

*Review*

# Population, poverty and economic development

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Economists, demographers and other social scientists have long debated the relationship between demographic change and economic outcomes. In recent years, general agreement has emerged to the effect that improving economic conditions for individuals generally lead to lower birth rates. But, there is much less agreement about the proposition that lower birth rates contribute to economic development and help individuals and families to escape from poverty. The paper examines recent evidence on this aspect of the debate, concludes that the burden of evidence now increasingly supports a positive conclusion, examines recent trends in demographic change and economic development and argues that the countries representing the last development frontier, those of Sub-Saharan Africa, would be well advised to incorporate policies and programmes to reduce high fertility in their economic development strategies.

**Keywords:** economic development; family planning; millennium development goals; population; poverty

## 1. INTRODUCTION

From the time of Malthus onwards, economists, demographers and other social scientists have been debating whether and how high fertility and rapid population growth affect economic outcomes and vice versa. There are at least four basic forms of the debate.

- (i) Does a large number of children diminish a family's present well being and future prospects?
- (ii) Does rapid population growth adversely affect the overall performance of the economy and its ability to achieve and sustain general well being?
- (iii) Does low income, or poverty, contribute to high fertility?
- (iv) Is rapid population growth a symptom, rather than a cause, of low national output and poor economic performance?

In other words, the debates occur at both the macro- and the micro-levels and are about the direction of causality.

Despite these debates, a broad consensus has developed over time that as incomes rise, fertility tends to fall. There is little debate about the causal relationship between rising prosperity and declining fertility. Generally speaking, there has been a uniformly high correlation between national income growth and falling birth rates, and between family incomes and

fertility. Economists and demographers for the most part agree that important ingredients of improved living standards, such as urbanization, industrialization and rising opportunities for non-agrarian employment, improved educational levels, and better health all lead to changed parental perceptions of the costs and benefits of children, leading in turn to lower fertility. In other words, there is no longer much debate about whether or not improved economic conditions, whether at the family level or at the societal level, lead to lower fertility. There are, of course, important differences between countries, and even within countries, regarding the timing and the pace of these changes, but that there is a causal relationship running from improved living standards to lower fertility is no longer in much dispute (National Research Council 1986).

Where debate remains active and at times quite contentious has to do with whether causality runs the other way—i.e. does reduced fertility improve the economic prospects of families and societies? Here there is anything but consensus, although, as I will argue in this paper, there appears to be a slowly growing convergence of views in favour of an affirmative answer to this question. This paper, in other words, addresses the question of whether reduced fertility, and more particularly public policies designed to reduce fertility, can lead to higher incomes and improved living standards.

A good deal of research, of course, has been conducted on this question. The paper attempts to summarize the present state of such research and the conclusions that emerge from it today. My purpose is to try to identify what policymakers can conclude from the present state of research and then to speculate on what might be accomplished between now

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and 2050 if policymakers were to pursue what I take to be the course of action suggested by the research findings.

## 2. WHAT DO WE KNOW—MACRO?

Through the nineteenth and the first half of the twentieth century, intellectuals were roughly divided between the followers of Malthus and the followers of Marx. Crudely stated, Malthusians believed that high rates of population growth condemned societies to more or less permanent states of underdevelopment and that only by breaking the iron linkage of high fertility to poverty could real improvements in standards of living be achieved. Marx, on the other hand, argued that high fertility was a symptom, not a cause, of poverty and said that only by bringing about a radical transformation in the underlying causes of poverty would living standards rise and birth rates begin to fall.

In the modern era, which is to say since World War II, there have been three broad stages of economic thinking on the relationship between rapid population growth and economic performance. In the first stage, which followed the post war discovery by demographers of extremely rapidly expanding populations in many parts of the developing world, the work of scholars such as Coale & Hoover (1958), Myrdal (1968) and Enke (1970) came to be widely accepted. It was decidedly neo-Malthusian, arguing that only by bringing rapid population growth under control could countries hope to achieve improved economic performance and high standards of living. While this work hardly represented a consensus among development economists, it did capture the imagination of policymakers, particularly in the richer countries, and contributed to the formation of the modern 'population movement' as we have known it since the 1960s. This movement took as a given fact that rapid population growth harmed the prospects for development and that strong policies to reduce population growth rates were an essential precondition of sustained economic development (National Academy of Sciences 1971).

