

# The World needs a 21<sup>st</sup> Century Population and Development Policy Paradigm

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Governments of the many countries whose low fertility and rapidly ageing populations cause concern are searching for mitigating or adapting policy interventions that are both effective and socially acceptable. Meanwhile, governments of high fertility countries are struggling with the consequences of rapid population growth. Accumulating evidence across varied fronts identifies one particular policy that may be broadly effective for all countries. Improvements in educational attainment of broad segments of the population are both a major driver of better health and economic prosperity in ageing societies and an important contributor to reducing high fertility and population growth while enhancing economic growth in the least developed countries.

The helplessness of conventional population policy paradigms to deal with 21<sup>st</sup> century demographic challenges was bluntly manifest at a recent 20-year review conference of the 1994 Cairo International Conference on Population and Development (ICPD). This conference for the UN Economic Commission for Europe in Geneva included 56 Northern countries from Vladivostok westward to Vancouver. All these countries are in the process of rapid population ageing, and except for those with significant migration gains many face the prospect of population shrinking. Bulgaria, for instance, has already shrunk rapidly from around 9 million in 1990 to 7.2 million today, heading toward an estimated 6 million by 2030. Japan has also started to shrink and faces the prospect of losing 30 percent of its population over the coming decades, with the median age of the population increasing from 44 years now to above 55 in 2050. Efforts to change these trends through policies to directly enhance births have been largely ineffective and are unlikely to change the big picture in the future. With the rapid increase in the elderly populations, significant increases in disability and need for care are expected. What should the governments of these countries do?

Meanwhile, the fertility declines from high levels in some countries in sub-Saharan Africa and South Asia have been slower in recent years than expected. For Nigeria, an extreme case where fertility is estimated around six children per woman, the latest UN projections (1) anticipate a population increase from currently 170 million to almost one billion by the end of the century. While this is in part due to lack of access to reproductive health services, strong evidence indicates that this is also due to high desired family size and supply of contraceptives alone will not bring fertility rates in many countries to replacement levels (2). Bongaarts (3) showed a very clear pattern in 30 African countries, where female education levels are negatively associated with desired family size and actual fertility and positively associated with use of contraception. How should the governments of such countries and the external organizations that support them allocate resources?

Finding science-based answers to these questions matters for all countries. Decisive choices will be made over the coming months that will frame future population and development policies for decades to come. First is the on-going global 20-year ICPD review of population and development policies that

will culminate in 2014. Meanwhile, the broader international development discussion focuses on the successor to the Millennium Development Goals (MDGs), whose time horizon extends from 2000 to 2015. Interactions between population and development, neglected in the original MDGs, are now widely understood as essential.

A related aspect of population-related policies, namely the emphasis on universal reproductive health and rights, has been included in the MDGs and is rightly receiving priority attention in the Cairo+20 review process. While there are still major deficits in this field in many countries, the way forward seems clear as part of the internationally agreed human rights and global health agenda. By contrast, existing policy paradigms on population and development not only fail to usefully address the new policy challenges arising from rapid changes in age structures and population size, they also fail to reflect the current state of scientific knowledge.

The ultimate goal of any development policy must be the enhancement of human wellbeing, including health, wealth and resiliency to unavoidable environmental change. Hence, the question of how changes in population size and structure impact human wellbeing must lie at the heart of any population and development policy. This is primarily a scientific question. Joel Cohen (4) has shown that it is futile to ask in general what the “optimal” population size is for our planet, because the answer depends critically on technology and human behavior, both demonstrably difficult to predict. Our goal here is more modest: to summarize recent scientific insights about the implications of changing age structures, changing education structures and their interactions for the future. Herein, we maintain, lies the answer to the question: What should governments do?

