is 1·3 billion people higher than in the medium variant and the low variant is 1·2 billion lower.

The table summarises the UN medium variant population projections from 2010 to 2050 for major regions of the world. The population of sub-Saharan Africa is expected to more than double by 2050, making it by far the most rapidly growing region. Asia, Latin America, and the USA and Canada are projected to add about a quarter more to their present populations. Europe is the only region where a decline is anticipated (mostly in eastern Europe).

By 2010, fertility had declined to below three births per woman in all but one region. The important exception is sub-Saharan Africa where fertility is still greater than five births per woman. In future decades, fertility declines are projected in all developing regions with the largest
decline assumed in sub-Saharan Africa (from 5.1 in 2005–10 to 2.5 in 2045–50). Whether such a rapid decline can be achieved is debatable and, as noted, even a modestly higher fertility trajectory will lead to much higher population in 2050.

Fertility declines are achieved by expanding the use of contraception among women of reproductive age. In developing countries as a whole, contraceptive prevalence rose from a few percent in the 1950s to 61% in 2010, with very large increases in Asia and Latin America. Unfortunately, sub-Saharan Africa still lags behind in contraceptive uptake. The region witnessed some improvement in use between 1990 and 2000 (from 13 to 20%), but contraceptive use seems to have stagnated in the past decade. Should this trend continue, the population of sub-Saharan Africa will be well beyond the projected 2 billion mark in 2050. For many developing countries and particularly sub-Saharan Africa, achieving contraceptive prevalence consistent with the projected medium variant population growth will require substantial investment to meet the unmet need for family planning.

Population policy options in developing countries
Since the 1960s, alongside efforts to increase levels of education and to improve health, the main policy response to high fertility and rapid population growth has been implementation of voluntary family planning programmes that provide information about, and access to, contraceptives. This policy has permitted women and men to control their reproductive lives and avoid unwanted childbearing. The choice of voluntary family planning programmes as the main policy instrument to reduce fertility has been based largely on the documentation of a substantial rate of unwanted childbearing and an unsatisfied demand for contraception. When questioned in surveys such as the Demographic and Health Surveys or World Fertility Surveys, large proportions of married women in developing countries report that they do not want a pregnancy soon. A substantial proportion of these women (more than half in some countries) are not protected from the risk of pregnancy by practising effective contraception and, as a result, unintended pregnancies are common. Family planning programmes provide a win-win solution; the welfare of individual women and children is improved, and the national economy and environment benefit. The present international consensus around this issue is shown in the Millennium Development Goals, specifically in target 5B—to provide universal access to reproductive health by 2015 and to reduce the unmet need for family planning.

Figure 3 presents estimates of unmet need for contraception for major regions of the world between 1990 and 2009. In sub-Saharan Africa, a quarter of women have an unmet need for family planning, which is twice as high as in any other region. Additionally, the extent of unmet need for family planning in the region has remained almost unchanged since 1990 and trends in the past decade suggest a possible increase.

According to Singh and colleagues, meeting the contraceptive needs of 215 million women with unmet need for modern contraception would reduce unintended pregnancies by more than two thirds, avert 70% of maternal deaths, 44% of newborn deaths, and 73% of unsafe abortions, and reduce by 76% the number of women needing medical care for complications related to unsafe abortion. In addition to these health benefits, the resulting reduction in fertility and population growth would bring substantial socioeconomic and environmental benefits.

Effect of voluntary family planning programmes on fertility
The substantial shifts in reproductive behaviour in the developing world during the past 50 years are well established, but debate about the causes of this change continues. Whereas conventional demographic and
economic theories emphasise the demand-driven nature of reproductive change, viz revisions and elaborations of these theories assign crucial roles to changes in the cost of birth control and to ideational shifts such as changing attitudes to birth control and diffusion mechanisms.

Family planning programmes can contribute substantially to accelerate fertility transitions by reducing the various costs (broadly defined to include health, social, and psychological obstacles to use of contraception and abortion) and by providing information that can affect parent’s assessments of the costs and benefits of children.