The second stage, which can be dated from around 1986, was what economist Kelley called the 'revisionist' period (Kelley 1986). The emblematic work of that period was the 1986 US National Research Council (NRC) publication, '*Population growth and economic development: policy questions*'. The work of an expert committee, the 1986 NRC report, concluded that as one of its authors, Birdsall (1988) put it, 'rapid population growth can slow development, but only under specific circumstances and generally with limited or weak effects'. This was a return to mainstream neo-classical economics, which had always viewed Malthus's views as one-dimensional and simplistic, and which generally expressed skepticism about the strength of the relationship between high fertility and economic growth.

In an important sense, the NRC report broke the back of the population movement and ushered in a period of uncertainty about the priority that should be given to population policies, as well as about what the content of policy should be. It is fair to say that

the NRC report fits nicely with the ideological predispositions of the Reagan Administration in the USA, which in 1984 had announced at the International Conference on Population at Mexico City that 'population growth is in and of itself neither good nor bad; it is a neutral phenomenon'.<sup>1</sup>

The NRC report also reinforced the views of feminist and human rights critics of the population policies of the 1960s–1980s who successfully lobbied for wholesale changes in orientation away from population control and towards a rights-based approach, culminating in the reproductive health and rights agenda that emerged from the International Conference on Population and Development at Cairo in 1994 (Singh 1998).

An important conclusion to be drawn from the history recounted thus far is that the views of economists matter a great deal. Indeed, notwithstanding Robert McNamara's deep commitment to population stabilization and his personal efforts to promote population policies during his presidency of the World Bank, the Bank's cadre of professional economists has for years succeeded in keeping population at a relatively low priority in terms of bank lending operations. More often than not, the macroeconomic and sector analytic work of the Bank pays scant attention to population dynamics, even in such chronically high fertility regions as Sub-Saharan Africa.

This brings us to the third, and current, stage of economic thinking on population and economic development. A new group of development economists decided to look at the impact, not only of reducing population growth rates, but also of changing age structures on economic outcomes (Bloom & Canning 2006). They reasoned that rapidly declining fertility is accompanied by changes in the ratio between the economically active population and dependent population. As fertility falls, a larger proportion of the population is in the age range 15–65, compared with the under 15 and over 65 categories. This one-time 'demographic bonus' ought to be associated with increased economic output at the same time that social services requirements for those not yet economically active (e.g. for education and health care) decline. Thus, assuming countries also pursue sensible pro-growth economic policies, the demographic bonus ought to translate into a jump in income *per capita*. Applying the model to the Asian Tigers (Korea, Singapore, Taiwan and Thailand), these economists found that the data fit the model extremely well. Countries that incorporated strong and effective population policies within the broader context of social and economic development policies were able to cash in very profitably on the demographic bonus. So, by looking at a changing age structure in addition to declining fertility, economists were now able to discern a highly plausible causal connection between demographic change and economic growth—a connection that was much more difficult to see in the less sophisticated analysis of the 1986 NRC study and the prior revisionist research on which it reported (Merrick 2001; Greene & Merrick 2005).

This latest chapter in the ongoing saga of macroeconomic thinking on population–economic interactions

does not by any means represent a new consensus. Many economists remain skeptical about the demographic bonus, or 'window of opportunity', as it is also sometimes known. But as the research accumulates, more and more policymakers are paying attention to it and forming their own ideas in accordance with the findings.

### 3. WHAT DO WE KNOW—MICRO?

One might expect that economists interested in examining the impact of fertility on household income would pay more attention to the micro-level than to the macro-level, but this is not the case. Much more research has been conducted at the macro-level than at the micro-level, probably because of the greater availability of appropriate datasets. The truth is, that only detailed household panel surveys or randomized interventions (or actual or natural experiments) are adequate to accurately estimate the impact of fertility at one point in time on household income at subsequent points. Such datasets are comparatively rare because of the time and expense required to construct them. In the absence of longitudinal household information, it is nearly impossible to address the issue of what economists call the 'endogeneity of fertility problem' and thus the direction of causality: does poverty reinforce high fertility or does high fertility lead to poverty?

