

# How Demographic Change Can Bolster Economic Performance in Developing Countries

*David E. Bloom & David Canning*

## **Introduction: Does population change matter for economic development?**

For many decades, rapid population growth has been one of the main challenges confronting developing countries. How can a country that can barely feed its existing population hope to prosper when there are so many new people every year? Reverend Thomas Malthus was among the first to recognize this challenge when, in his 1798 *Essay on Population*, he put forth the hugely influential pessimistic view that population growth, powered by an irrepressible passion between the sexes, tends to depress income growth. By contrast, and more recently, others (such as Julian Simon and Esther Boserup) have suggested that population growth can actually promote economic development by spurring technological innovation. Still another group maintains that there is no overall effect of population growth on economic growth.

In the last few years, however, new research has revived and substantially extended a nearly forgotten idea first asserted more than 50 years ago: Although population growth per se may have no net effect on economic growth, the specific manner in which population grows—and, in particular, the changes in age structure that accompany population growth—can have, and has had, an enormous effect. For a prototypical country, the argument runs as follows:

The country starts out with high fertility and mortality rates. Many babies are born, but a large number of them die; there is also widespread

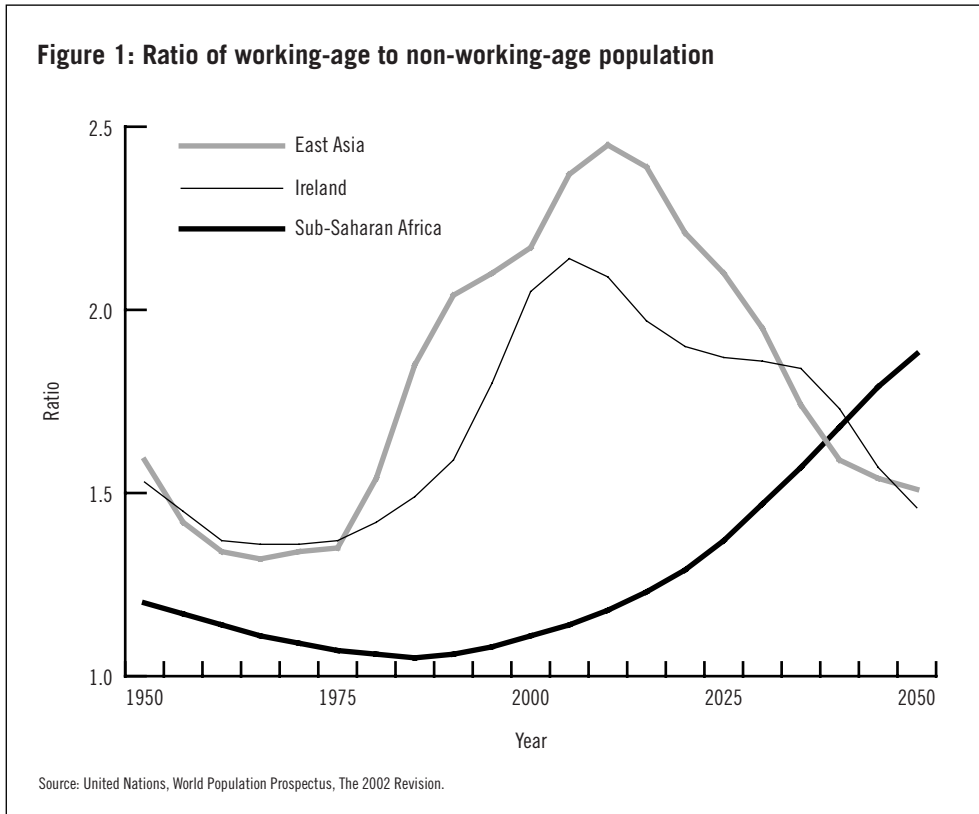
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David Bloom is the Clarence James Gamble Professor of Economics and Demography, and David Canning Professor of Economics and International Health, at Harvard School of Public Health. The authors thank Larry Rosenberg for helpful comments, discussions, and other assistance.

sickness and early death among the general population. As advances in public health reach the general population, mortality rates fall, especially among infants and children who increasingly survive when previously they might have died. After a period of time, as they realize their children are more likely to survive, couples choose to have fewer of them. This process can be encouraged and reinforced by family planning, educational development, and other improvements in living standards. If medical advances are accompanied by economic growth, moreover, working opportunities for women become more widespread and the opportunity cost of having children therefore increases. The experience of different regions in the second half of the 20th century shows that the time lag between the onset of the fall in mortality rates and the corresponding decline in fertility rates can occur within widely different time frames, from 15 years upwards.

