
**THE DEBATE OVER THE EFFECTS OF
POPULATION GROWTH ON ECONOMIC GROWTH**

The relationship between population change and economic growth remains a subject of debate among economists and demographers. They continue to disagree about whether population growth (a) restricts, (b) promotes, or (c) is independent of economic growth. Proponents of each view can point to research evidence to support their cases.

The utility of this debate has been hampered by its almost exclusive focus on population *size* and *growth*. Little attention has been paid to a critical variable: the *age structure* of the population (that is, the way in which the population is distributed across different age groups) and how it changes when populations grow.

This report attempts to address this limitation. It reviews the debate over the effects of demographic change on economic growth and examines the evidence for the relevance of changes in age structure for economic growth. It also examines the relationship between population change and economic development in particular regions of the world. Finally, it discusses key policies that, combined with reduced fertility and increases in the working-age population, have contributed to economic growth in the developing world.

Understanding the relationship between population change and economic growth has taken on immense significance in recent years because of demographic trends in the developing world. The world's developing countries—home to the vast majority of the world's population—are in varying stages of a demographic transition from

high to low rates of mortality and fertility. This transition is producing a boom generation that is gradually working its way through nations' age structures. In conjunction with the right kinds of policies, this phenomenon creates opportunities for economic growth in developing countries. For this reason, policymakers should benefit from a clearer understanding of the relationship between economic development and the shifting age structure that results from the unfolding demographic transition.

THE "PESSIMISTIC" THEORY: POPULATION GROWTH RESTRICTS ECONOMIC GROWTH

After World War II, rapid population growth, resulting from the gap between declining mortality and continuing high fertility, began occurring in much of Asia. By the mid-1960s, more countries, including a number in Latin America and the Middle East, were experiencing unprecedented rates of population growth. At such rates, their populations would double in less than 25 years.

Concerns about rapid population growth voiced by demographers, social scientists, and others were based largely on the assumption that such growth would "serve as a brake" on economic development.¹ In the late 1940s, conservationists began to write about excessive population growth as a threat to food supplies and natural resources. Concerns about the impact of rapid population growth and high fertility motivated the widespread implementation of family planning programs in many areas of the developing world (see Seltzer, 2002). Policymakers presumed that by helping to reduce high fertility, family planning programs would slow population growth, which in turn would contribute to improved economic performance by freeing resources that otherwise would be devoted to child-rearing and by reducing strains on infrastructure and the environment.

The "pessimistic" theory traces its lineage to Thomas Malthus. Writing in the 1790s, Malthus asked whether "the future improvement of

¹For one interesting discussion of trends in global population growth since the 1950s and the development implications of family planning, see Bulatao (1998), pp. 3–20.

society” was possible in the face of ever larger populations. He reached his famously dismal conclusion:

“Taking the population of the world at any number, a thousand millions, for instance ... the human species would increase in the ratio of 1, 2, 4, 8, 16, 32, 64, 128, 256, 516, etc. and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc. In two centuries and a quarter the population would be to the means of subsistence as 512 to 10; in three centuries as 4096 to 13, and in two thousand years the difference would be incalculable” (Malthus, 1798).

In a world with fixed resources for growing food, and slow technical progress, Malthus theorized, food production would quickly be swamped by the pressures of a rapidly growing population. The available diet would then fall below subsistence level, until population growth was halted by a high death rate. Living standards could only ever improve in the short term—before they set in motion more rapid population growth. The balance between population and income growth was the “great law of our nature.” Accordingly,

“No fancied equality, no agrarian regulations in their utmost extent, could remove the pressure of it even for a single century. And it appears, therefore, to be decisive against the possible existence of a society, all the members of which should live in ease, happiness, and comparative leisure; and feel no anxiety about providing the means of subsistence for themselves and families” (Malthus, 1798).

Malthus’s pessimism has remained with us. In 1968, for instance, Paul Ehrlich opened his influential book *The Population Bomb* with the words, “The battle ... is over. In the 1970s hundreds of millions of people are going to starve to death” (Ehrlich, 1968). More measured studies undertaken by the U.S. National Academy of Sciences (NAS) in 1971 and the United Nations in 1973 also predicted that the net effect of population growth would be negative (National Academy of Sciences, 1971; United Nations, 1973). Rapid population growth continues to press on the modern consciousness. The world’s population has grown sixfold since 1800, when it stood at about 1 billion. It took less than 130 years to add another billion. Things have quickened considerably since. The 6 billionth baby was born in October 1999—and world population is forecast to reach 9.3 billion by the year 2050 (see Table 1.1). Table 1.2 shows the current population