Fortunately, in just the last few years, datasets have become available (or have been discovered by economists) that permit sophisticated micro studies of the fertility–poverty relationship (Merrick 2001). One of these is the Indonesian Family Life Survey, a panel study that covered several years and that permitted investigators to look at the effect of changes in desired and actual fertility at one point in time on subsequent household poverty. Canning & Schofield (2007) found that over a three-year period, one birth on average reduced the likelihood of female labour force participation by 20 per cent. This decline in women's contribution to household income, in turn, reduced expenditure *per capita* in the household, pushing a significant number of families into poverty and preventing the escape of a significant number from poverty.

One of the economists who has been most demanding of a solid evidence base for conclusions about the effect of fertility on economic development or poverty is T. Paul Schultz. Schultz, while willing to stipulate the plausibility that high fertility acts as a barrier to economic growth and poverty reduction, has nonetheless for many years remained skeptical that the relationship is as strong or as stable as many neo-Malthusians assert it to be. Recently, however, Joshi & Schultz (2007) conducted a study, 'Family planning as an investment in development: evaluation of a program's consequences in Matlab, Bangladesh', using data from the famous Matlab family planning quasi-experiments of 1974–1996 and the associated surveillance system. Schultz and Joshi found that in the 'programme', villages and individual households fertility declined by some 15 per cent more than in the 'control' villages. They then looked at the impact

of that decline 'on a series of long run family welfare outcomes: women's health, earnings and household assets, use of preventive health inputs, and finally the inter-generational effects on the health and schooling of the woman's children. Within two decades many of these indicators of the welfare of women and their children improve significantly in conjunction with the programme induced decline in fertility and child mortality. This suggests social returns to this reproductive health programme in rural South Asia have many facets beyond fertility reduction, which do not appear to dissipate over two decades'.

The question of whether or not high fertility leads to, or exacerbates, poverty and whether this in itself should be grounds for policy interventions ultimately revolves around the question of parental intentions with respect to childbearing. If parents perceive children as good in and of themselves and are willing to forego other forms of consumption for the sake of having a large number of children, most economists would argue it is hard to make the case that they should be urged to have fewer of them. If, on the other hand, many of the children very poor parents are bearing are the result of unintended pregnancies, the case for public policies to assist them in having fewer would seem to be stronger.

Thanks to the remarkable series of surveys that began with the World Fertility Survey in the 1970s and continues to this day as the Demographic and Health Surveys programme, we know a great deal about fertility intentions in a large number of countries around the world, and the inescapable conclusion is that a significant proportion of births in developing countries are the result of unintended pregnancies. For example, an estimate by the Global Health Council in 2002 revealed that roughly one-quarter of the 1.2 billion pregnancies that occurred in the developing world between 1995 and 2000—some 300 million—were unintended (Daulaire *et al.* 2002). Since these estimates are the result of ex-post surveys of the women who had the pregnancies, many of whom may have changed their minds about the 'wantedness' of the pregnancies after they realized they were pregnant, it is quite likely that estimates of the number of unwanted pregnancies in fact understate reality. The ever rising numbers of abortions and of maternal deaths that result from abortion are additional evidence of the incidence of unwanted pregnancy around the world.

It seems justified to conclude that the burden of evidence from micro-analysis is that high fertility reinforces poverty and makes an escape from poverty more difficult. As Birdsall *et al.* (2001) conclude in their overview chapter in *Population matters: demographic change, economic growth and poverty in the developing world*, '...the essays in this volume do point to a conclusion which links concern about population growth and change more directly to concern about the welfare of millions of people in the developing world. In their entirety, they put together a newly compelling set of arguments and evidence indicating that high fertility exacerbates poverty or, better put, that high fertility makes poverty reduction more difficult and less likely'.

#### 4. POPULATION GROWTH, HIGH FERTILITY AND THE MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) were adopted by consensus following the United Nations (UN) Millennium Summit in 2000. They represent seven specific development goals adopted by the community of nations, as well as an eighth goal to work in harmonious partnership. The seven quantitative MDGs and their targets are as follows:

##### Box 1. Millennium development goals

###### *Goal 1: eradicate extreme poverty and hunger*

*Target 1a.* Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.

*Target 1b.* Achieve full and productive employment and decent work for all, including women and young people.

*Target 1c.* Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

###### *Goal 2: achieve universal primary education*

*Target 2a.* Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.

###### *Goal 3: promote gender equality and empower women*

*Target 3a.* Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015.

