1

Rapid population growth in less developed countries (ldcs) is widely regarded as a major obstacle to their material progress and a major global economic and political problem. According to the Pearson Report: 'No other phenomenon casts a darker shadow over the prospects of international development [the latter a synonym in the Report for the development of ldcs] than the staggering growth of population.'

Mr Robert McNamara, President of the World Bank, is even more emphatic:

To put it simply: the greatest single obstacle to the economic and social advancement of the majority of peoples in the underdeveloped world is rampant population growth... The threat of unmanageable population pressures is very much like the threat of nuclear war... Both threats can and will have catastrophic consequences unless they are dealt with rapidly and rationally.2

Such opinions are surprising. The recent rapid increase in population in ldcs reflects a steep fall in mortality. This development represents substantial improvement in conditions, since people value a longer life. Yet the fears epitomized in these passages have been advanced in support of drastic measures for reducing population growth, including even forcible sterilization.
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These fears are unfounded. Their implausibility is suggested by observation of the contemporary world and by reflection on recent and earlier history of both the less developed world and the West.

Rapid population growth has not been an obstacle to sustained economic advance either in the Third World or in the West. Between the 1890s and 1930s the sparsely populated area of Malaysia, with hamlets and fishing villages, was transformed into a country with large cities, extensive agricultural and mining operations and extensive commerce. The population rose from about one and a half to about six million; the number of Malays increased from about one to about two and a half million. The much larger population had much higher material standards and lived longer than the small population of the 1890s. Since the 1950s rapid population increase in densely-populated Hong Kong and Singapore has been accompanied by large increases in real income and wages. The population of the Western world has more than quadrupled since the middle of the eighteenth century. Real income per head is estimated to have increased by a factor of five or more. Most of the increase in incomes took place when population increased as fast as, or faster than, in the contemporary less developed world.

Received opinion, widely accepted across the political spectrum, has it that the effects of population growth on economic achievement and progress depend largely on physical resources and capital per head, primarily the former. Yet this conventional reasoning is plainly inadequate, as our examples show. Either the reasoning fails to identify the principal determinants of economic progress, or the factors underlying the reasoning do not interact in the manner assumed. We shall argue that the accepted reasoning suffers from both these shortcomings. We argue further that much of the discussion of the welfare effects of population growth, and also those of population density, rests on a misleading index of economic welfare. We also show that demographic forecasts have been seriously unreliable, and that this is pertinent to their use as basis for policy.

2

In societies (other than simple subsistence economies) there are, and always have been, substantial differences in economic performance, and therefore in incomes, among individuals and groups with access to the same physical resources, including land. This is so, and has always been so, both in the less developed world and in the West. Such differences could not be explained if it were true that physical resources were a decisive or a major determinant of economic achievement.
There are pronounced differences in economic performance between ethnic and cultural groups in the same country. Examples include differences between Chinese, Indians and Malays in Malaysia; between Chinese and others elsewhere in South-East Asia; between Parsees, Jains, Marwaris and the rest of the population in India; between Greeks and Turks in Cyprus; between Armenians, Jews, Greeks and the rest of the population in the Levant; between Asians and Africans in East Africa and Central Africa; between Ibos and others in Nigeria; and between Chinese, Lebanese and West Indians in the Caribbean.

In some of these cases the more prosperous groups have been relatively recent immigrants, who mostly came in empty-handed but were ambitious, energetic, industrious and resourceful. The fact that emigrants are usually not a random selection of the population in the country of their origin does not affect the present argument, which is concerned with the role in economic performance of natural resources per head. Similarly, whether or not differences in performance persist is also irrelevant here.

In many of these instances the now more prosperous groups were discriminated against in access to land, and often barred from owning land. This was true of the Chinese in South-East Asia and the Asians in Africa. And in South-East Asia the Chinese, with higher incomes on average, live in more densely populated areas than the Thais, Burmese, Malays and Indonesians in the various countries. There are similar examples in the West. The economic achievement and prosperity of the Huguenots, Jews and Nonconformists were attained without owning land. Indeed in much of Western Europe Jews could not own land until quite recently, by which time they nevertheless had become relatively prosperous.

In both the less developed world and in the West some of the most prosperous countries and regions are extremely densely populated. Hong Kong and Singapore are probably the most densely populated countries in the world, with originally very poor land. Hong Kong consists largely of eroded hill sites, and much of Singapore was empty marshland in the nineteenth century. In the advanced world Japan, West Germany, Belgium and Holland are examples of densely populated countries. Conversely, many millions of extremely backward people live in sparsely populated regions amidst cultivable land. Examples include the backward peoples in Sumatra, Borneo, Central Africa and the interior of South America. They have ready access to vast areas of land – for them land is a free good. In South Asia, generally regarded as a region suffering from over-population, there is much uncultivated land, land which could be cultivated at the level of technology prevailing in the region. In its first Five Year Plan the Government of India
classified one quarter of the land surface of the country as uncultivated but cultivable. In West Malaysia, a small and relatively densely populated country, well over half the land is still uncultivated. Much of this uncultivated land is of the same quality as that currently cultivated, and is virtually as readily accessible.4

Such contrasts are not new. The Indians in North America before Columbus had unlimited land and were wretchedly poor. The land was not infertile, as European immigrants soon made clear. They came from Western Europe which had far less land per head and was already advanced and rich. Venice was built on a few mud flats and became a wealthy world power. Much of Holland was drained from the sea and it became a prosperous commercial country and a centre of culture and learning.