The initial fall in infant mortality rates creates a “boom generation”, in which there are more people than in earlier generations because child survival rates are higher. When fertility rates fall, the boom stops, but the age structure of the population then shows a “bulge” that is created by the non-synchronous falls in mortality and fertility. The bulge is particularly pronounced if the period between mortality and fertility decline is short, as it was in East Asia, for example. The bulge works its way through the age structure and, for a period of time, the share of the population that is of working age (generally taken to be 15–64) can be significantly higher than it was previously and than it will be in the future.

Figure 1 shows the ratio of working age to non-working age population (the inverse of the dependency ratio) in East Asia, Ireland, and Sub-Saharan Africa over the period 1950–2000, with projections out to 2050; data are from the United Nations *World Population Prospects* (2002 revision). Starting in between 1975 and 1980, fertility reductions led to rapid improvements in the working age to non-working age ratio in both East Asia and Ireland. On the other hand, high fertility in Sub-Saharan Africa has kept the ratio low and its demographic dividend is only now beginning to appear. The figure makes clear that the age structure effects in Ireland and East Asia are temporary (they are now close to their peak) and will dissipate as the baby boom generation ages. However, they do provide a window of opportunity for rapid economic growth while they last. While this large cohort of “baby boomers” is of working age, there are, by historical



standards, relatively few young and elderly people. This expansion in the relative size of the working-age population corresponds to an expansion of the per capita productive capacity of the economy, creating the potential to heighten the pace of economic growth. Moreover, because people save mainly during their working years, the relatively large size of the working-age population will likely result in increased savings rates, providing a further long-term stimulus.

In addition, there are behavioral effects; for example, having fewer children can boost women's participation in the labor force, and allows economic resources to be redirected from meeting the basic needs of a large cohort of children to providing higher levels of capital, education, and health per child, increasing future productivity and income levels.

This recent shift in focus from growth in total population numbers to changes in population age structure represents something of a watershed in academic thinking on population issues. Earlier work based only on the

overall growth of population suffered from a basic flaw. Population growth (in an economy with no net migration) is the difference between the birth rate and the death rate. A country can reduce its population growth rate by reducing its birth rate or increasing its death rate, but these have very different effects on economic performance through their effect on age structure, since the effect of births is concentrated at the base of the population pyramid (i.e., age zero) while the effect of deaths is diffused throughout the pyramid (i.e., across the whole age range). Treating the two as symmetric (i.e., by just focusing on overall population growth) has turned out to be a fundamental mistake that led to an under-appreciation of the importance of demographic change and its potential effects on economic performance.

## **The importance of policy**

The potential for a “demographic dividend” is not always realized; economic growth is not an automatic outcome of changes in the population structure. A large working-age population requires a matching demand for labor if the demographic dividend is to be enjoyed. Without appropriate policies the extra labor supply can result in unemployment or underemployment, with political instability, elevated rates of crime, and the deterioration of social capital a possible further consequence.

The key determinants of whether a country will capitalize on its demographic opportunity are how flexible the economy is and how far it is able to absorb a rapidly increasing labor force.

A comparison between Latin America and Southeast Asia is instructive here. Latin America has a demographic history that is similar to that of Southeast Asia, but the latter has experienced rapid economic growth over the last 40 years, while Latin America has stagnated by comparison. Demographic opportunity alone has been insufficient for Latin America for three main reasons.

First, many countries in Asia have successfully worked to educate the majority of young people and to do so in a fashion that has prepared them for an economy in which workers need to be able to learn new tasks. In an era when production methods change quickly in response to international demands and trends, better-educated workers are more able to adapt to new circumstances and contribute to the success of a wide range of

industries and firms. The focus in numerous Asian countries on building a cadre of young people with good general education and technical skills has been invaluable.