Table 1.1
World Population in Billions, 1804–2043

1 billion in 1804
2 billion in 1927 (123 years later)
3 billion in 1960 (33 years later)
4 billion in 1974 (14 years later)
5 billion in 1987 (13 years later)
6 billion in 1999 (12 years later)
7 billion in 2012 (13 years later)
8 billion in 2026 (14 years later)
9 billion in 2043 (17 years later)

SOURCES: Population Division, Department of Economic and Social Affairs, UN Secretariat, *Population Newsletter*, No. 66, December 1998; and United Nations (2001).

Table 1.2
Total Population in 2001, by Region, Subregion, and Country (Thousands)

Area, Region, Subregion, or Country	Population	Share of World Population
WORLD	6,134,135	
More-developed regions ^a	1,193,861	19.5%
Less-developed regions ^b	4,940,274	80.5%
Least-developed countries ^c	674,954	11.0%

^aUnited Nations (2001) defines *more-developed regions* as “all regions of Europe plus Northern America, Australia/New Zealand and Japan.”

^bUnited Nations (2001) defines *less-developed regions* as “all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia.”

^cUnited Nations (2001) follows the United Nations General Assembly’s 1998 definition of *least-developed countries* as these 48 countries: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People’s Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Sierra Leone, Solomon Islands, Somalia, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia. These countries are also included in the less-developed regions, except where otherwise stated.