A review of recent evidence on the interactions between educational attainment and population size and age-structures was published in *Science* in 2011 under the title “Global Human Capital: Integrating Education and Population.” (5) The figure, taken from this review, illustrates how alternative education scenarios lead to substantially different world population trends even assuming identical education-specific fertility and mortality rates. Under the most optimistic Fast Track (FT) education scenario, the world’s population will not only be much better educated but also significantly smaller, due to the fact that more educated women in developing countries want and have fewer children. These comparative projections summarize the underlying evidence that female education in high-fertility countries is a key to reducing world population growth.

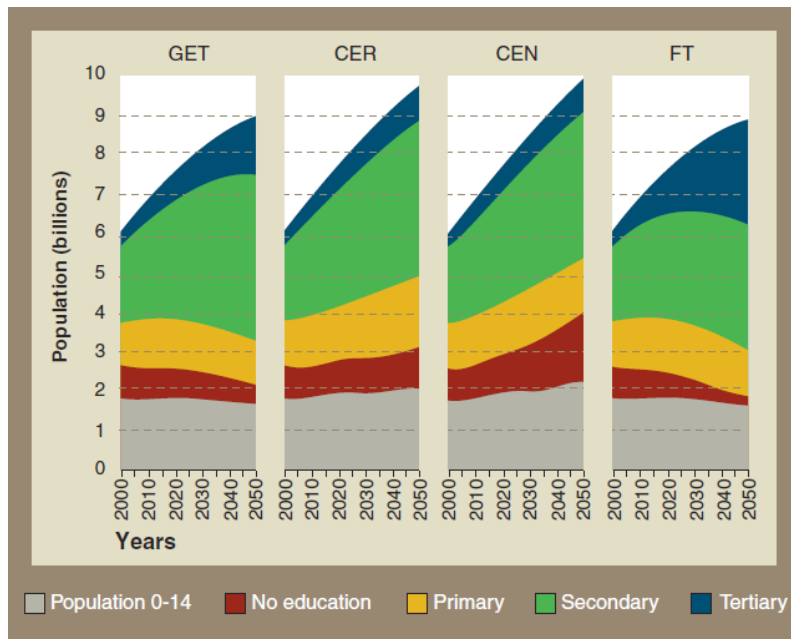


Fig. 1. The effect of different education scenarios on population growth and composition under identical education-specific fertility and mortality rates. The alternative education scenarios are: GET: Global Education Trend (considered most likely); CER: Constant Enrolment Rates; CEN: Constant Enrolment Number (no new schools built); FT: Fast Track (following the experience of South Korea)

A diversity of other studies have strengthened the finding that models with this explicit focus on the changing educational composition of the population imply a future that looks very different from models that account only for increasing population size and changing age structure. Economists' treatment of schooling and income is an important example. Economic theory has long implied that education has an important positive effect on economic growth. Accordingly, the evidence is that more years of schooling generally lead to higher income at the individual level. But at the macroeconomic level, empirical evidence relating changes in education measures to economic growth has been ambiguous. These studies relied on crude measures of human capital that did not differentiate by age (6). More recent studies that explicitly include the age structure of human capital provide unambiguous statistical evidence that educational attainment is a consistently significant determinant of a country's aggregate level of economic growth (7). The key to these new results lies in more detailed and more consistent national time series of educational attainment distributions by 5-year age groups. In some countries with rapid recent education expansions such as South Korea, the elderly are still largely uneducated while the young cohorts are among the best educated in the world. Indeed, economic growth was most rapid when the better educated cohorts entered the productive ages.

A separate and influential body of research on the effects of changes in age structure on economic growth is known under the rubric of demographic dividend or demographic window of opportunity (8, 9). This literature argues that a decline in fertility that results in a decline in the number of children and

youth to be supported by the working age population presents a unique opportunity for economic growth, one that exists for only a limited period. After this period the number of elderly to be supported by the working age population starts to increase. Most studies emphasize that this dividend does not come automatically but only when the opportunity is used wisely, mostly through strong investments in human capital (10). However, a recent paper demonstrates that the productivity enhancing effect is entirely due to the improving educational attainment of the labor force and that fertility decline only contributes to the “accounting effect” through decreasing the denominator in per capital GDP (11).