Second, East and Southeast Asia have found ways to engage in international trade that have helped to keep their large cohorts of workers productively employed. The enabling changes involved a phased, careful, and partial opening of economies to international markets, with governments striving to ensure that integration would have definable, and quickly visible, effects on the local economy and people. In Latin America, too, governments have tried to integrate with the world economy, with a shift away from highly protectionist policies but many have suffered long periods of poor macroeconomic management. The results, in terms of economic growth and poverty reduction, have been disappointing. Meanwhile, internal markets have not been dynamic enough to provide employment to the large working-age cohort.

Third, Asian countries have had, in general, less restrictive labor laws than has Latin America. Laws providing protection to workers—e.g., minimum wages, the right to organize, restrictions on firing—have been very important in many countries in steering clear of some of the worst abuses of workers. At the same time, less restrictive labor regimes in Asia—although perhaps initially harmful to workers—ultimately complemented the efficient investment of capital and led to rising incomes, including among the poor.

Well-chosen, effectively implemented policies in these areas—education, engagement with the global economy, and labor—are essential complements of the dividend offered by the “demographic transition”, as this process of demographic change is commonly known.

### **Reaping the dividend: Family planning and fertility reduction**

Lowering birth rates is key to bringing about the demographic bulge and the economic bonus that can result. Family planning has been a central area of effort for many countries that want to lower their birth rate and make their societies more manageable, but in recent years the actual and projected rate of world population growth has shown signs of moderating and family planning has slipped off many international policymakers’ radar screens.

The projected annual growth rate of the world's population for 2000–2050 is 0.9 percent, half the actual growth of 1950–2000, so there is some substance to the view that a global “population explosion” is a thing of the past. However, there remain important population issues in some areas, particularly in the many countries where fertility rates are still high and show little sign of falling. These areas are beset with poverty and ill health, and lowering fertility could facilitate the task of improving living standards. Even in areas where fertility has fallen, there is, in many cases, room for an accelerated lowering of birth rates. If this can be achieved, the demographic bulge will emerge sooner, and more strongly, and create a greater impulse for economic growth and development. The fact that poor countries have faster-growing populations than wealthier countries, moreover, is contributing to increased global income inequality, which has considerable potential to promote political and economic instability at the global level.

Several factors are responsible for declines in fertility. One is human development itself. As infant and child health improves, and as people's incomes rise, couples tend to choose to have fewer children. This process takes place to a significant extent without any governmental action, as couples perceive that fewer births are required to hit family size targets, and as improving economic conditions favor small families—fewer children with more invested in their health and education tend to do disproportionately better than many children with little investment, while the opportunities for women to participate in work rather than child-rearing increase. Probably the best-known and certainly most pithy summary of this view comes from the former Indian Minister of Health Karan Singh, who is reported to have said, “Development is the best contraceptive”.<sup>1</sup>

But do family planning programs also have an effect? This is a complex issue, over which a vigorous and contentious debate has taken place for nearly 10 years. Finding evidence to support the seemingly obvious affirmative answer has proven rather elusive, and several economists have expressed great skepticism regarding the efficacy of family planning in promoting fertility reduction.

The skeptics' basic argument is that fertility rates in developing countries have fallen because *desired fertility* falls during the process of

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<sup>1</sup> Recently, however, Mr. Singh offered yet another intriguing one liner: “Contraception is the best development”.

economic and social development, not because family planning has any independent influence on fertility. Reducing *desired* family size is thus taken as the key to bringing down fertility rates, and desired family size tends to fall as people get richer.

Notwithstanding the plausibility of this argument, two particular cases provide compelling evidence that family planning does, indeed, lower fertility rates. The first is an experiment in Matlab, a rural subdistrict in Bangladesh. In 1978 a number of villages in the area were randomly assigned to either a treatment or a comparison area. The treatment area received high-quality family planning services—services that were more accessible and higher in quality than the standard package of government family planning services that was provided to the comparison area. Within 18 months, contraceptive prevalence in the treatment area rose dramatically relative to the comparison area. This quickly led to a 1.6-birth difference between the treatment and comparison areas, a disparity that persists to this day. Recent analysis<sup>2</sup> has shown that the difference is due to significantly lower rates of *unintended pregnancy* in the treatment area.

The second piece of evidence is provided by Ireland. Before 1980, Ireland's total fertility rate was very high by European standards—over 3.5 births per woman. One reason for this was the legal ban on the use of contraception. However, in 1979 contraceptives were made legal if procured with a doctor's prescription, and beginning in 1985 contraceptive sheaths and spermicides could be sold over the counter to all those aged 18 and over. After these measures were implemented, the crude birth rate in Ireland fell sharply, from 21 to 14 per thousand in the 1980s (leading, in turn, to a fall in youth dependency).