Measurement of this fertility effect of family planning programmes is not straightforward since it requires the estimation of an unobservable quantity—ie, the level of fertility that would have occurred in a population if the family planning programme had never been implemented. The best available evidence of the effects of such programmes comes from both controlled and natural experiments.

The largest and most influential controlled experiment in the discipline of family planning is the Family Planning and Health Services Project that started in the late 1970s in Matlab, a rural district of Bangladesh.12,16,17 Figure 4 summarises the effect of the programme on fertility. Within 2 years of the start of the intervention, the proportion of women using contraception in the intervention area increased from less than 5 to 32%. By contrast, very little change occurred in the control area and in the rest of Bangladesh during the first years of the experiment. The rise in contraceptive prevalence in the intervention area led to a decline in fertility of about 1·5 births per woman below that in the control area. The success of this intervention led to the adoption of the Matlab model by the Bangladesh government as its national family planning strategy.

Bangladesh also presents a natural experiment in comparison to Pakistan. The two countries were united from 1947 until Bangladesh was created after the civil war in 1971. As a result, these two populations still have much in common and levels of development are broadly similar, even though Pakistan scores slightly higher on several development indicators. Figure 5 shows the trends in fertility in the two countries from 1975 to 2010. In 1975–80, the two countries had nearly the same very high fertility of 6·6 births per woman, but trends diverged in subsequent decades. By the late 1990s, Bangladesh’s fertility had declined to 3·4 births per woman while in Pakistan, fertility remained at 5·0.

Much of the contrasting fertility trends in these two countries can plausibly be attributed to differences in family planning programmes. Pakistan’s programme has been weak and ineffective and has lacked government funds and commitment. By contrast, Bangladesh has implemented one of the world’s most effective voluntary family planning programmes, using the experience and lessons from the Matlab experiment. A unique feature of the programme is its cadre of literate female workers who counsel women and distribute supplies at the doorstep, thus overcoming the barriers posed by the purdah system (ie, the practice of concealing women from men). Bongaarts10 has described other such natural experiments comparing Kenya and Uganda, Indonesia and the Philippines, and Iran and Jordan. In all these comparisons, fertility was substantially lower in the countries with strong programmes (Kenya, Indonesia, and Iran) than in the corresponding countries with weak programmes (Uganda, the Philippines, and Jordan). These findings from both controlled and natural experiments support the conclusion that a well-organised family planning programme with a substantial information–education–communication component can reduce fertility by about 1·5 births per woman.

The effect of such a reduction in fertility on population size can be very large. For instance, the difference in

Figure 3: Percentage of married women with unmet need for contraception by region, 1990–95, 2000–05, and 2009. Data from UN world contraceptive use, 201010^9 LAC=Latin America and Caribbean. N=North. S=southern. SSA=Sub-Saharan Africa.

Figure 4: Effect on contraceptive use and fertility of family planning experiment in Matlab, Bangladesh. (A) Reproduced from Cleland and colleagues,12 by permission of the World Bank. (B) Data from ICDDR,B 2001,17 and ICDDR,B 1994.14

Series
fertility rates between the low and high variant of the UN projections for sub-Saharan Africa is one child per woman. By 2050, that difference will result in a difference of half a billion people in the population of that region, depending on whether actual fertility follows the path of the low or high variant projection. In the absence of substantial investments in family planning programmes in the region, the high variant could well become a reality, especially in view of the slow pace of fertility change in the region. However, with substantial new investments in family planning in sub-Saharan Africa, the low variant could probably be achieved. The timing of fertility decline is also a crucial determinant of future population growth. For example, Pakistan’s failure to promote family planning in the 1970s and 1980s led to much more rapid population growth than in Bangladesh. In 1980, Pakistan’s population (80.5 million) was slightly smaller than Bangladesh’s (80.6 million), but by 2050 its population is projected to be 41% larger than Bangladesh’s (275 vs 194 million). When populations are growing rapidly, a delay in the implementation of family planning programmes and the fertility decline associated with them have major implications for future demographic trends.