The education of mothers, in particular, consistently emerges as one of the most important factors, generally more important than household wealth, in reducing infant and child mortality (12). Demographic and health surveys in nearly all developing countries have shown that even incomplete primary education of girls contributes to improved survival of their children. Mothers thereby seem to gain a less fatalistic attitude, start to use simple precautions such as boiling water for sterilization, and know better how to get access to existing health care facilities.

In almost all countries, men and women who are better educated have lower mortality rates at every life stage (13). The differences in life expectancy between the highest and lowest educational groups can be up to 12 years. These differentials do not diminish when previously uneducated parts of society also start to benefit from education. Education of youth even influences their health status decades later when very old, according to many studies showing that at any age the disability rate of more educated men and women is significantly lower than for those with less education (14). In projection models, explicitly including education substantially changes the outlook with respect to the future prevalence of disability. In contrast to purely age-based projections, the proportions of disabled persons aged 40-75 in Western Europe and Asia are actually expected to decline rather than increase when these educational health differentials are considered, considering the fact that the future elderly will be better educated than today’s elderly (14, 15).

Empirical studies also show that better educated individuals tend to have a longer investment horizon and be more risk adverse (16). This has far-reaching consequences for behaviors relating to health, economic activities, adaptive capacity to environmental change, and the organization and governance of societies. Other research analyzes age-specific data on trends in educational attainment distributions to assess the returns to investments in education over a broad array of desirable outcomes. Remarkably, there are strong indications that improving education, in particular the education of women, is a powerful driver toward a country’s improved governance and transition to modern democracy (17). Regarding vulnerability to natural disasters and adaptive capacity to climate change, research at both micro- and macro-levels has found a protective function of education stronger than that of income (17). More educated women and men tend to have better access to information, be better prepared for possible disasters, behave more cautiously, and recover more favorably from mental trauma, physiological injuries, physical damage and economic losses (18, 19).

While the statistical relationships between education and these varied individual and aggregate outcomes are pervasive and undeniable, the direction and nature of causality have for three reasons been less easy to establish. There are the possibilities of reverse causality, selectivity and joint determination by another force. A recent review summarizing the literature on various natural experiments and other evidence on these issues affirms the causal role of education in improving health and leading to lower fertility in countries that are still in the process of demographic transition (20). Regarding the mechanism, modern brain research leaves little doubt that every learning experience, especially repeated experiences, physiologically change our brains by building new synapses that not only store the information content of our experiences but also become an integral part of what forms our sense of personality (21). Education actually causes changes in our brains and hence in our cognition and the way we think about the future and act. While formal educational attainment is only a poor proxy for such multi-faceted learning experiences it is the easiest to measure. But already this crude measure shows the pervasive effects described above. More research is needed on the additional effects of quality and content of education in different parts of the world.

What do these new scientific insights imply for population and development policy priorities in the 21<sup>st</sup> century? The scientific evidence from diverse geographic regions and methodological approaches points toward the acquired productive capabilities of human beings—human capital—as the key to both the goals and means of development, and in both rich and poor countries. Although this essay concentrates on the former, human capital includes both education and health. Better female education and reproductive health in developing countries will result in more rapid fertility decline, lower child mortality, more rapid poverty eradication and better governance. In rapidly ageing and possibly shrinking societies the skills of the labor force and the health of the elderly populations are critical for securing future well-being through higher productivity (22), longer productive life spans and a lower burden of disability. In both cases – for poor and rich countries alike – the primary concern must be the building and maintenance of a productive human resource base for longer term sustainable development.

The ICPD Programme of Action did away with “quantitative demographic targets” but did not set any other meaningful aggregate level objective that might take their place. A priority focus on human capital development, beginning with and concentrating on education, should be the new global population and development policy paradigm, equally scientifically valid for all societies around the world.

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