Within the last hundred years or so, very large areas of the less developed world which had been sparsely populated by poor people were effectively transformed. Examples include the establishment and development of the estates and smallholdings in South-East Asia, primarily in Malaysia and Indonesia, but also in Thailand and the former Indo-China, and estates and farms in much of Africa and Latin America. These instances of transformation were effected very largely by people with meagre capital and with only simple technology at their command, and who worked under difficult conditions. Their progress reflected sustained effort, the adoption of improved methods and the reinvestment of income.

Altogether, it is clear that natural resources do not explain differences in development and living standards. There is also no substantial ground for the belief that population growth in the Third World will be a major obstacle to material progress, much less that it will create critical shortages of natural resources. (We shall revert to this in somewhat greater detail in section 4 below in the context of food production and of the availability of land and mineral resources.) Indeed, over large parts of the Third World the extreme sparseness of the population presents obstacles to the economic advance of enterprising people, obstacles which are more effective than those supposedly presented by population pressure. A sparse population precludes the construction of transport facilities and communications, and thus retards the spread of new ideas and methods. In this way it circumscribes the scope for enterprise.

Of course, by extrapolating any increase in population sufficiently far ahead it is always possible to conclude that eventually there will be standing room only left on earth. Given enough time, this would be true even if population increased by only one person every century. But such extrapolations are not informative or sensible. No one can predict social and technological change beyond a decade or two. Nevertheless, one particular prediction can be made
confidently. If rapid population growth should substantially threaten living standards, this would induce people to modify their reproductive behaviour.

The predictions of doom through population growth rest on the idea that economic achievement, progress and welfare all depend primarily on natural resources, supplemented by physical capital. There is a vaguely commonsensical appeal about the neo-Malthusian notion that prosperity depends on ample land and rich mineral resources. This neo-Malthusian notion is then supplemented by the very non-Malthusian idea that people in ldcs have no will of their own and are simply passive victims of external forces: in the absence of Western-directed pressures, people in the less developed world would procreate heedless of consequences. This reasoning is invalid. People in the less developed world do adapt their conduct to circumstances, and do not procreate without thought for the morrow.

It may be convenient to forestall three lines of objection to the proposition, emphasized in the preceding discussion, that natural resources and physical capital are relatively insignificant as pre-requisites of economic achievement.

The gold and silver flowing into Spain after the Spanish conquest of Latin America, and the riches of contemporary oil producing countries, are often instanced as evidence of the value of natural resources in conferring prosperity on their owners. But the precious metals of the Americas did not promote economic progress in pre-Columbian America, and their capture did not serve to ensure substantial development in Spain. The oil resources of the Middle East and elsewhere were valueless until found and developed by the West; it must be conjectural how far they will lead to sustained economic advance. It is true, however, that the interplay of political and ideological forces determine largely who benefits primarily from such geographical ‘windfalls’, windfalls activated by Western enterprise and technology.

Second, rapid population growth is often said to inhibit development in that it absorbs investible funds which could otherwise have been available to support economic development. A typical formulation is by Mr McNamara:

> The irrefutable reason is that these governments must divert an inordinately high proportion of their limited national savings away from productive effort simply in order to maintain the current low level of existence for the expanding population. . . . Capital that ought to have been invested was not available. It had been dissipated by the ever-rising tide of children.\(^5\)

This contention is seriously defective. To begin with, it assumes that the increasing numbers of children are looked upon by their parents as a burden, not as a boon. Further, it ignores the direct economic contribution made by the very young in many ldcs. It also exaggerates the expenditures in ldcs called
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...forth by high fertility rates. For instance, primary education even on a large scale need not be costly, because for both climatic and social reasons school buildings can be simple inexpensive structures. The volume of investible funds in any case is a minor factor in economic development. Much capital formation takes forms more closely analogous to consumer durables than to instruments for increasing production and promoting further economic growth. It is unwarranted, further, to assume that the governments of the LDCs in question would use the investible funds more productively if they did not have to use them to provide for expanding population. The investment record of many Third World governments has been deplorable.

Third, it is argued that population growth must be detrimental to overall productivity by reducing land and capital per head. As we have seen, land is in abundant supply in large areas of the less developed world. And the fertility of the land is largely the result of human activity, notably effort, science and technology. Moreover, the factor price of land as such is a small part of the national income in most countries. Where rents are high relative to the income of farm tenants and agricultural labourers, this clearly reflects the low value of unskilled labour, itself the reflection of lack of skill, enterprise or ambition rather than of population pressure. Of course, population increase can substantially reduce the marginal productivity of labour in the short period; but this phenomenon has little to do with long term development. It can also reduce productivity per head by increasing the proportion of the young and the old in a population. But to regard this as a reduction in welfare is to accept the unstated and, as we shall see, unwarranted assumption that children and old people are unwanted burdens whose life is of no value.

National income per head is used extensively as an index of economic welfare, as a measure of goods and services yielding economic satisfaction or benefit. The psychic income derived from health, prolongation of life and possession of children is a major component of satisfaction. That this is so is evident in the readiness of people to pay for services to have their health improved and their own lives and those of their children and parents prolonged. These forms of psychic income are disregarded in national income statistics.

Disregard of these forms of benefit brings about anomalies. The birth of a child immediately reduces income per head within the family, and also that in the country as a whole. But do the parents feel worse off? Would they feel better off if they could have no children or if some of them died?

The familiar references in the development literature to the so-called burden
of dependency, represented by a relatively large proportion of children and old people in the population, imply that children are only a cost or a burden, not a blessing; and that the survival of people into old age is of no benefit to anybody, not even to the survivors themselves. These references also ignore both the current and prospective economic contribution of children to the incomes of their parents.