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
AFRICA	812,603	13.2%
Eastern Africa	256,673	4.2%
Burundi	6,502	
Comoros	727	
Djibouti	644	
Eritrea	3,816	
Ethiopia	64,459	
Kenya	31,293	
Madagascar	16,437	
Malawi	11,572	
Mauritius	1,171	
Mozambique	18,644	
Réunion	732	
Rwanda	7,949	
Seychelles	81	
Somalia	9,157	
Uganda	24,023	
United Republic of Tanzania	35,965	
Zambia	10,649	
Zimbabwe	12,852	
Middle Africa	98,151	1.6%
Angola	13,527	
Cameroon	15,203	
Central African Republic	3,782	
Chad	8,135	
Congo	3,110	
Democratic Republic of the Congo	52,522	
Equatorial Guinea	470	
Gabon	1,262	
São Tomé and Príncipe	140	
Northern Africa	177,391	2.9%
Algeria	30,841	
Egypt	69,080	
Libyan Arab Jamahiriya	5,408	
Morocco	30,430	
Sudan	31,809	
Tunisia	9,562	
Western Sahara	260	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
Southern Africa	50,129	0.8%
Botswana	1,554	
Lesotho	2,057	
Namibia	1,788	
South Africa	43,792	
Swaziland	938	
Western Africa	230,259	3.8%
Benin	6,446	
Burkina Faso	11,856	
Cape Verde	437	
Côte d'Ivoire	16,349	
Gambia	1,337	
Ghana	19,734	
Guinea	8,274	
Guinea Bissau	1,227	
Liberia	3,108	
Mali	11,677	
Mauritania	2,747	
Niger	11,227	
Nigeria	116,929	
Saint Helena	6	
Senegal	9,662	
Sierra Leone	4,587	
Togo	4,657	
ASIA	3,720,705	60.7%
East Asia	1,491,772	24.3%
China	1,284,972	
China, Hong Kong SAR (Special Administrative Area)	6,961	
China, Macao SAR (Special Administrative Area)	449	
Dem. People's Republic of Korea	22,428	
Japan	127,335	
Mongolia	2,559	
Republic of Korea	47,069	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
South Central Asia	1,506,727	24.6%
Afghanistan	22,474	
Bangladesh	140,369	
Bhutan	2,141	
India	1,025,096	
Iran (Islamic Republic of)	71,369	
Kazakhstan	16,095	
Kyrgyzstan	4,986	
Maldives	300	
Nepal	23,593	
Pakistan	144,971	
Sri Lanka	19,104	
Tajikistan	6,135	
Turkmenistan	4,835	
Uzbekistan	25,257	
Southeast Asia	529,762	8.6%
Brunei Darussalam	335	
Cambodia	13,441	
East Timor	750	
Indonesia	214,840	
Lao People's Democratic Republic	5,403	
Malaysia	22,633	
Myanmar	48,364	
Philippines	77,131	
Singapore	4,108	
Thailand	63,584	
Viet Nam	79,175	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
Western Asia	192,445	3.1%
Armenia	3,788	
Azerbaijan	8,096	
Bahrain	652	
Cyprus	790	
Georgia	5,239	
Iraq	23,584	
Israel	6,172	
Jordan	5,051	
Kuwait	1,971	
Lebanon	3,556	
Occupied Palestinian Territory	3,311	
Oman	2,622	
Qatar	575	
Saudi Arabia	21,028	
Syrian Arab Republic	16,610	
Turkey	67,632	
United Arab Emirates	2,654	
Yemen	19,114	
EUROPE	726,312	11.8%
Eastern Europe	302,619	4.9%
Belarus	10,147	
Bulgaria	7,867	
Czech Republic	10,260	
Hungary	9,917	
Poland	38,577	
Republic of Moldova	4,285	
Romania	22,388	
Russian Federation	144,664	
Slovakia	5,403	
Ukraine	49,112	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
Northern Europe	95,236	1.6%
Channel Islands	145	
Denmark	5,333	
Estonia	1,377	
Faeroe Islands	47	
Finland	5,178	
Iceland	281	
Ireland	3,841	
Isle of Man	76	
Latvia	2,406	
Lithuania	3,689	
Norway	4,488	
Sweden	8,833	
United Kingdom	59,542	
Southern Europe	145,050	2.4%
Albania	3,145	
Andorra	90	
Bosnia and Herzegovina	4,067	
Croatia	4,655	
Gibraltar	27	
Greece	10,623	
Holy See	1	
Italy	57,503	
Malta	392	
Portugal	10,033	
San Marino	27	
Slovenia	1,985	
Spain	39,921	
TFYR Macedonia	2,044	
Yugoslavia	10,538	
Western Europe	183,407	3.0%
Austria	8,075	
Belgium	10,264	
France	59,453	
Germany	82,007	
Liechtenstein	33	
Luxembourg	442	
Monaco	34	
Netherlands	15,930	
Switzerland	7,170	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
LATIN AMERICA AND THE CARIBBEAN	526,533	8.6%
Caribbean	38,329	0.6%
Anguilla	12	
Antigua and Barbuda	65	
Aruba	104	
Bahamas	308	
Barbados	268	
British Virgin Islands	24	
Cayman Islands	40	
Cuba	11,237	
Dominica	71	
Dominican Republic	8,507	
Grenada	94	
Guadeloupe	431	
Haiti	8,270	
Jamaica	2,598	
Martinique	386	
Montserrat	3	
Netherlands Antilles	217	
Puerto Rico	3,952	
Saint Kitts and Nevis	38	
Saint Lucia	149	
Saint Vincent and the Grenadines	114	
Trinidad and Tobago	1,300	
Turks and Caicos Islands	17	
United States Virgin Islands	122	
Central America	137,480	2.2%
Belize	231	
Costa Rica	4,112	
El Salvador	6,400	
Guatemala	11,687	
Honduras	6,575	
Mexico	100,368	
Nicaragua	5,208	
Panama	2,899	

Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
South America	350,724	5.7%
Argentina	37,488	
Bolivia	8,516	
Brazil	172,559	
Chile	15,402	
Colombia	42,803	
Ecuador	12,880	
Falkland Islands (Malvinas)	2	
French Guiana	170	
Guyana	763	
Paraguay	5,636	
Peru	26,093	
Suriname	419	
Uruguay	3,361	
Venezuela	24,632	
NORTHERN AMERICA	317,068	5.2%
Bermuda	63	
Canada	31,015	
Greenland	56	
Saint Pierre et Miquelon	7	
United States of America	285,926	
OCEANIA	30,915	0.5%
Australia/New Zealand	23,146	0.4%
Australia	19,338	
New Zealand	3,808	
Melanesia	6,627	0.1%
Fiji	823	
New Caledonia	220	
Papua New Guinea	4,920	
Solomon Islands	463	
Vanuatu	202	
Micronesia	528	0.0%
Guam	158	
Kiribati	84	
Marshall Islands	52	
Micronesia (Federated States of)	126	
Nauru	13	
Northern Mariana Islands	76	
Palau	20	

