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**Economic Factors in Population
Growth**

Edited by **ANSLEY J. GOALE**

Economic Factors in Population Growth

Proceedings of a Conference held by the
International Economic Association at
Valescure, France

EDITED BY
ANSLEY J. COALE



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Introduction

Ansley J. Coale

The conference reported in this book was a discussion of the mutual interrelations between demographic conditions and trends on the one hand, and economic conditions and trends on the other. As background for the papers and comments that form the body of the book, this introduction provides a sketch of the demographic differences among parts of the contemporary world with different economic characteristics.

There is an easily visible link between economic conditions and trends and demographic characteristics and trends in different areas. The recent demographic history, the current demographic circumstances and the prospective demographic changes among the higher income populations of the world form a pattern quite different from the history, present circumstances and future trends characterising the lower income populations. If the countries of the world were arrayed in the order of the average duration of life implied by current mortality rates, or in the order of the average number of children each woman would bear according to current fertility rates, or in the order of the median age of the population, a point could be found on each continuum that would quite efficiently separate economically more developed (higher income) countries from economically less developed (lower income) countries.

The dividing line at present would fall at an expectation of life at birth for women of about 68 years, at a total fertility rate of some 3.5 births per woman, and at a median age of 24 years. The countries with greater durations of life, lower fertility, and greater median ages than these boundary points include the Soviet Union, Japan, the United States, Canada, Australia, New Zealand, Argentina, Uruguay, and every country in Europe except Ireland and Albania. On the other side are found all of Africa, Asia except for Japan and Siberia, Tropical Latin America, the Philippines and Indonesia.

There are, however, a few areas that have some but not all of the demographic characteristics of the more developed areas. For example, Hong Kong, Singapore, Taiwan and Puerto Rico have an

average duration of life of more than 68 years, and a total fertility rate of less than 3.5 children per woman, but all have median ages less than 22 years, because recent high fertility has left a legacy of a high proportion of children and young adults in the population. Kuwait is particularly remarkable, with a female expectation of life at birth of over 70 years (as in developed areas), but a total fertility rate of 7.4 children per woman and a median age of 19.6 years (well within the less developed part of the spectrum). The economic classification of these countries is also borderline: Hong Kong, Singapore, Taiwan and Puerto Rico are candidates for designation as more developed, and Kuwait has recently attained the highest per capita income in the world.

There is a general pattern, characteristic of the modern demographic history of each category (less developed and more developed), with individual variations on the two themes – primarily variations in the extent and timing of the typical changes. In the developed countries, the characteristic pattern has been a decline in mortality and fertility, a decline that led from a starting point in the pre-industrial past when the average number of children per woman was double the present, and the average length of life only half as great as now, to the present low rate of child-bearing and extended average lifetimes. In some countries these changes began nearly two centuries ago; in others the fall in fertility and mortality has occurred since 1900.

One of the effects of low fertility is relatively few children in the population; if fertility was low during the period 20 to 50 years ago, there is also a low ratio of persons at early adult ages to those a generation older, and thus a relatively large proportion above the age of 65. Because all of the more developed countries have recently had low to moderate fertility, the population less than 15 years of age is less than 30 per cent in all but Ireland and New Zealand. The proportion over 65 is especially high (13 or 14 per cent) in the countries (such as France and Sweden) that had low fertility a long time ago, and is moderate (8 per cent), but rising, in countries (such as Australia and Canada) that had high fertility at the beginning of the century.

Demographers developed a set of generalisations that relate the decline in mortality and fertility to specified social and economic changes during modernisation or industrialisation, calling the process the *demographic transition*. That such a transition is an inevitable feature of development is a popular explanation of the differences between the high fertility and rapid growth of population in less developed countries, and the low fertility and more gradual increase in more developed countries. At the World Population

Conference in Bucharest in 1974, for example, 'Development is the best contraceptive' was a slogan frequently heard. Closer consideration of the evidence casts doubt on the existence of any simple list of social and economic conditions that are necessary and sufficient for the initiation of declines in mortality and fertility, especially the latter. Contrary to the implications of the simplest versions of the demographic transition, there are populations (such as that of Mexico in the 1960s or the United Kingdom in the 1870s) that had reduced mortality extensively, had become predominantly urban in residence, and enjoyed per capita incomes well above earlier generations, but had not experienced a decline in fertility; conversely, there are instances (such as certain *départements* in early nineteenth-century France, and certain sub-populations of mid-nineteenth-century Hungary) of greatly reduced fertility among rural and mostly illiterate populations in which mortality remained high.

Recent trends in mortality in the more developed countries are fairly uniform: the attainment of an average duration of life for females from about 70 to 75 or 76 years, with an average duration for males that is 4 to 8 years less. In most areas the recent declines in mortality have been gradual, with the exception of marked reductions in infant and child mortality where those rates were high relative to the developed country average. Reduction in death-rates for older males has been virtually absent in many populations.