It is sometimes suggested that high birth rates in LDCs, especially among the poorest, result in life so wretched as not to be worth living: over a person's life suffering or disutility exceeds utility. If this were so, fewer such lives would increase the sum total of human happiness. This type of reasoning, which implies that external observers are the appropriate judges of the moral and emotional status of others, was often heard in the late nineteenth century and early twentieth century in discussions of the conditions of the poor in Britain. It is inconsistent both with simple observation and with widely accepted ethical notions. Even when people are poor they prefer to live rather than not to live, as is indeed shown by their decision to strive to remain among the living. This is not to say that their lives may not be unhappy, but merely that it is not legitimate to suppose that their lives are not worth living.

The rapid population growth in the less developed world in recent years has served to widen differences in recorded per capita income between advanced countries and LDCs compared to what these would have been otherwise. Somewhat similar changes have taken place within individual countries between richer and poorer groups. The results of such developments are all too often deplored as representing a greater inequality of income—a so-called worsening of income distribution. Yet since the poor also like to have children and to live longer, this so-called worsening of income distribution reflects an improvement in their condition.

The concept of optimum population (whether the population size which maximizes real income per head or that which maximizes real income per head multiplied by the size of the population) occasionally surfaces in discussions of population growth in LDCs. This concept is of little intellectual or practical significance. It again ignores any psychic income from children and from longer life. Its proponents usually also fail to specify such critical magnitudes as the period over which average or total income is to be maximized and the rate at which expected future income is to be discounted.

If population pressure and population growth do not jeopardize economic performance and progress significantly, they should not bring about
persistent specific adverse results either. However, certain specific untoward results are often attributed to population growth. These results are thought to bring about quite special problems and also by themselves to obstruct material progress. The most significant of these are thought to be a threat to food supplies through lack of land, and to other components of living standards through the exhaustion of mineral resources. The emergence of large-scale unemployment is said to be another major threat.

Food supplies and exhaustible resources. Population growth is often said to undermine living standards in the less developed world, or even worldwide, through increasing the demands made on land and exhaustible minerals. In this particular context population growth in advanced countries is supposed to be especially harmful because people there use more of these resources per head.

People in the West do indeed consume much more food and minerals per head than do people in LDCs. But the difference in production between the two categories is even greater. Not only does the production of developed countries pay for all the consumption there, but in addition it finances the export both of commercial capital and of subsidized capital to the less developed world.8

There is no danger of worldwide malnutrition or starvation through shortage of land resulting from population growth. Contemporary famines and food shortages occur mostly in sparsely populated subsistence economies with abundant land. There is no shortage of land in areas such as Ethiopia, the Sahel, Tanzania, Uganda and Zaire. The recurrent famines in these countries and elsewhere in the less developed world usually reflect conditions typical of subsistence or near-subsistence economies. They reflect in particular the absence of reserve stocks and lack of access to external supplies, largely the result of poor communications and ineffective storage facilities. The effects of these conditions are exacerbated by widespread official restrictions on the activities of traders, by a lack of public security and sometimes by official restrictions on the movement of food. In some instances the shortages are brought about by the maintenance of unproductive systems of rights to land, such as tribal systems of land rights which inhibit improved productive activity. These various influences have nothing to do with population pressure on land. It is notable that no famines are reported from such densely populated regions of the less developed world as Taiwan, Hong Kong, Singapore, Malaysia and cash crop producing areas of West Africa.

The small size of farms and the low level of agricultural productivity over most of the less developed world reflect lack of skills, ambition and energy, or
social beliefs and customs adverse to economic achievement – and not a shortage of land. In many of these regions additional land is freely available, and yet agricultural holdings are very small. And in much of the less developed world, only a single annual crop is taken from the land where double or treble cropping is feasible with little or no increase in input other than more work by the family in different seasons.

In the developed world the cost of land is a small proportion of the resource cost of food. For instance, land rent as a proportion of the factor cost of food was estimated for the United States as representing no more than 5% in 1972. Most of this modest proportion represents not the original qualities of the land, but the enhancement of its value through human activity and the application of knowledge – processes which will continue pari passu with population growth. The productivity of land in both the developed and less developed world depends very largely on human activity.

It should be clear that there is no unequivocal or even sensible answer to the frequently asked question how many people a country, a region or the world can support. Those who ask such questions often fail to specify even the standard of living they envisage. But even if this were specified, such questions would not be sensible. The number of people who can live in any area at the specified standard of living is not determined by the extent of land or of other physical resources available there. It depends very largely on the personal qualities, social institutions and mores and political arrangements of the population, on the state of technology and on external market conditions for imports and exports.

Except for fossil fuel, mineral deposits do not represent exhaustible resources. They are concentrations of minerals. The extraction of these deposits and also of minerals in a more dispersed form depends on price, cost, technology and government policy. When minerals are used they do not disappear. In large measure they can be recovered by processes governed by the same factors as those governing their discovery and extraction. Fossil fuel is an exception because when used as energy it disappears in the atmosphere. But there is no danger of population growth posing a threat to long term energy supplies. A substantial and lasting increase in the real cost of fossil fuels would encourage the use of other sources of energy and also various methods for saving energy. Moreover, fossil fuel is not used extensively as a source of energy in Asia and Africa, the home of the great majority of the peoples of the less developed world. Thus population increase in these areas would not be a major factor in raising the cost of fossil fuel.

Any substantial long term rise in the real cost of food and minerals would induce technical change designed to mitigate their relative scarcity. It would
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also affect people's reproductive behaviour. To ignore this amounts to assuming that in one of the most important aspects of people's lives their conduct remains unaffected by changes in their circumstances.