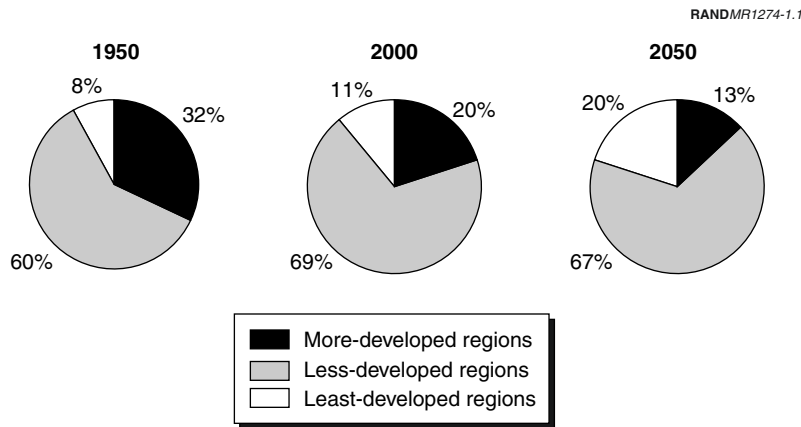
Table 1.2—continued

Area, Region, Subregion, or Country	Population	Share of World Population
Polynesia	613	0.0%
American Samoa	70	
Cook Islands	20	
French Polynesia	237	
Niue	2	
Pitcairn	0	
Samoa	159	
Tokelau	1	
Tonga	99	
Tuvalu	10	
Wallis and Futuna Islands	15	
Less-developed regions excluding China	3,647,893	59.5%
Less-developed regions excluding the least developed countries	4,265,320	69.5%
Sub-Saharan Africa	667,022	10.9%

SOURCE: United Nations, "World Population Prospects: The 2000 Revision," CD-ROM, 2001.

of all regions and countries, along with the share of the world's total population in each region. With the population of many developed countries decreasing by 2050, all of this explosive population growth is happening in developing countries (United Nations, 2001) (see Figure 1.1)—most rapidly in those geographic regions that are most fragile and least hospitable (due to adverse climate, lack of resources, or unfavorable location) to economic growth (Sachs, Mellinger, and Gallup, 2001)—encouraging predictions of demographic catastrophe.

For a time, it seemed the pessimists had the right answer. Innovations in agriculture, such as irrigation in China and potato cultivation in Ireland, were accompanied by vast increases in population that hampered improvements in living standards. Until 1700, income gaps between countries were fairly small and, even in 1820, real income levels in the advanced European nations were only about two to three times those found in Africa, Asia, and Latin America (see Figure 1.2).

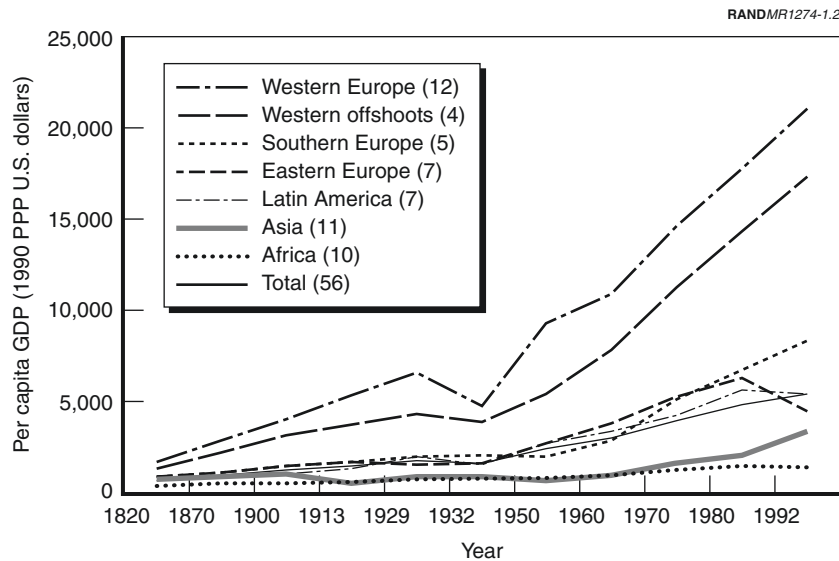


SOURCE: United Nations, "World Population Prospects: The 2000 Revision," CD-ROM, 2001.

NOTE: The UN defines "least-developed nations" to be a subset of "less-developed nations." By contrast, these charts completely separate the two categories, removing the "least-developed" nations from the "less-developed."

Figure 1.1—Shares of the World Population by Levels of Regional Development, 1950, 2000, and 2050

In addition to the effect of population numbers on the demand for fixed resources, there is also a potentially negative impact of population growth on capital intensity. In principle, higher population numbers require more homes, factories, and infrastructure to house, employ, and provide for their needs. In the long run, such capital can be constructed, but periods of rapid population growth may well lead to reductions in capital per worker and lower living standards. When population growth is rapid, a large part of investment is used to supply the needs of the growing population rather than enabling an increase in the level of provision per capita.