Within the general pattern of declining fertility in the more developed countries there are complex recent variations. First, a recovery in fertility from a low point reached before the Second World War was shared by many but not all Western countries. In some countries this so-called baby boom was limited to a sharp peak in fertility just after the war; in others the upward trend in fertility continued until the late 1950s.

A contributing factor in the rise in fertility from before to after the war was a change in nuptiality that took place in many Western European countries, and in the United States, Canada, Australia and New Zealand. In Sweden, for example, there was a departure from a pattern of first marriage that had persisted with little alteration since early in the nineteenth century, to one of late marriage (mean age at first marriage for women, 25 or more years) and frequent celibacy (15 per cent or more still single at the age of 50). The change, which began in about 1930, was a steady decline in the mean age at first marriage and also a decrease in the proportion remaining celibate. In Norway, such a change in marriage customs was virtually the sole source of the increase in fertility; in the United States and Canada increases both in nuptiality and in marital fertility were important: in France there was little change in marriage,

and the substantial increase in fertility in the 1940s and 1950s was the result almost wholly of increased child-bearing within marriage.

In the late 1960s and early 1970s in almost all of the more developed countries fertility fell to low levels attained previously by only a few during the 1930s. In the majority the current rate of child-bearing, if continued, is not sufficient to replace the parental generation; and in most of the remainder current fertility would yield only very gradual long-term growth. An interesting feature of declining fertility during the last decade is a new trend in marriage in some countries, most notably Sweden. In the mid-1960s the crude marriage-rate in Sweden began a steep decline, and by 1972 it was lower than the crude rate of *divorce* in the United States. When a well-substantiated model distribution of first marriage frequencies is used to estimate the future rates of marriage of cohorts that were past the modal age of first marriage by 1972, it is apparent that it is not the mean age at first marriage that has risen (the mean age has rather continued to decline, at least until the cohort that reached 20 in 1968 or 1969); the striking change is a sharp increase in the proportion destined to remain single—apparently more than 40 per cent will remain unmarried in the cohorts now at the peak ages of first marriage. The tendency towards avoiding first marriage has been accompanied by a marked increase in the avoidance of remarriage. Remarriages per 1000 divorced women aged 15–49 declined by 80 per cent from 1966 to 1972.

The implications of this revolution in marriage for future changes in fertility are not easily determined, because there has been a concomitant increase in rates of child-bearing outside marriage, suggesting a substitution, to some extent, of other forms of sexual union for the conventional form of legal marriage. Nevertheless, greatly reduced proportions of those married among persons of parental age seem more likely to promote continued low fertility, or further reductions, than to cause a strong increase in child-bearing.

In the less developed world the recent past has been a period of rapidly accelerating growth of population, with current annual rates of increase ranging from two to nearly three and a half per cent, compared to rates generally less than one per cent in the more developed countries. This acceleration of growth has been the result of a fall in death-rates, rather than of any major increases in fertility. In fact, fertility in the less developed areas as a whole has declined somewhat in the last decade. The downward trend in mortality has been unmistakable. Since the Second World War death-rates have fallen in many less developed countries at a pace exceeding any previously experienced in the more developed areas. Innovations in

medicine and public health and the effective transfer of appropriate medical technology seem to have been a major element in this rapid reduction. Such changes have been especially marked in areas that have also made the most rapid progress in overall economic development, and improvements in diet and living conditions have doubtless contributed to lower death-rates. The relatively small reduction in some areas can be accounted for in part by limited access to modern medicine and public health, and in part by poor nutrition and other effects of poverty.

The estimated average duration of life for major regions of the less developed world ranges from about 40 years in Tropical Africa to about 60 years in Tropical Latin America.

Fertility trends in the developing countries fall between two limiting patterns: in some areas fertility has remained at a high plateau, or even risen slightly; in others there has been a recent sharp decline, often at a faster pace than in the earlier experience of the more developed countries. In several countries in or bordering on the Caribbean, and in Mauritius, Singapore, Hong Kong, Taiwan and South Korea, total fertility has fallen by at least 25 per cent in the last 10 or 15 years. In other countries, including Egypt, Indonesia and the Peoples' Republic of China, there are indications of a major reduction, although reliable national records of births do not exist.

The recent history of trends in the more developed countries thus includes a convergence of mortality towards schedules of death-rates favourable enough to achieve the biblical three score and ten years, and fluctuations in fertility culminating in a contemporary movement to very low rates, insufficient, or barely sufficient, to replace the parental generations. The future prospects are for slow growth that may approach zero or negative rates within a generation, and for major changes in age composition towards still fewer children, still more old-age dependants, and an older labour force.

In the less developed areas the recent history is one of accelerated growth caused by sharp decreases in mortality, and fertility that has remained high or has declined well after a fall in death-rates occurred. The result of these trends is an age composition characterised by a larger proportion of children (more than 40 per cent under 15 rather than less than 30 per cent) and a smaller proportion of the aged (2 to 5 per cent over 65 rather than 8 to 14 per cent) than in the more developed countries. The future prospects for these areas is for continued substantial growth for two reasons: any downward movement of fertility will take time, and even when fertility reaches the low levels now found in the developed areas, an inertia that perpetuates growth for an additional generation is

inherent in the age composition that is the legacy of past high fertility. Specifically, if by 2000 (in 25 years) fertility in the developing countries as a whole were to fall to the level that would insure mere replacement of each parental generation, the population of the developing areas would still be multiplied in the next 75 years by nearly 2.6.