Thus population growth in the less developed world would not endanger long term supplies of food and minerals. On the other hand, governments of many lpcs pursue policies which affect these supplies adversely. Over much of the less developed world both current agricultural output and the extension of capacity, and thus long term supply, are impaired by heavy taxation of farmers, forcible collectivization of agriculture and restrictions on the activities of traders. In many lpcs there are also severe restrictions on the access of energetic and enterprising local groups to land, whether already cultivated or unused. (Examples include the Ibo in Nigeria, Asians in Africa, and Chinese in South-East Asia.) Further, farm production is inhibited by ubiquitous restrictions on the import or use of tractors, harvesters, intertillage machines and other mechanically-powered farm implements.¹⁰

Supplies both of food and of minerals, including fossil fuels, are impaired also by policies and measures such as expropriation of assets and enterprises, unilateral alteration of terms of agreements and insistence of local participation in mining and plantation enterprises. Besides reducing current supplies, these widespread policies raise risks and costs and inhibit the flow of capital into plantation agriculture, the exploration and production of minerals and related activities, and thus reduce the long term supply of foodstuffs and minerals.¹¹

Population growth and unemployment. It is widely believed that population growth in the less developed world is responsible for heavy current and prospective unemployment. This opinion is the acknowledged basis for the large scale World Employment Project sponsored by the World Bank and the International Labour Office.

This opinion is superficially plausible but nevertheless unfounded. It clearly does not envisage unemployment as a consequence of lack of effective demand, that is unemployment of a Keynesian or cyclical character. The larger population means more consumers as well as more producers. There is no reason why an increase in numbers as such should cause unemployment. The large increase in population in the West over the last two centuries has not brought about persistent mass unemployment. Substantial unemployment emerged in the twentieth century when population growth was already much slower than it had been in the nineteenth century. And when in the 1930s and 1940s an early decline in population was widely envisaged, this development was thought to make for more unemployment. It is evident also from recent
and current experience in the less developed world that even rapid increase in population does not result in persistent unemployment, and also that this issue cannot be discussed sensibly on the basis of numbers and physical resources. Rapid population growth in Hong Kong did not bring about unemployment there. Again, Singapore is extremely densely populated and only very recently experienced a rapid population growth. There is far less land per head of population in Singapore than there is in neighbouring Malaysia. Yet many people move from Malaysia to Singapore as short term or long term migrants or as permanent settlers in search of employment and higher wages. Their numbers represent an appreciable proportion of the labour force of Singapore and are significant in relation also to the labour force of Malaysia.

The suggestion that increased population results in unemployment implies that labour cannot be substituted for land or capital in particular activities, and also that the pattern of production cannot be altered in the direction of more labour intensive activities. In technical language the suggestion implies that the elasticity of substitution between labour and other resources is zero in both production and consumption. These conditions are not present in the less developed world. This is shown by the development of more intensive forms of agriculture in many lds and the frequent changes in the composition of their national output. Obvious examples include the development of double and treble cropping or the shift from pastoral activity to arable farming. The suggestion that population growth causes large scale and persistent unemployment in the less developed world involves other unrealistic and inadmissible assumptions such as absence of foreign trade, unchanging technology and reproductive behaviour uninfluenced by economic conditions and prospects.

There are, however, certain characteristics of labour markets in some lds which do lead to unemployment, but they have nothing to do with population pressure. An important instance is the operation of formal or informal minimum wage controls above the equilibrium level for the type of labour involved. This need not in itself cause unemployment but merely a reduction in the numbers employed in these activities. However, the attraction of being employed at these wages, together with the need to be available for employment when required, results in the formation of pools of unemployed or intermittently employed labour. This situation, which is unrelated to population pressure or growth, is observable in the urban labour markets of many lds.
The Population Explosion

The foregoing discussion of the implications of population growth and density can now be linked to recent demographic experience and prospects in the less developed world.

Treatment in largely broad brush terms is appropriate for the present purpose on several grounds. The first is the ethnic and cultural diversity of the less developed world and even of individual ldc's. Specific treatment of demographic experience would require separate discussion of the conduct and experience of the main ethnic and cultural groups in particular regions and countries. This is not feasible here. Moreover, demographic statistics of most ldc's, notably in Africa and South Asia, are often no more than rough estimates with wide margins of error. Registration of births is seriously incomplete in most ldc's. Statistics are sometimes manipulated for political purposes. On the other hand, incomplete censuses may result in underestimated numbers. The appropriate procedure for the present purpose is therefore to rely on broad information or reasonable estimates. In certain contexts this information can, however, be supplemented by detailed specific studies carried out by observers with no specific axe to grind.

The population explosion is simply a shorthand expression for a rapid sharp decline in mortality over a period during which birth rates have remained high. Although statistics are patchy, the overall picture is clear. Between the 1920s and the 1960s mortality in the less developed world approximately halved. It declined from about thirty-one per thousand in the 1920s to about seventeen per thousand in the 1960s. Life expectation at birth in the less developed world as a whole is estimated to have increased from about thirty-five years in 1950 to about fifty-three years by 1972, that is by one half in the life span of one generation. The decline in mortality and the increase in life expectation have occurred far more rapidly than they did in more developed countries with initially similar levels of mortality. In Western countries for which comparable information is available such an increase in life expectancy took place over several generations. The decline in infant and child mortality in the less developed world has been particularly rapid, but mortality seems to have declined substantially in all age groups. The general and sharp decline in mortality and the consequent rise in life expectation in ldc's have not been accompanied or as yet been followed by a correspondingly substantial or widespread decline in fertility.