SOURCE: Angus Maddison, *Monitoring the World Economy: 1820–1992*, Paris: OECD, 1995.

NOTE: (*n*) = number of countries; PPP= purchasing power parity; Western offshoots = the United States, Canada, Australia, and New Zealand.

Figure 1.2—Economic Growth, 1820–1992 (by Major Region)

Both these theories give grounds for pessimism. However, by the early 1980s, economists were beginning to reject the pessimist view. Empirical research had weakened the pessimists' case; economic theory had begun to give increasing importance to technology and human capital accumulation rather than to the old key growth factor of physical capital; and demographic theory started to look to the intermediate and long term, where the short-term effects of population growth were likely to have at least partly smoothed out.² In response to these developments, organizations such as the National Academy of Sciences began to revise their earlier views, as economists' voices,

²On the importance of human capital in explaining differences in standards of living across countries, see Mankiw, Romer, and Weil (1992). On demographics, see A. C. Kelley (2001).

with their greater faith in markets' ability to respond to population growth, no longer took a backseat to those of the social and biological scientists who previously dominated population thinking (National Research Council, 1986).

THE "OPTIMISTIC" THEORY: POPULATION GROWTH CAN FUEL ECONOMIC GROWTH

Recent history has cast further doubt on the pessimists' theory. In the last 30 years—during which the world's population has doubled—per capita incomes have increased by about two-thirds. Famines have occurred, but Ehrlich's "hundreds of millions" of people have not starved. The famines that have occurred were largely caused by poverty and lack of funds within a section of the population to buy food rather than by any absolute shortage of food. (As Amartya Sen has noted, there has never been a famine in a functioning democracy, whatever its population growth rate [Sen, 1999].) Technological progress, in both agriculture and industry, has been more rapid than during any other time in human history. There have been equally dramatic social and institutional innovations: in the way people work, the standard of their education and health, and the extent to which they participate in the political process (Sen, 1999; Bloom, Craig, and Malaney, 2001). Rather than being constrained by fixed resources, the prices of many raw materials are in long-term decline, and some parts of the economy are becoming "dematerialized" as knowledge becomes an increasingly vital asset (World Bank, 1997; Task Force on Higher Education and Society, 2000).

These trends have supported the views of a group of "population optimists" who have sought to promote the idea that population growth can be an economic asset. Simon Kuznets and Julian Simon, for example, argued (separately) that as populations increase, so does the stock of human ingenuity. Larger societies—with the capacity to take advantage of economies of scale—are better positioned to develop, exploit, and disseminate the increased flow of knowledge they receive (Kuznets, 1960, 1967). Simon, in his influential book *The Ultimate Resource* (1981), showed that rapid population growth can actually lead to positive impacts on economic development (Simon, 1981). As one example, he cites the tendency of natural

resource prices to decline in the long term because of technological progress induced by the growing demands of rising populations. Ester Boserup uses similar arguments to turn the Malthusian worldview around. Population growth creates pressure on resources. People are resourceful and are stimulated to innovate, especially in adversity. When rising populations swamped traditional hunter-gatherer arrangements, slash-burn-cultivate agriculture emerged. When that, too, became inadequate, intensive multi-annual cropping was developed (Boserup, 1965, 1981). More recently the Green Revolution, which has almost quadrupled world food production since 1950 using just 1 percent more land, was a direct reaction to population pressure. “Without high yield agriculture,” comments Norman Borlaug, an initiator of the Green Revolution, “either millions would have starved or increases in food output would have been realized through losses of pristine land a hundred times greater than all losses to urban and suburban expansion” (Department for International Development, 1997).

The Optimists, while refuting the alarmist tendencies of the Pessimists’ theory, were not dogmatic about the positive impacts of population growth. Instead, they took a broader view, suggesting that a multiplicity of external factors was responsible for the consequences of population growth. These factors could have either positive or negative economic consequences; as T. N. Srinivasan said, “Many of the alleged deleterious consequences result more from inappropriate policies and institutions than from rapid population growth” (Srinivasan, 1988). This broadening of the discussion on population growth eventually led to population *neutralism* emerging as the dominant view in the demographic debate.³

³A more recent position is that of Galor and Weil (1999), who propose that the Malthusian and growth regimes should not be seen as competitors but rather, respectively, the beginning and end of a historical process. The world begins in the Malthusian regime and eventually evolves from an intermediate stage they call Post-Malthusian into the current Modern Growth Regime.