###### *Goal 4: reduce child mortality*

*Target 4a.* Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.

###### *Goal 5: improve maternal health*

*Target 5a.* Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio.

*Target 5b.* Achieve, by 2015, universal access to reproductive health.

###### *Goal 6: combat HIV/AIDS, malaria and other diseases*

*Target 6a.* Have halted by 2015 and begun to reverse the spread of HIV/AIDS.

*Target 6b.* Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it.

*Target 6c.* Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.

###### *Goal 7: ensure environmental sustainability*

*Target 7a.* Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.

*Target 7b.* Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss.

*Target 7c.* Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.

*Target 7d.* By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.

all developing countries, donor countries and international development agencies and institutions have embraced the MDGs and pursue them in their various development plans and agreements. Elaborate monitoring systems have been put in place to track progress against the goals, and as recently as last September, the nations of the world convened at UN headquarters in New York to reaffirm their commitment to the MDGs. The MDGs themselves were derived from the remarkable series of sectoral international development conferences of the 1990s, each of which produced an outcome document with one or more international goals. Interestingly, only one conference of the 1990s, the 1994 International Conference on Population and Development (ICPD) at Cairo, failed to have its outcome goal included in the MDGs: universal access to reproductive health. One indisputable consequence of the decision to exclude the ICPD goal from the MDGs has been a significant drop off in the priority accorded to reproductive health and family planning programmes (figure 1). Many in the population and reproductive health communities expressed deep concern over the absence of a reproductive health MDG and lobbied hard to have the situation rectified. The result was agreement in 2005 to add target 5b, the precise language of the ICPD programme goal—not exactly an MDG but a target against which country performance can now be measured and judged. Specific indicators of progress were ultimately agreed upon in early 2008: the contraceptive prevalence rate; the adolescent birth rate; the extent of antenatal care coverage and the unmet need for family planning.

An important part of the argument for incorporating the Cairo language in the MDG framework, albeit belatedly, was the assertion that all or nearly all of the MDGs would be unachievable unless the Cairo goal was also achieved. Proponents sought to demonstrate that unless couples, and women in particular, were able to gain better control over their own reproduction and to achieve their desired fertility, continuing high fertility and population pressures would make it nearly impossible to reduce poverty, reduce hunger, achieve full employment, reach universal completion of primary school, achieve gender equality, reduce under five mortality, reduce maternal mortality, reverse the spread of HIV/AIDS and other diseases or achieve any of the environmental targets. Perhaps, the most comprehensive of these analyses were carried out by the UNFPA and the Alan Guttmacher Institute in 2004 (United Nations Population Fund (UNFPA) 2004; UNFPA and the Alan Guttmacher Institute 2004) and by the UK All-Party Parliamentary Group on Population, Development and Reproductive Health in comprehensive hearings conducted in 2006 and its subsequent publication, *'The return of the population growth factor: its impact on the millennium development goals'* (UK All-Party Parliamentary Group on Population Development and Reproductive Health 2006). The uniform conclusion of all these analyses is that, absent effective programmes to enable individuals to manage their own fertility more effectively, virtually none of the MDGs, can be achieved by the target date of 2015 in the majority of low income countries.

In a very real sense, the MDGs represent today's consensus international development agenda. Nearly