Despite the importance of family planning in reducing birth rates, the international family planning movement is going through a difficult stage. The recent US decision to withhold its contribution to the United Nations Population Fund, and the apparent neglect of population and reproductive health among the UN's Millennium Development Goals are just two indicators of a general loss of interest in family planning among development organizations and the international community as a whole. The crisis for family planning is not just financial and political. Ideological

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<sup>2</sup> Rahman, M., DaVanzo, J., and Razzaque, A., "Do better family planning services reduce abortion in Bangladesh?", *The Lancet*, Volume 358, Issue 9287, 29 September 2001, Pages 1051–1056.

disputes are also diverting the international community's attention from the real achievements of family planning programs.

The lack of acceptance of family planning as a key motivator of lowered birth rates and the more rapid economic development that can thus be engendered means that advocates of family planning can now go beyond advocacy based on moral, humanitarian, or human rights grounds. Those rationales have not been sufficient to garner the interest and mobilize the political will of economic leaders who control the power of the purse (be they finance ministers, planning ministers, central bank governors, or local business elites). Arguments based on economic justifications are likely to hold more sway, and in the next section we highlight examples of the economic effect of the demographic transition.

### **Demographic change matters for macroeconomic performance**

The bulge generation that progresses through the age structure of the population as a consequence of the demographic transition is of great economic consequence, as revealed by an examination of the demographic and economic effects of the fertility transition in Eastern Asia, South Central Asia, Latin America, and Sub-Saharan Africa between 1965 and 2000. The fertility transition in these areas moderated the growth of population. Total population in these four UN regions increased from 2.1 to 4.1 billion, instead of to 5.7 billion, which would have occurred if not for the fertility decline. This fertility transition caused the dependency burden to decrease from 0.8 dependents (children and the elderly) per non-dependent to 0.6. Our calculations indicate that in the absence of the fertility transition, the dependency burden would have risen to over 0.9. As a consequence, per capita income grew from about \$1100 to \$2600 (in constant 1995 US dollars) between 1965 and 2000. This is nearly \$1000 more than would have occurred if not for the combination of slower population growth and a lighter dependency burden.

The biggest economic gains were enjoyed in Eastern Asia, which experienced one of the most rapid and pronounced fertility transitions in human history. By contrast, the smallest economic gains were experienced in South Central Asia and Sub-Saharan Africa, where the fertility transitions have been most sluggish. The source of Eastern Asia's rapid economic growth has been the subject of much study. In 1993, the World



Bank tried to explain the rapid growth of income per capita among the Asian Tiger economies.<sup>3</sup> However, even after taking account of a range of factors, cross-region analysis still showed an unexplainable economic surge in Eastern Asia. One factor that was missing from the World Bank's analysis was the changing age structure of the population. The increased share of people of working age, which came about as mortality and then fertility declined, was a demographic dividend that Eastern Asia used to bolster economic growth rates. Indeed, changes in age structure in East Asia explain its exceptional economic performance. Overall, we estimate that as much as one-third of the growth rate in income per capita in East Asia over the period 1965 to 1990 can be accounted for by the effects of the demographic transition.

The potential economic benefits of the demographic transition are not limited to developing countries. In the 1970s and 1980s, the growth rate of income per capita in Ireland was approximately 3.3% per year. But in the 1990s, when its dependency ratios dropped steadily, Ireland's economic growth rate jumped to 5.8%. This level of economic growth exceeded, by a considerable margin, that in any other European nation, and earned Ireland its "Celtic Tiger" label.

Of great importance here is the fact that Ireland, like the "tiger" economies of East Asia, has had policies in place to take advantage of the demographic changes it has undergone. First, Ireland has encouraged direct foreign investment and promoted exports so that Irish companies could take advantage of international markets to sell the products made by its "baby boom" generation. Second, beginning in the mid-1960s, free secondary education was introduced, leading to a large increase in school enrollments and subsequent expansions in higher education. Ireland provides a striking example of a country in which family planning has definitely affected fertility and age structure, and where changes in age structure have closely tracked, and appear to have contributed directly and considerably to, national economic performance.