THE “NEUTRALIST” THEORY: POPULATION GROWTH HAS NO SIGNIFICANT EFFECT ON ECONOMIC GROWTH

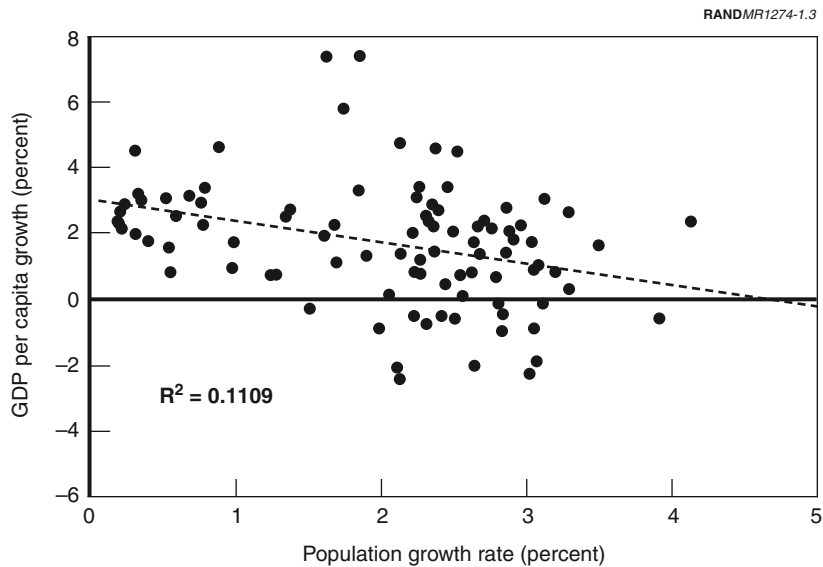
In his pathbreaking *Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith (1776) asked why some countries were richer than others. He found his answer in the division of labor, which allowed workers to become more productive by honing their skills at ever more specialized tasks. In recent years, economists considering the economic effects of demographic change have been more interested in Adam Smith, and in his narrative of the power of the market, than in Thomas Malthus’s dire predictions about population.

Most economic analysis has examined the statistical correlation between population and economic growth and found little significant connection. Though countries with rapidly growing populations tend to have more slowly growing economies (see Figure 1.3), this negative correlation typically disappears (or even reverses direction) once other factors such as country size, openness to trade,⁴ educational attainment of the population, and the quality of civil and political institutions are taken into account. Figure 1.4 shows the portion of economic growth unexplained by these other factors. It shows that this “residual” growth bears little correlation to population growth rates. In other words, when controlling for other factors, there is little cross-country evidence that population growth impedes or promotes economic growth.⁵ This result seems to justify a third view: population neutralism.

The neutralist theory has been the dominant view since the mid-1980s (Bloom and Freeman, 1986). Although there are some variations within the neutralist school—with the NAS concluding in 1986 that “*on balance* ... slower population growth would be beneficial to economic development of *most* developing countries” (National Research Council, 1986; italics added), and many World Bank

⁴Sachs and Warner (1995) judge openness to trade on the basis of tariffs, quotas and licensing, black-market premia, and export taxes.

⁵This result refers to the average experience across countries. The economic performance of any specific country, however, will be determined by many forces.



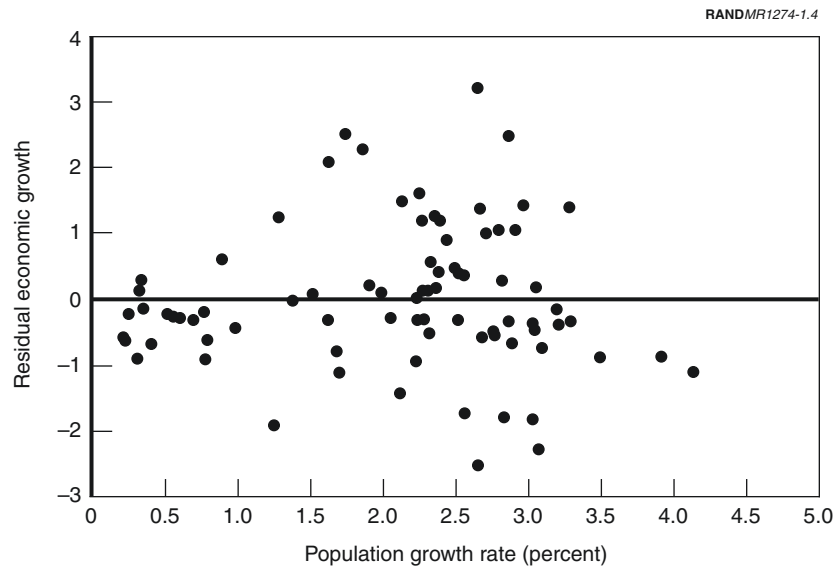
SOURCES: Authors' calculations, based on GDP data from Heston and Summers (1995) and on population growth rate data from United Nations, "World Population Prospects: The 2000 Revision," CD-ROM, 2001.