**Policy options in countries with low fertility**

Although much attention of policy makers and researchers has justifiedly focused on high fertility in the developing countries of sub-Saharan Africa and southeast Asia, concerns about the adverse effects of below-replacement fertility in economically advanced countries are rising rapidly. Policy makers have, until recently, been reluctant to support probirth measures and action. Several factors explain this reluctance: a disinclination to interfere with personal decision making about family size, the apparent inconsistency of advocating probirth policies at home while supporting efforts to reduce fertility in developing countries, the hope that fertility will soon increase again without intervention, and the high cost of intervention. However this reluctance has now largely disappeared as the cost of inaction becomes increasingly evident and the importance of intervention.

However this reluctance has now largely disappeared as the cost of inaction becomes increasingly evident and efforts to reform pension policies and health-care systems have proven difficult and unpopular. Moreover, if fertility remains very low then reform alone will be inadequate to address the problems. Various measures have been implemented or are being considered, including birth bonuses, family support measures (eg, subsidised childcare, reduced taxes for families with children), paid parental leave, and even a dating service (in Singapore). Such measures can be expected to raise fertility because on average in most developed countries, actual fertility is lower than desired family size and reductions in the cost of childbearing will make it easier for women to combine a career with the preferred level of childbearing. Reviews of the past effect of such measures conclude that they can indeed raise fertility but the effect is modest. Country studies in the past 10 years in Japan, Italy, and Spain, among others, confirm this conclusion and show that probirth policy measures can have different effects in different institutional, cultural, or economic environments.

Another important policy option linked to addressing low fertility in economically advanced countries is immigration. However, some researchers estimate that hundreds of millions of immigrants will be needed to keep the ratio of working age people to dependants constant in the many countries with low fertility. Despite increasing approaches to limiting the migration of unskilled people, policies in high-income countries with low fertility are converging on the need to attract increasing numbers of highly skilled workers and this objective is being realised through regular immigration programmes in countries such as Canada, Australia, the USA, France, Germany, and the UK. The effect of this pattern of migration on development in the countries of origin of the immigrants is not clear and the traditional debates around so-called brain drain (and more recently on brain gain) are dominant themes in discussion of international migration and development.

**Conclusions**

Rapid population growth and high fertility are a threat to the wellbeing of individuals and societies in the poorest developing countries. The choice of voluntary family planning programmes as the main policy instrument is based largely on evidence of a substantial unsatisfied demand for contraception. Family planning programmes aim to reduce the various social, economic, and health obstacles to the use of contraception, thus reducing unwanted fertility. Additionally, information–education–communication messages can contribute to declines in desired family size.

The very low fertility now prevailing in many developed countries is increasingly also regarded as a threat to the future welfare of these societies. Rapid population ageing is leading to an unsustainable burden on public pensions and health-care systems. Additionally, ageing
and population declines are expected to lead to slower growth in income per head than is currently achieved. Unfortunately, an understanding of the linkages between policies, social and economic conditions, and fertility remains limited, thus making it more difficult to consider action. Further research is needed to elucidate the potential effect of various family policies on childbearing decision-making; on the role of the welfare state and its cultural underpinnings in determining long-term fertility trends; on the interaction of demographic policies with other social systems, such as gender and the family; and on the effects of policies on different social groups.28

The need for further research should not prevent policy makers from taking action now based on present knowledge and experience to address the challenges of high and low fertility regimes and to reduce their adverse effects on the wellbeing of families and societies.

Contributors
ACE led the entire process of writing this report, beginning with conceptualisation in consultation with coauthors. He drafted the outline, and guided the review of relevant published work and analysis of secondary data. He wrote the introduction and conclusion of the paper. JB contributed to conceptualising and shaping the report. He wrote the section about demographic patterns in 2010 and guided on inputs relating to the demographic effect of the AIDS epidemic. BM wrote the paper. We thank Remaré Ettarh for African Population and Health Research Center, which supported the writing time of ACE and BM. We also thank the Hewlett Foundation for their general support to the report. We thank Remaré Ettarh for African Population and Health Research Center, which supported the writing time of ACE and BM.

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