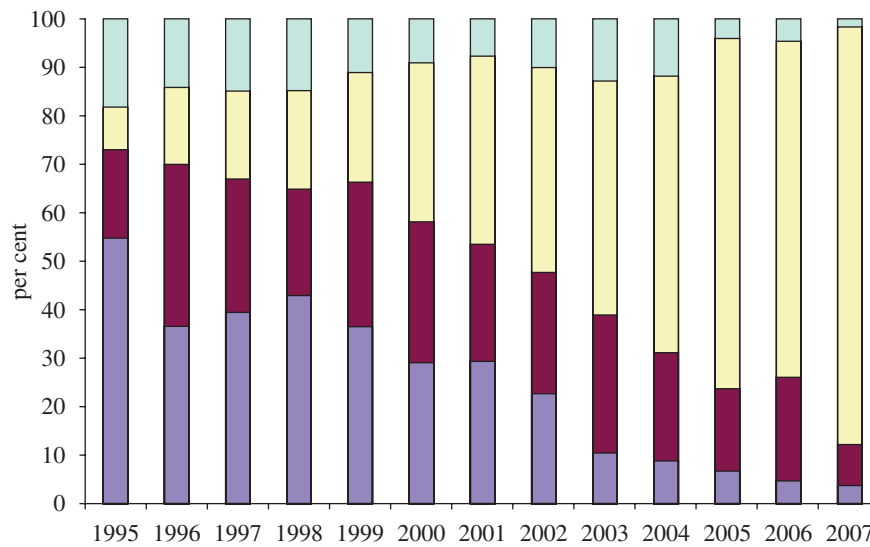


Figure 1. Donor allocation of population assistance, 1996–2007. Purple, family planning services; magenta, basic reproductive health services; yellow, STD/HIV/AIDS; blue, basic research. Adapted from UNFPA/UNAIDS/NIDI. 2006 figures are preliminary; 2007 are projections.

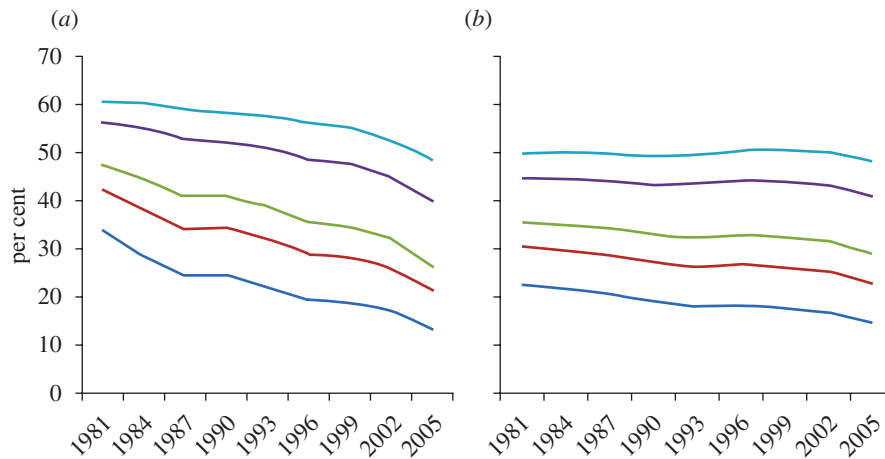


Figure 2. (a) Poverty levels over time world population (per cent). (b) Poverty levels over time excluding China. Dark blue, \$1 a day; red, \$1.25 a day; green, \$1.45 a day; purple, \$2 a day; light blue, \$2.50 a day. Adapted from World Bank Development Indicators (2008).

**5. TRENDS AND PROSPECTS**

That is the bad news. The good news is that poverty has been declining and living standards have been improving in most of the world’s regions over the past two or three decades (figure 2).

According to the World Bank, living standards have risen dramatically over the last decades. The proportion of the developing world’s population living in extreme economic poverty—defined as living on less than \$1.25 per day (at 2005 prices, adjusted to account for the most recent differences in purchasing power across countries)—has fallen from 52 per cent in 1981 to 26 per cent in 2005.

Substantial improvements in social indicators have accompanied growth in average incomes. Infant mortality rates in low- and middle-income countries have fallen from 87 per 1000 live births in 1980 to 54 in 2006. Life expectancy in these countries has risen from 60 to 66 between 1980 and 2006.

Poverty in East Asia—the world’s poorest region in 1981—has fallen from nearly 80 per cent of the population living on less than \$1.25 a day in 1981 to 18 per cent in 2005 (about 340 million), largely owing to dramatic progress in poverty reduction in China. The goal of halving extreme poverty between 1990 and 2015 has already been achieved in East Asia. Between 1981 and 2005, the number of people in poverty has fallen by around 600 million in China alone. In the developing world outside China, the poverty rate has fallen from 40 to 29 per cent over 1981–2005, although the total number of poor has remained unchanged at around 1.2 billion.

The \$1.25 a day poverty rate in South Asia has also fallen, from 60 to 40 per cent over 1981–2005, but this has not been enough to bring down the region’s total number of poor, which stood at about 600 million in 2005.