Figure 1.3—GDP per Capita Growth Against Population Growth, 1965–1990

economists suggesting that in some countries bigger populations can boost economic growth⁶—the overall tendency is to accord population issues a relatively minor place in the context of the wider policy environment.

Allen Kelley has suggested that population neutralism has in fact been the predominant school in thinking among academics about population growth for the last half-century; for example, the academic background papers to even the most pessimistic UN and NAS reports are much more moderate in tone than the reports themselves (Kelley, 2001). Kelley cites three major research areas that influenced the rise of population neutralism in the 1980s:

⁶See Easterly (2001), especially Chapter 5.



SOURCES: Authors' calculations, based on GDP data from Heston and Summers (1995) and on population growth rate data from United Nations, "World Population Prospects: The 2000 Revision," CD-ROM, 2001.

Figure 1.4—Overall Population Growth Rate and the Economic Growth Residual

- **Natural Resources.** Exhaustion of natural resources was found not to be as strongly affected by population growth as the Pessimists thought. Technology, conservation, and efficient market allocation of resources all play a part in preserving natural resources, and per capita income has been shown to be a key determinant of supply and demand for these resources.
- **Saving.** The negative impact of population growth on savings (and a consequent negative effect on economic growth) was not borne out by studies.
- **Diversification of Resources.** Whereas the Pessimists had thought that population growth would lead to a diversion of resources from the formation of physical capital (which

would yield quick returns) to the formation of social capital (e.g., child health and education, whose returns would take longer to be realized), multi-country studies showed that this did not in fact happen to any great extent.

According to Kelley, these studies, coupled with the impact of Julian Simon's *The Ultimate Resource* on extending demographers' view into the longer term, were crucial in bringing neutralism to the fore, and the theory has since had an enormous influence on policy-makers in developing countries and on the international development community. The Reagan administration and several donor agencies sought to limit support of population programs and simultaneously appealed to neutralist theory.⁷

THE IMPORTANCE OF AGE STRUCTURE

Proponents of population pessimism, optimism, and neutralism can all fall back on theoretical models and more or less robust data to support their positions.

All of these theories, however, tend to ignore a critical dimension of population dynamics: populations' evolving *age structure*. Economists have tended to focus on population *growth*, ignoring the changing age distribution within populations as they grow.⁸ Yet these changes are arguably as important as population growth. Each age group in a population behaves differently, with distinct economic consequences: The young require intensive investment in health and

⁷World Bank economists had long thought that the macroeconomic case for population lending was weak (Steven W. Sinding, Professor of Clinical Public Health, Columbia University, personal communication), and excluded population issues from most policy discussions (Tom Merrick, Senior Population and Reproductive Health Adviser, World Bank, personal communication). The Reagan administration's Mexico City policy in 1984 stated that "population is neither a positive nor a negative factor" in development, but is neutral. This statement was associated with the new policy of denying federal funding to NGOs that performed or promoted abortion as a means of fertility regulation in other nations. This policy, which had been overturned by President Clinton in 1993, was reinstated by the George W. Bush administration in January 2001.

⁸The most famous exception was the seminal Coale–Hoover study, which used India and Mexico as case studies to emphasize the costs associated with a high dependency ratio in the early stage of the demographic transition. See Coale and Hoover (1958). See also Bloom and Freeman (1988).

education, prime-age adults supply labor and savings, and the aged require health care and retirement income (Figure 1.5 is a schematic representation of life cycle income and consumption). When the relative size of each of these groups in a population changes, so does the relative intensity of these economic behaviors. (Figure 1.6 illustrates the period of high population growth preceding the period during which there is a high share of working-age people.) This matters significantly to a country's income growth prospects. Policymakers with a broad view of development and the complex relation between economic and human development must factor these effects of changing age structure into decisions about their countries' future.