The demographic picture of the contemporary world can be presented in the following general terms. In most of the less developed world fertility has remained high but mortality has fallen sharply. In the developed world, in
contrast, both fertility and mortality have been at much lower levels for several decades, even allowing for somewhat higher fertility rates in the first two decades or so after the Second World War. Thus there is one large group of societies with crude birth rates of about thirty-five to forty per thousand or more, a population increase in the region of about 2% per annum or more, and a gross reproduction rate of over 2.5%; and there is another large group with crude birth rates of about eighteen to twenty per thousand, a population increase of under 1% per annum, and a gross reproduction rate of about 1.2%. There are some societies with intermediate levels of fertility at around thirty per thousand, with population increasing at around 1% per annum. These are mainly in certain Far Eastern countries with appreciable Chinese populations, a few island countries elsewhere (for example, Sri Lanka, Mauritius and the Caribbean) and some South American countries in the temperate zone with substantial populations of European origin. But this intermediate group is relatively small.

Thus there is a distinct dichotomy in recent demographic experience and current demographic patterns between the West (including Eastern Europe), Japan and Australasia on the one hand, and most of Asia, Africa and Latin America on the other hand. The distinction between these two groups is much clearer and much more pronounced in terms of demographic statistics than it is in terms of statistics of national income per head, for which there is no clear discontinuity in the international range of incomes. There are many relatively prosperous countries, especially in the Middle East and Latin America, where fertility has remained at levels much higher than those in some European countries with comparable or even lower per capita incomes.

The high gross reproduction rates and the large proportion of young people will ensure significant population increases in the principal regions of the less developed world over the next few decades. These increases would occur even if age-specific fertility were to decline appreciably. As we shall see in the next section, ambitious population projects have often been wide of the mark. But the unambitious prediction can be made with some confidence that over the next decade or two the rate of population growth of the less developed world as a whole is unlikely to fall significantly below 2%, and may for some years continue in the region of 2½%. The only circumstances likely to upset rough estimates would be a huge increase in mortality as a result of a series of catastrophes, or a dramatic reduction of fertility as a result of a sudden, rapid and pervasive Westernization of much of the less developed world. The occurrence of either development is exceedingly improbable, and the first would in any case be accompanied by other cataclysmic changes.
Current levels of fertility in the less developed world have greatly exceeded expectations. It used to be widely believed that the precipitate fall in mortality in ldc's would be followed by an early and substantial fall in fertility. This was thought especially likely if the decline in mortality were accompanied by a significant rise in incomes and in the extent of urbanization. It was also thought likely that a decline in infant and child mortality would bring about a reduction in the birth rate, because a wish to replace children who had died young was regarded as a major reason for large families.

In the West the rising incomes and general living standards in the nineteenth century were accompanied first by a widespread decline in mortality which was then followed relatively soon by a decline in the birth rate. This sequence resulted in a slow rate of population growth in the late nineteenth century and in the twentieth century, with much reduced mortality and fertility rates compared with the early stages of this period of transition in the eighteenth century and early nineteenth century. This Western experience came to be regarded as a norm. It served as the basis for the theory of demographic transition, from which its exponents predicted in the early post war years that similar sequences were about to take place in the less developed world.16

Throughout the 1960s and 1970s fertility in most of the less developed world remained much higher than had been expected. In particular, fertility in some of the poorer countries of Europe in the inter-war years was much lower than it has been in recent years in many ldc's, including countries with higher incomes than these European countries had before the Second World War.17

For at least two reasons the confident predictions based on the theory of demographic transition derived from Western experience should have been suspect at the time.

The first reason was the notable failure of predictions of an early decline in population widely canvassed in the 1930s and 1940s. Substantial early decline in population, primarily in the West but to some extent worldwide, was then generally predicted. Confidence was buoyed up by belief in improvements in demographic forecasting techniques, notably the development and use of the concepts of gross and net reproduction rates. Economists, sociologists and demographers also predicted that the decline in population would entail unfortunate or even disastrous results. These were thought to include widespread unhappiness in a world populated largely by old people; an increased burden of dependency on income earners because the greater proportion of old people in the population would more than offset the smaller proportion of children; a lack of adaptability of the economy; difficulties of
maintaining full employment because the incentive to invest would be reduced; and widespread social pessimism and dejection accompanying these changes. Even the extinction of the species was seriously envisaged in some writings of prominent academics under such headings as ‘The End of the Human Experiment’ or ‘The Suicide of the Race’.

In less than the span of one human generation the population problem has come to mean the exact opposite of what it had been held to be. The earlier scare of a decline in numbers has come to be replaced by the scare of an increase in numbers, in both the developed and less developed worlds. The scare has remained but the sign has been reversed. In view of this startling change one wonders what would have happened if proposals for increasing fertility had been adopted in the 1930s and 1940s and had successfully increased the number of people in the reproductive age groups. But before the more drastic proposals could be introduced, the predictions on which they were based were already discomfited by population growth.

Population forecasts have often proved wildly inaccurate. It is, nevertheless, hard to think of a precedent for an error in direction such as that of the forecasts of the 1930s and 1940s. The belief of the practitioners in their predictions and their readiness to base far-reaching policies on them were also new. Much the same confidence is evident in current population discussions, and they again serve as bases for policy.

Faith in the extension of the conventional theory of demographic transition to the less developed world was misplaced also. The initial conditions from which the demographic transition in the West occurred were in critical respects radically different from those in the contemporary less developed world. The level of material culture in many Western countries was then higher than that in most of the Third World. Moreover, marriage patterns in Europe in the eighteenth century also may have been exceptional, possibly unique. This is the theme of a justly celebrated and often quoted article by Professor John Hajnal. According to Hajnal:

The marriage pattern of most of Europe as it existed for at least two centuries up to 1940 was, so far as we can tell, unique or almost unique in the world. There is no known example of a population of non-European civilisation which had had a similar pattern. The distinctive marks of the ‘European’ pattern are (1) a high age at marriage and (2) a high proportion of people who never marry at all. The ‘European’ pattern pervaded the whole of Europe except for the eastern and south-eastern portion.