In Sub-Saharan Africa, the \$1.25 a day poverty rate has shown no sustained decline over the whole period

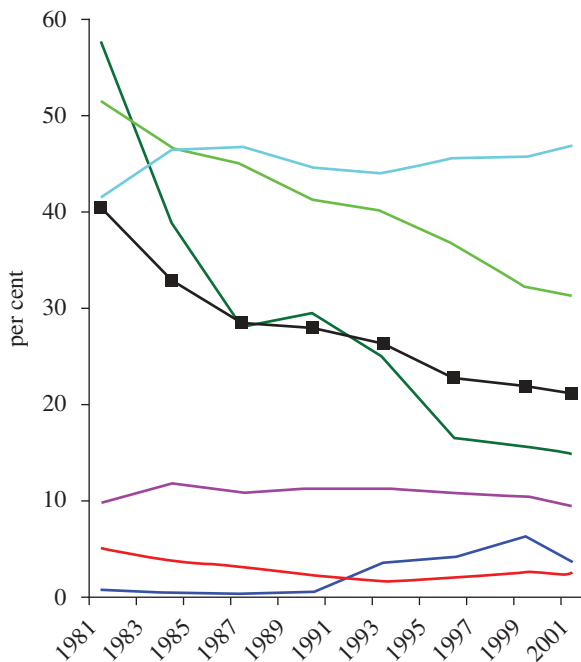


Figure 3. Percentage living on less than \$1 per day. Dark green, East Asia; dark blue, Eastern Europe and Central Asia; purple, Latin America; red, Middle East and North Africa; light green, South Asia; light blue, Sub-Saharan Africa; black line with filled square, World. *Source:* 'How have the world's poorest fared since the early 1980s?' by Shaohua Chen and Martin Ravallion. See <http://econ.worldbank.org/external/default/main>

since 1981, starting and ending at around 50 per cent. In absolute terms, the number of poor people has nearly doubled, from 200 million in 1981 to 380 million in 2005. However, there have been signs of recent progress; the poverty rate fell from 58 per cent in 1996 to 50 per cent in 2005.

In middle-income countries, the median poverty line for the developing world—\$2 a day in 2005 prices—is more relevant. By this standard, the poverty rate has fallen since 1981 in Latin America and the Middle East and North Africa, but not enough to reduce the total number of poor (figure 3).

As figure 3 makes clear, nearly all the decline in poverty over the past 25 years has occurred in Asia, most dramatically in East Asia, where China's success is clearly evident. However, it needs to be borne in mind that East Asia as defined by the World Bank also includes Southeast Asia, including Thailand, the countries of Indochina, Indonesia and the Philippines. Many of these countries, not coincidentally, have registered quite dramatic declines in fertility over the same period of time. It is highly plausible, if not provable, that the decline in poverty and the improvement in living standards that have occurred in Asia over the past 25 years are attributable at least in part to the very successful fertility reduction policies these countries pursued simultaneously. An exception that perhaps proves the rule is the Philippines, where fertility has declined very little and poverty rates remain essentially unchanged from their 1980 levels.

Another measure of development, albeit one that is not universally accepted, is the distribution of income.

Most development economists, however, view movement towards a more equitable distribution of income as an indicator of development and modernization. Improving income distribution usually accompanies poverty reduction and indicates improving opportunities and prospects for the lowest income groups. As can be seen in figure 4, the Asian countries show the most favourable income distributions among the major regions of the developing world.

Some will not view the correlation between declining fertility and reduced poverty/improved living standards as causally connected or may persist in seeing them as connected in the opposite direction: improved living standards leading to lower fertility. I hope that the review of recent theory and research on this question earlier in this paper will persuade readers that there is a strong reason to believe that reduced fertility can in fact lead to economic development and higher standards of living. The case of Latin America demonstrates, however, that while reduced fertility may be a necessary condition for economic growth and development, it is not a sufficient one. If countries fail to put in place and effectively implement sound economic policies, reduced fertility by itself will not automatically produce economic advancement. Despite impressive fertility declines over the last 30 years, Latin America as a whole has seen comparatively little reduction in poverty or improvement in income distribution. In fact, it is arguable that the failure of governments in that region to address extremely skewed income distributions and to invest in human capital is the primary underlying factor in the failure to grow economically (of course, a number of countries in Latin America—Chile, Costa Rica, Brazil—represent important exceptions to this generalization).