Demographic change does have significant impacts, therefore, for economic growth. It also matters for poverty reduction, although the magnitude of this reduction has been harder to quantify. In the developing world, East and Southeast Asia show that countries can take advantage of

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<sup>3</sup> World Bank, *The East Asian Miracle: Economic Growth and Public Policy*, Oxford University Press, 1993.

the demographic transition to enjoy more rapid economic growth. The case of Ireland, meanwhile, shows that the demographic dividend is not limited to developing countries.

## **The demographic dividend in different contexts**

The cases of East Asia and Latin America show that some countries have reaped the economic bonus offered by the demographic transition while others have not. In some instances, demographic change has taken place, but policies have not been in place to capture the potential benefits. In others, demographic change has been slow, so it is too early to tell whether a country will reap the benefits. A survey of other major world regions shows some striking contrasts.

Southeast Asia is following in the demographic footsteps of East Asia, with its fertility rate falling, though not quite as dramatically. The steep rise in the proportion of the working-age population that characterized East Asia is now being repeated in Southeast Asia, albeit less sharply. Correspondingly, the region has benefited from demographic change, but not as much as East Asia. Overall, we estimate that approximately 1 to 2 percentage points of per capita annual income growth in Southeast Asia (Bloom and Williamson, 1998; Bloom, Canning, and Malaney, 2000) derives from the demographic transition over the period 1965–1990.

Fertility rates have also been falling in South Central Asia, but they remain high, particularly in Pakistan. Family planning programs have been important in promoting lower birth rates in Bangladesh and India. As the region continues on this demographic trajectory, it stands to gain economically in the same way as other parts of Asia. This will only happen, however, if the new, large cohort of working-age people is productively employed. The area's government will need to adopt policies that make this possible. In a stagnating economy, a large working-age cohort is a recipe for the travails that accompany widespread unemployment.

Most of the countries in the Middle East and North Africa have seen relatively slow fertility declines, even though life expectancy (one indicator of mortality rates) matches the world average. In some countries, such as Egypt and Jordan, the beginnings of change in the age structure of the population already account for some of the economic gains experienced in the past few decades. Analyses suggest that in other countries

very substantial economic benefits could result from a lowering of fertility rates, if coupled with appropriate economic growth-promoting policies. More broadly, to take advantage of the potential inherent in the demographic transition, the region will need to emphasize education and training, examine its labor laws with an eye to making employment practices less rigid, and encourage foreign and internal investment.

Sub-Saharan Africa has not yet moved beyond the first phase of the demographic transition. Lower mortality rates have led to a huge boom in population, but high fertility rates persist in most of the region (with the exception of Kenya and some southern African countries). For this region, then, the issue is not yet how to capitalize on the demographic transition, but how to speed it up. Sub-Saharan Africa finds itself with an enormous young population poised to keep population growth rates up well into the future. With infectious diseases (including HIV/AIDS, malaria, and tuberculosis) still widespread, with children seen as an essential source of labor, and with cultural norms continuing to encourage large families, fertility rates are unlikely to decline rapidly.

Sub-Saharan Africa appears to be caught in a vicious circle: High fertility rates hamper economic growth and development; continued underdevelopment underlies sustained high fertility. Wars exacerbate the misery experienced by much of the population. One cause for hope is the successful experience of Senegal in preventing HIV from taking hold, and of Uganda in diminishing the HIV prevalence rate in its population. Investments in HIV prevention have been shown elsewhere (in Thailand) to yield large economic returns. African countries that can put together such prevention programs stand a better chance of slowing their economic downturns.

Finally, in Eastern Europe and the Former Soviet Union fertility rates fell rapidly during the past several decades and are now well below replacement level. In Russia, rising death rates—particularly among working-age men—are causing a decline in population. With fertility rates projected to rise again in the next few decades, the mixed pattern of demographic change means that the traditional demographic transition is not now operative in this region. But as with the more developed countries, the region is experiencing an aging of the population, putting considerable burden on health systems.

Russia has long had a high fraction of working-age people in its population, but there are not sufficient data (in particular, pre-1950 age structure data) to correlate this fact with the ups and downs of its economic growth rate. What is clear, though, is that the economic boost that could, theoretically, have resulted from that high working-age share did not materialize in the second half of the twentieth century.