This pattern contributed to a fertility appreciably lower than the norm in other societies, including most present day lds. Hajnal’s findings have been acclaimed widely. Hajnal suggests that the distinctive marriage pattern
emerged around the middle of the seventeenth century (although there are more recent suggestions of an earlier origin). That its emergence was soon followed by a substantial acceleration of material progress bears out the significance of attitudes and mores on economic performance.

In the contemporary less developed world economic improvement has at times been accompanied by an increase in birth rate and an even greater rate of increase in population because of increased survival rates (including those of women of childbearing age and of their young children). Statistical association between economic improvement and increases in the birth rate has been observed in the inter-war period and in the 1950s in a number of countries including Taiwan, Singapore, Malaysia and Mauritius. (This was found in conditions in which the rise in the birth rate could not be attributed to the correction of previous under-reporting.)

In particular, in many parts of Africa fertility has increased in the course of progress from a nomadic life to sedentary agriculture, and from the first to the second generation of sedentary agriculture. In these early stages of economic advance the improvement leads to increased fertility and survival at a time when parents do not wish to restrict the number of their children. Dr James Kocher found that in rural Tanzania parents generally would have liked to have more children than the number of their children surviving over their reproductive life. He argues that his findings apply widely in sub-Saharan Africa and that they are confirmed by other studies.

Various demographic inquiries in West Africa, notably those of Professor Caldwell and of his associates, found that fertility may have increased in recent times, and that there was no significant difference between fertility in the towns and in the countryside, notably in the Yoruba society of Western Nigeria. Professor Petersen shows that a number of inquiries into urban and rural fertility reveal wide differences in experience in the less developed world. In many ldc's, for example Malaysia, India, Pakistan and Algeria, urban fertility is not lower than in the countryside; urban fertility relative to rural fertility appears to be highest in Nigeria and lowest in some Latin American and Caribbean countries. In the West, on the other hand, low urban fertility has been routine for a long time.

The relationship between fertility, social class and occupational statistics is also much more varied in the less developed world than in the West. Some studies of fertility in Egypt have suggested that fertility on the one hand, and education and occupation on the other, are positively correlated in rural areas
but negatively in urban areas. Practically throughout the less developed world, however, the Westernized strata in business, politics, administration and the professions tend to have smaller families. These groups are a small fraction of the total population in South Asia, Africa and much of Latin America.

Altogether, fertility in the less developed world does not depend simply either on the level of income or on the degree of urbanization. Adoption of Western attitudes will induce people to restrict the number of their children; but neither higher incomes nor increased urbanization by themselves will bring this about.

The number of children people desire depends on personal attitudes and preferences. These in turn are much affected by social beliefs, values and institutions. The economic costs and benefits also affect the number of children people wish to have.

Social values, beliefs and institutions differ widely among and often within societies. The more narrowly economic costs and benefits of children again differ greatly with the economic opportunities open to parents and children both as producers and as consumers. These opportunities in turn are influenced by social and religious values, institutions and arrangements.

Thus one would expect substantial differences in fertility and family size both among societies and among groups within societies. Various influences interact with one another, and their impact may change. Fertility and family size in a given society may therefore be expected to change over time. Both the nature and speed of demographic response to a particular economic change, such as an increase in income, may differ greatly in different societies and groups and may vary through time.

Diversity and complexity of social and economic phenomena themselves do not preclude valid generalization. Indeed, they present a challenge to theorists. We now note two bold attempts at a theory of the determination of family size. One is in terms of modern microeconomic theory; the other is based on inter-generational flows of wealth.

The microeconomic theory of fertility applies modern economic analysis to the determination of fertility and family size. It proposes to explain family size in terms of various factors susceptible to economic analysis; these include the pleasure (i.e. utility) derived from children, the costs of raising them, the current and expected income accruing from children to parents, and the prices of goods and services.
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The theory is valuable for imposing a pattern on disjointed phenomena, and for reconciling the results of cross-section studies of fertility with the results of the analysis of time series. It may well provide successful predictions of fertility over relatively short periods or in stable conditions, especially in industrial societies. But its usefulness for predicting longer-term demographic change in ldc's is likely to be limited. This is so chiefly for two reasons. First, the theory addresses itself only to some of the determinants of the decisions on fertility (unless the utility derived from children and the costs of raising them are defined so widely as to be tautological); and these are not always the most important. Second, the parameters and their modes of interaction with the variables used in the analysis are apt to differ considerably among the diverse societies of the less developed world, and are apt to change in the changing conditions of that world. This applies, for example, to the cost of children and to their likely contribution to family income and to the support of parents in their old age.

Thus even if the demographic experience of the West could be explained largely in terms of the modern economic theory of fertility, it is unlikely to provide a sound basis for predicting prospective fertility in ldc's over the next few decades.

The theory that the direction of the inter-generational flow of wealth determines fertility was developed by Professor Caldwell. His investigations and inferences are among the most informative on this subject. His enquiries were conducted mostly in West Africa, and his findings are summarized in the major article already mentioned. Their significance and novelty warrant extended discussion.

For the purpose of demographic analysis Caldwell classifies the societies of the less developed world into primitive, traditional and transitional societies. The first two types of society reward a high fertility, which is advantageous to the society and may even be necessary to maintain it. The primitive society has barely emerged from subsistence production. Mortality is very high and there is scant protection from internal and external enemies. Traditional society is much more orderly as well as significantly less poor. Settled agriculture, cash crops, trade and crafts emerge. In both primitive and traditional societies the extended family prevails. Caldwell recognizes and lists the familiar advantages of the extended family in the early stages of development. But he also observes and emphasizes certain other characteristics rarely noticed in discussion of the nuclear family and the extended family which bear on demographic prospects.