My own view is that the fertility–economic development relationship is a mutually reinforcing one, where improvements in one tend to encourage and then accelerate improvements in the other—the so-called virtuous circle. Where countries succeed in stimulating economic growth and then encouraging its continuation (most of today's rich countries), declining fertility will usually follow (an exception is the oil-rich states where economic growth is an artefact of mineral extraction with non-indigenous labour and where modernization in its usual sense has not occurred). But, on the other side, where countries succeed in encouraging reduced fertility (Korea and Bangladesh), they put in place an important potential stimulant to economic development. Where the two occur simultaneously as part of a comprehensive development strategy, as they have in East Asia, the most virtuous of circles can develop.

One thing that has become increasingly clear in recent years is the importance of investing in human capital and in human development. Whereas an older generation of economists paid little attention to the importance of education and health in promoting economic development, today's economists are increasingly of the view that a well-educated and healthy population are essential ingredients in sustained economic growth. The most influential of development institutions, the World Bank, has become increasingly insistent in its publications and

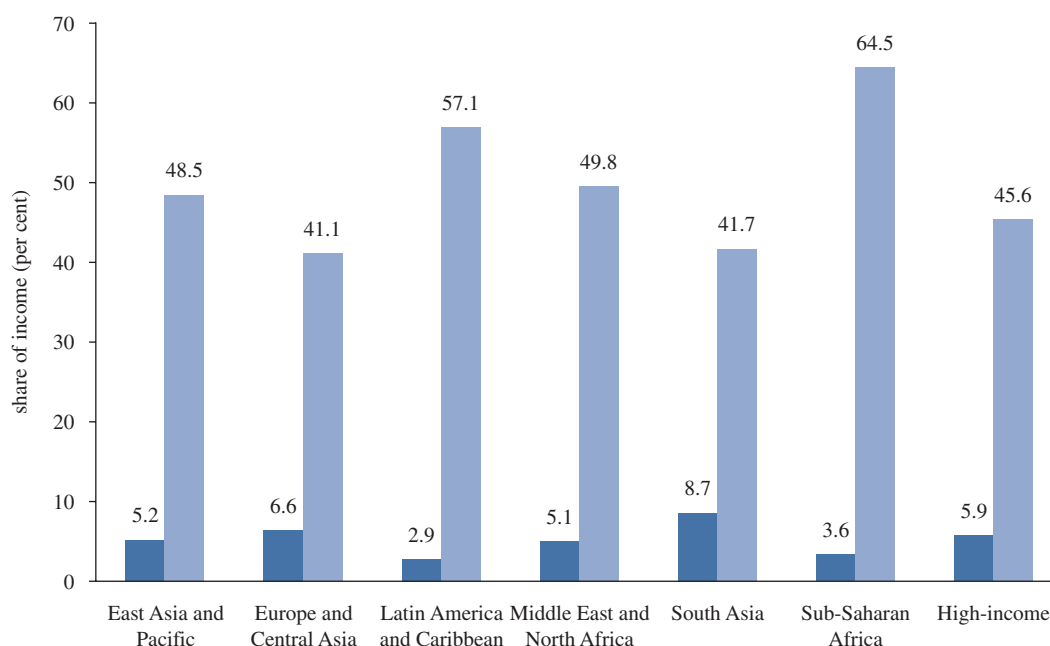


Figure 4. Income distributions. Dark blue bar, poorest 20 per cent; light blue bar, richest 20 per cent. Adapted from World Bank Development Indicators (2008).

in the advice that it gives to countries, that they place high priority on their educational and health systems and that they strive to bring about improvements in both the educational and health status of the population, not just on moral grounds but as essential conditions for economic growth. The history of the last 30 years in East Asia has had a profound impact on the thinking of the current generation of development economists. The policy package that is now broadly advocated by the bank and other development advisers places a very high priority on improving health and education, alongside the more conventional economic policy prescriptions regarding savings and investment, incentives to industry, export-oriented growth, monetary and fiscal policies and the development of capital and equity markets.

Still missing from the standard set of policy prescriptions, and a very important omission in my view, is one regarding reduction in fertility. As I mentioned earlier, one searches long and hard, and usually in vain, for advice from World Bank officials to African governments to address the issue of high fertility and rapid population growth. Perhaps, it is because of the sensitive nature of human reproduction; because of the unfortunate history of coercion in a handful of earlier family planning programmes in Asia, or because of persisting skepticism of economists regarding the fertility-development linkage. Whatever the reason, African policymakers are not hearing the message that the future of economic development in Africa depends in part on bringing down the extraordinarily high fertility of most Sub-Saharan states.