## **Looking ahead: population still matters**

It is important to recognize that the well has not run dry with respect to the macroeconomic contribution that can be realized through further actions to speed the demographic transition. The issue of population growth is perhaps less “hot” than it was 10 to 20 years ago, because fertility has fallen in so many countries, including developing ones. Current predictions show world population beginning to level off later this century and even decreasing in some regions. Most developing countries are part of this moderating trend. Many people are breathing a sigh of relief that, somehow, the “population problem” has taken care of itself, but this view ignores the very high fertility rates that persist in some countries, and it also ignores the beneficial effects that are still to be had by bringing down fertility rates faster than they are currently falling.

One way to illustrate this is to examine alternative population projections for Eastern Asia, South Central Asia, Latin America, and Sub-Saharan Africa and compare their economic implications. The United Nations’ most likely (i.e., “medium-fertility”) projection for these regions assumes that fertility will approach replacement levels by around 2050. According to this projection, total population in developing areas will increase from 4.1 billion today to 6.2 billion by 2035, with the dependency ratio declining from 0.6 today to 0.55.

Suppose now that fertility declines somewhat faster, so that replacement is reached around 2035 instead of 2050. In this scenario, population will increase by 600 million less, and the dependency rate will fall even further, to below 0.5. In economic terms, this modest acceleration of fertility decline will translate into a roughly 30 percent average boost in per capita income. If Sub-Saharan Africa, where income per capita increased by only 5 percent during the past 35 years, were to enjoy only a

fraction of this 30 percent income boost, fertility decline would have provided an enormous benefit to human development.

If the scenario depicted in this article continues to emerge, with demographic change leading to faster economic growth in developing countries, then this same demographic change will likely have been a contributor to greater equality across nations. The reason is that developed countries have all completed, or nearly completed, their demographic transition. Their boom generations are aging, and the share of the population that is of working age is, or will soon be, declining. These countries may still have fast-rising incomes (because, of course, demography is only one of many factors that affect economic growth rates), but they will not be getting another demographic dividend. Thus, demographic change, abetted by enabling policies, will help to decrease inequality across countries by spurring economic growth and rising incomes in developing countries without doing the same in developed countries. But until birth rates fall in the countries where they are still high, rising populations and high youth shares will actually exacerbate worldwide inequality.

## Conclusion

People's economic needs and contributions vary over the life cycle (youth dependency, prime working ages, and elderly dependency). Working-age people support young people, both within families and by virtue of what society as a whole spends on them and invests in facilities for them. Working-age people also provide support for the elderly, although in many cases, the elderly engage in productive economic activities. These patterns form the basis for powerful links between demographics and economics—links that hinge critically on the economic implications of the age structure of the population.

Most importantly, as the demographic transition unfolds, the share of working-age people in the population increases and subsequently decreases. Since the economic needs and the labor potential of working-age people are different from the needs and potential of youth and the elderly, the increased share of working/saving-age people opens the door to possible economic benefits.

However, the positive links from demographic change to economic change are not automatic. Age structure changes just create the potential

for economic shifts. Whether that potential is realized depends on the policy environment. Well-chosen policies in the areas of education, labor, trade, and governance can be key in allowing a country to benefit from changes in its age structure. Governments can also take measures (such as public health improvements and greater access to family planning) to catalyze and speed up demographic change.

There are also reverse links; that is, economic development affects demography. Typically, income growth leads to a decline in mortality. It leads to even greater fertility decline, both because parents who are earning more implicitly assign a higher value to their time (so it becomes more costly to spend time with children) and choose to invest more of their resources in fewer children. This reverse link magnifies the effect of the initial decline in mortality and fertility. Thus, countries can experience a virtuous spiral of cumulative causality, in which demographic and economic developments feed back positively on each other.

The interactions discussed in this paper apply, at least potentially, to all countries as they undergo a demographic transition. Countries are at very different phases in this transition. Some have already seen huge economic benefits arising from demographic change, others are in a position to benefit but for lack of good policies have not yet been able to, and for still others the potential economic benefits lie ahead.

These ideas give renewed academic justification to pursuing family planning programs, with the intention of lowering birth rates. Such programs have been out of favor with some international agencies and the governments of numerous countries during the last decade or so. But the newly clarified connections that run from lower fertility to higher economic growth—which are based on the changing age structure that results from lower birth rates—should revive everyone's interest in the benefits of family planning programs and reproductive health.