The most important of these characteristics is that in primitive and traditional societies the inter-generational flow of wealth is overwhelmingly from the children to the parents, and more generally from the younger to the
older generation. The contribution of children who work in the field or in the household exceeds the cost of maintaining them. The young continue to be net contributors to their elders until they set up on their own. Indeed, they often contribute even after leaving the household or compound, especially by supporting their relations. The young do not resent the system, because they know that they in turn will be supported when they grow old. The participants adopt and accept a long-term horizon; for instance, young women frequently refer to the need to have many children and even grandchildren to support them when they grow old.\(^2\)

When the inter-generational flow of wealth is from the young to the old it is an economic advantage to have many descendants and young collateral relatives. Thus the system conduces to high fertility. Higher incomes and more urbanization will not by themselves reverse the inter-generational flow of wealth and bring about demographic transition. Thus in Nigeria many of the social, political and economic advantages of having many children continue in urban conditions. Indeed, it is more likely in the towns than in the country that the political and material benefits of having one really successful relative should outweigh the cost of bringing up a number of unsuccessful ones.

It is in the transitional society which follows a traditional society that the inter-generational flow of wealth is reversed. The transitional society is significantly more modernized than the traditional society. Many people in it have adopted Western attitudes to a considerable extent. Caldwell rightly insists that modernization is only a euphemism for Westernization. Adoption of Western attitudes conduces to a reversal of the direction of the inter-generational flow of wealth. People come to subsidize their children and young relatives generally, instead of being subsidized by them. This change then promotes family limitation.

Caldwell supports his contentions with the results of close study of the availability and use of contraception in Nigeria, notably Ibadan and Lagos. He confirms other evidence that both traditional and modern contraceptive methods are widely known and readily accessible in Southern Nigeria. However, only a minority practise contraception to restrict family size. Even when contraception is practised, this is not primarily in order to limit family size, but rather for various other reasons such as avoidance of detection of pre-marital or other extra-marital sexual activity. The demographic innovators, those women who regularly practise contraception in order to restrict family size, are a small minority — a small minority even of educated women, and also of those who use contraceptives. They are women who deliberately accept Western attitudes towards child-bearing and child-rearing, almost certainly as
a result of exposure to Western education, contacts and media. They are as yet only a very small fraction of women of child-bearing age.

Caldwell's conclusions are original, imaginative and suggestive. His findings may explain the sustained high fertility in most ldc's, in circumstances when a substantial decline could have been expected on the basis of the theory of demographic transition. Nevertheless, even if Caldwell's conclusions were valid and capable of generalization to other parts of the less developed world, they still could not serve as a secure basis for forecasting long-term fertility trends. It is impossible to predict how far and how fast the different societies will accept Westernization and Western patterns of inter-generational flow of wealth. Westernization has made headway in the less developed world. It may be expected to make further headway, and if so, it would bring about smaller families. But there has also been resistance to Westernization, even substantial movement in the opposite direction. Examples include the resistance in rural India both to birth control and to the slaughter of cattle, and the revival of Muslim orthodoxy in parts of the Middle East.

The microeconomic theory of fertility and the Caldwell theory based on the direction of the inter-generational flow of wealth are complementary. The latter relies more explicitly and extensively on the effects of cultural change. Together the two theories help considerably with an understanding of the determinants of family size. But for the reasons indicated, notably the impossibility of forecasting the extent and speed of Westernization, prediction of long term fertility trends in the less developed world as a whole must involve much conjecture. It is unwarranted to go beyond saying that it is virtually certain that for the rest of the century the population of the less developed world will increase appreciably, even though it is likely that age-specific fertility and the rate of population growth will diminish.

The preceding discussion has assumed that parents plan the size of their families and tend to have the number of children they wish to have. The typical family size, in turn, depends on various cultural, social and economic factors.

The comparatively high fertility and large families in many ldc's should not be regarded as irrational, abnormal, incomprehensible or unexpected. They accord with the tradition of most cultures and with the precepts of religious and political leaders. These precepts have been expressed by leaders of non-proselytizing cultures, such as Hinduism, which suggests that they do not reflect merely a desire for the power or prestige conferred by large numbers of
followers or subjects. It is highly plausible that the desire for self-fulfilment and for the perpetuation of one's family or one's society or culture has been important in traditional insistence on the value of large families. The larger the number of children, the more likely are these objectives to be attained, especially for people looking beyond their immediate descendants. A sense of continuity in the society is likely to encourage people to have large families.26

Notwithstanding certain clearly definable exceptions, the wish of the great majority of mankind to have at least some children has extended across the ages, across cultures and across social classes. This is evident from the multiplication of the human race as well as from widely-held ideas and widely-practised behaviour.27 The Biblical injunction to be fruitful and to multiply is familiar. Less well known in the West is the traditional greeting addressed to brides in India: 'May you be the mother of eight sons'. By contrast, the discontent or unhappiness of people, especially of women, with no children, and the happiness of the fertile are common themes of both the sacred and the profane literature of diverse cultures; it is reflected also in the uniformly unfavourable connotation of the term barren.28 The widespread practice of adoption and the growing demand for artificial insemination in some countries also reflect the desire for children and a family.

Altogether, in the less developed world as elsewhere the great majority of people want the children they have. Children give satisfaction; they are outlets for affection; and they enable people to project themselves into the future. They also yield economic benefits: they often contribute significantly to the family income; they serve as a source of security or form of insurance for old age; and they sometimes bring prestige and influence. In all these contexts the benefits from one highly successful child exceed the cost of the others.