The aggregate differences in population trends among areas in different economic circumstances just summarised are paralleled by individual differences within populations in fertility and mortality. Attempts to determine differences in mortality rates according to the income of the decedent before his death are complicated by the low income that is associated with illness, but strong differences in mortality for persons of different education and occupation make it clear that death-rates are higher, and the pattern of causes of death different, for persons in the same community but with different life-time incomes. There are also complex differences within the same population in the rate of child-bearing among couples with different economic characteristics.

The world-wide inventory of data on individual differences in fertility, although uneven in content, coverage and quality, is quite large. Many population censuses have included a question on the total number of children each woman has borne, and the responses have been tabulated by age, by duration of marriage, and by education, occupation and work-force status of husband and wife. In a number of developed countries extensive special surveys have been conducted to determine the intended, expected, and ideal number of children for each couple, and also to compile for each couple a complete fertility history, including a full record of contraceptive practice. These surveys are, moreover, designed to ascertain, for each couple, the social, economic, and psychological characteristics thought relevant to differences in fertility. In the less developed countries such extensive data are less frequent, although there have been many surveys to determine at least the fertility preferences, and the knowledge of, attitudes towards and practice of contraception. The earliest generalisation from this mass of data is that there is a tendency for lower fertility to be associated with higher socio-economic status, specifically, for example, with more education and with urban rather than rural residence. The relation to income (usually negative without statistical control for other variables) is a matter of dispute, as is the interpretation of observed differences in fertility associated with many particular characteristics of couples.

The purpose of the conference was for economists with an interest in demography, and some non-economist demographers, to examine

together the effects of demographic trends on economic change, and conversely, the influence of economic factors on demographic trends and characteristics. In Part 1 of the volume that follows, there is a review of the attempts to incorporate demographic variables into economic thought, especially in accounting for the economic effects of population growth, and a discussion of how the classical concept of the optimum population can be generalised to the optimum rate of population growth. In Parts 5–8 particular implications of population change are explored – the effects of population growth on the environment and on the future availability of resources; the effects of rapid population growth and the demographic structure of the labour force on employment and unemployment in developing countries; the interrelation among population trends, economic conditions, and internal migration; and the effect of demographic variables on education, particularly in less developed countries.

In Part 2, there is a description of a micro-economic model of the determination of fertility, a model that puts the decision to have a child into the framework of the theory of consumer's choice; the application of such a model to the results of a survey conducted in Israel is also presented. In Parts 3 and 4 the role of economic factors in the decline of fertility in Europe, in Taiwan, and in certain areas of South East Asia is examined.

It is evident in the papers presented and in the ensuing discussion at the conference that economists have not yet formulated a general model of the determination of human fertility that is fully persuasive to non-economists; on the other hand, in their analysis of the causes of difference in fertility, demographers have taken inadequate account of economic factors and of modes of thought and techniques of analysis employed by economists. However, interchanges of ideas of the sort that took place at this conference are apparently having an effect on contemporary research, judging, for example, by the existence of an optional special 'module' of questions on economic factors in the World Fertility Survey that will ultimately be conducted in more than forty countries by the International Statistical Institute, and by the explicit attempt in the recent writings of Richard Easterlin and others to achieve a marriage of the sociologist's and the economist's approach to the study of human fertility.

It is also evident that no concise theory has yet been proposed that provides a satisfactory model of the aggregate economic effects of demographic variables. It is not that *particular* economic effects are always hard to discern. For example, the effects on higher education of the recent declining trend in the number of births in the United States (from a peak of 4.3 million in 1957 to 3.2 million in

1974) has been clearly analysed by Allan Cartter. Since the proportion of each cohort attending college has reached a high plateau of about 45 per cent, the declining number of births in the past 17 years implies that college enrolments will be smaller in the 1980s and early 1990s (when the reduced cohorts reach college age) than they are now. In short, the industry of providing college-level education in the United States will probably soon be a declining industry like the railroads, or coal mining, in earlier eras. A conspicuous form of capital goods for this industry is college teachers with Ph.D.s. According to the acceleration principle, the slackening rate of growth of college enrolments has reduced the demand for this capital good: the prospective cessation of growth and then shrinkage in enrolments implies that the need for new teachers will fall *below* the level of replacement. Replacement needs in turn will be minimal in the near future because recent high rates of new appointments have built up a faculty with only a small proportion near the age of retirement.

It is not likely that a macroscopic model of the effects of population trends on the economy as a whole, analogous to the clear picture of the effects of population trends on college education in the United States, will soon be found. Perhaps the more modest approach (adopted for most of this conference) of investigating the effects of population trends on specific elements such as rural-urban migration, on education, on employment and on the use of specific resources constitutes at the moment the best way of advancing.

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