This challenge is especially pressing in the developing world. In those countries whose mortality and fertility rates are beginning to fall (South Central Asia and much of sub-Saharan Africa, for example), there is an opportunity for governments to capitalize on the consequent demographic transition, where the number of working-age adults grows large relative to the dependent population and

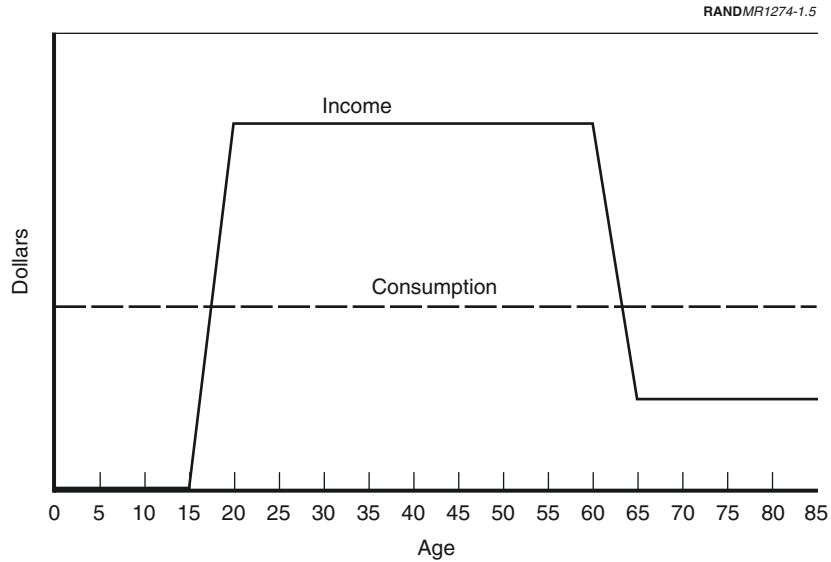


Figure 1.5—Life Cycle Income and Consumption

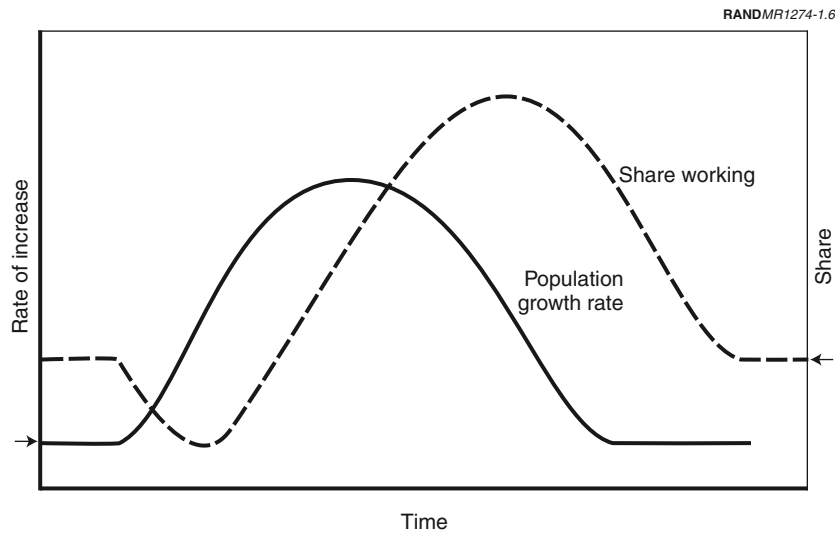


Figure 1.6—Population Growth and Age Structure

potentially acts as a major economic spur. Conversely, if the appropriate policy environment is not in place, unemployment and instability may result, and health, education, and social welfare systems may undergo unbearable strain. Those developing countries whose transition is advanced, on the other hand (Southeast Asia and Latin America), need to look to the future, adopting policies to cope with an aging population and optimize the remaining years of low dependency ratios.⁹

In Chapter Two, we assess how countries can make the most of the age structure of their populations. In Chapter Three, we examine the interplay between demographic change and economic growth within specific regions of the world. In Chapter Four, we explore how several key policy variables—health, family planning, education, and economic policies—influence a nation’s ability to exploit its demographic dividend. We conclude in Chapter Five by restating the significance of population age structure—a variable that has been

⁹The United Nations defines “dependency ratio” as the ratio of the population aged 0–14 and 65+ to the population aged 15–64.

underappreciated in the policy debate—and clarifying how demography provides an opportunity for countries, especially for developing countries, to flourish.