Africa is, in many respects, the last frontier in terms of economic take-off and sustained economic growth. In every other region, despite the presence of outliers and differential rates of growth, there is clear evidence of movement towards improved living standards and overall well being. There are also several bright spots in Africa and some relatively recent evidence of

broad improvements, but continuing civil unrest, poor governance and economic corruption and mismanagement in too many countries means that overall progress is slow and setbacks are many. Why in such an environment should one even think about advocating on behalf of intensified efforts in fertility limitation, reproductive health and family planning? If there were not several examples of success in population planning in Africa, it would be very hard to answer that question, but the truth is that in several countries south of the Sahara, strong programmes have yielded perhaps surprisingly positive results. I refer not only to South Africa, where fertility has been fairly low for quite a long time, but also to the historic successes in Botswana, Zimbabwe and Kenya, and more recently in Rwanda. In all these countries, the interest and commitment of the political leadership translated into national policies and programmes designed both to influence family size norms and to provide family planning services to those who wanted them. The response on the part of the public in every case was positive and substantial. All of these countries saw large increases in contraceptive use and falls of between 15 and 25 per cent in their birth rates.

In addition to these national examples, there is the interesting and promising Navrongo Community Health and Family Planning Project, a field experiment conducted between 1994 and 2003 in the isolated and impoverished northern region of Ghana. As the Matlab experiment in Bangladesh showed a decade earlier, the Navrongo study showed that even under conditions of extreme poverty and depressed living standards, a demand for fertility limitation could be identified and satisfied by appropriately designed services (Phillips *et al.* 2006). Fertility was reduced by 15 per cent in the programme areas, whereas it remained essentially unchanged in the control areas.

Kenya, Zimbabwe, Botswana, Rwanda, and the Navrongo project, have all demonstrated that

population policies and reproductive health programmes can work in Africa. What is needed now is for African leaders to understand this and also to believe that effective fertility control programmes need to become essential elements of the economic development strategies they design and implement in their countries. Effective family planning is as essential to the future success of Ghana, Cote D'Ivoire and Mozambique as it was for Korea, Thailand and Indonesia.

## 6. CONCLUSION

In tracing the recent history of theory and research on the connection between demography and economics, we find a new consensus is emerging; that reductions in fertility and declining ratios of dependent to working age populations provide a window of opportunity for economic development and poverty reduction.

Empirical studies increasingly support the idea that countries which have incorporated population policies and family planning programmes in their overall economic development strategies have achieved high and sustained rates of economic growth and that they have also managed significant reductions in poverty. Fertility reduction is by no means an economic development panacea and is certainly not a sufficient condition for economic growth, but it may well be a necessary condition, establishing conditions in which governments can invest more *per capita* in education and health, thus creating the human capital for sustained economic growth. Likewise, with fewer children to care for and raise, families can improve their prospects for escaping the poverty trap. At both the macro- and micro-levels, moderating fertility enhances economic prospects.

Throughout the developing world, declining birth rates and rising living standards have gone hand in hand. The evidence suggests that the interrelationship between them represents a virtuous circle, whereby improvements in one reinforce and accelerate improvements in the other. The virtuous circle can be initiated either by investing in human development programmes such as healthcare and education or by investing in programmes to reduce fertility. But the example of the East Asian Tigers suggests that the best strategies have been those that do the two simultaneously.

These recent historical experiences hold important lessons for Africa, development's last major frontier. By drawing on these examples, as well as Africa's own success stories, and by recognizing the link between demography and economic development, African leaders and policymakers can devise integrated economic development strategies that give a prominent role to population policies that include strong reproductive health and family planning programmes.

## ENDNOTE

<sup>1</sup>In the interest of full disclosure, I should confess that as the then USAID Agency Director for Population, concerned about the Reagan Administration's statement at Mexico City, I had commissioned the NRC study in the full expectation that it would reaffirm the findings of an earlier NRC report (1971) to the effect that 'high fertility and rapid population growth have serious adverse social and economic effects'. Had I been a more careful student of

demographic-economic research at that time, I might have made a different decision.

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