It is often thought that people in ldcs have many children because they do not know about birth control or have no access to cheap contraceptives. But this is wrong. Fertility is well below fecundity in most societies. Traditional methods of fertility control such as coitus interruptus were widely known and practised in societies technically and culturally much poorer and more primitive than populations with high fertility in the contemporary less developed world. Moreover, people in high fertility areas do have access to cheap Western-type goods and simple equipment of all sorts. Mass demand for such cheap Western-type consumer goods as soft drinks, hardware, watches and cameras has been conspicuous for many decades in South Asia, the Middle East, Southern Ghana, Southern Nigeria, Latin America and elsewhere. The transistor radio was ubiquitous in South Asia, the Middle East and Latin America a few years after it became available in the West. Contrast this with the relatively slow spread of condoms, inter-uterine devices and the
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pill, long after their extensive use in the West, and also long after the decline of mortality in the less developed world. The ready availability of cheap consumer goods and the relatively limited use of cheap contraceptives, which moreover are often subsidized, suggest strongly that there is only limited demand for them.

Much of the discussion of population in the development literature assumes or implies that in the high-fertility ldc's children are somehow uncontrollably visited on their parents, and that they are to a large extent unwanted burdens both on the parents and on society at large. On the contrary, however, the children who are born are generally desired. Children at any rate are avoidable. To deny this is to suggest that parents in ldc's procreate without an understanding of the consequences or without the will or sense of responsibility to prevent them. This view treats people of the less developed world with altogether unwarranted condescension or contempt.29

Western observers often chide parents in ldc's for alleged exploitation of their children and of the young generally. Such complaints are inconsistent with the frequent assertions that the large proportion of children in their populations represents a heavy burden of dependency. Neither of these inconsistent notions is valid.

In ldc's quite young children often participate in economic activity. They contribute to the family income through agricultural activity and by undertaking household chores, thereby freeing parents for other activities. In rural Uganda even five and six year old children regularly participate in simple agricultural and pastoral work.30 A detailed survey of a large area of Bangladesh found that children contributed substantially to family income by working in the field and in the home.31 Even in towns young children are often active in various forms of trade. This is a well known feature of economic life in West Africa.32

The contribution of children to family income, and thus to the national income, is considerable in the aggregate.33 The contribution of young children may well exceed the cost of maintaining them. But this does not mean that parents exploit their children. As already noted, the children can expect similar support when they grow up.

In ldc's as elsewhere people take note of surrounding social and economic conditions in their procreative habits. And if they find that they have as many children as they can support, they will either stop having more or adjust their economic circumstances. People in ldc's as elsewhere who are materially
ambitious for themselves or for their children will adopt one or other or both of these courses. The adoption of more intensive forms of agriculture, the development of cash crops and the readiness of people to move between activities and places are familiar examples of such responses.

It is argued at times that even if parents largely have the families they desire, they may have larger families than is socially desirable because they do not bear the full costs of having and raising children. According to this argument there is an externality in that some of these costs are met by public expenditure, as on hospitals, schools and family allowances. Taxpayers subsidize parents. Consequently the total number of children is greater than if parents themselves had to bear all or a larger part of the costs.

These effects are likely to be more material in developed than in less developed countries because the public expenditures involved are less significant in the latter. However, the remedy lies in the reduction of these expenditures, or a modification of their incidence so that the parents of larger families are not so heavily subsidized. Further, the presence of some of these externalities does not depend on family size. For instance, while a small family may be subsidized by the taxpayers if the children receive publicly financed university education, a much larger family may not be so subsidized if the parents bear the cost of their school education.

Western observers often press governments of ldc's to restrict family size because of the adverse consequences of larger families, including the consequences of externalities. At the same time these observers often also urge more government help for the poor, including those with large families. Advocacy of fertility control will not be effective if parenthood is subsidized at the same time. Even if the incomes of the poor were increased by subsidies not geared to family size, this is still more likely to lead to larger families than to smaller ones because these higher incomes would not result from a change in attitudes.

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Allegations or apprehensions of adverse or even disastrous results of population growth are unfounded. They rest on seriously defective analysis of the determinants of economic performance; they misconceive the conduct of the peoples of ldc's; and they employ criteria of welfare so inappropriate that they register as deterioration changes which are in fact improvements in the conditions of people.

Misconceptions and defective reasoning have promoted policies designed to reduce fertility and family size. Where these policies involve no more than
dissemination of information about birth control techniques, or even the subsidized distribution of contraceptives, they may do little harm, and may at some cost improve the range of alternatives open to people. Even then, however, the policy may set up tensions and provoke feelings of insecurity and vulnerability if its announcement and implementation are accompanied by official propaganda insistently deprecating prevailing attitudes and behaviour. Moreover, people in many Idcs, especially in rural areas, are often dependent on officials for favours, for example in the allocation of subsidized credit or subsidized goods. Education and persuasion in favour of reduced fertility may in practice shade into coercion.34

Pressures for population control in the less developed world largely emanate from the West. The pressures and their sources were evident in India, where a sustained and mounting pressure for birth control reached its peak in the compulsory mass sterilization campaign 1975–77 in which the number of people sterilized against their will, often brutally and in insanitary conditions, is reported to have run into several hundred thousand.35 Substantial sums have later been spent in trying to rehabilitate some of the victims of this coercive population policy.

Even drastic policies of population control will not be able to achieve the favourable effects claimed for them within the foreseeable future, certainly not within the time horizon of interest to national and international politicians and administrators. On the other hand, population policies which involve open or disguised coercion, or which in other ways are repugnant to the people concerned, will rapidly produce anguish, anxiety, tension and conflict, with a damaging effect on personal and social well-being and on economic performance. Such coercion is objectionable on moral grounds as well as for its economic results. Those who seek urgent and dramatic solutions to a problem they claim to have discovered are apt to propose or prescribe policies which generate difficulties and problems for the people directly affected far more acute than those they would otherwise experience.