

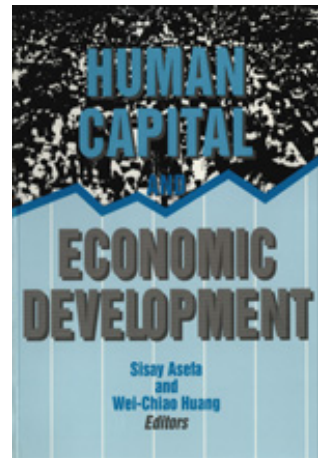
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## Introduction

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# Introduction

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Human capital, as viewed by economists, involves a process of investment that enhances human labor productivity by means of advances in knowledge and its applications. It specifically involves investment expenditures on education, training, health, nutrition, and related factors that increase the productivity of the labor force. Nobel Laureate T. W. Schultz (1956) was one of the first economists to identify the deficiency of the standard neoclassical production function in neglecting the critical role of human capital. More recent empirical studies of economic growth by Hagen (1980), Denison (1985), and Jorgenson (1988), have shown that human capital investment has made a significant contribution to the economic growth of industrial nations such as the United States. The essays in the present volume explore the various national and international dimensions of human capital and development ranging from the economic implications of demographic trends in the United States (Richard A. Easterlin), the effect of population growth and human capital on development (D. Gale Johnson and Julian L. Simon), the relationship among human capital, the family, and economic development (Mark R. Rosenzweig), and the crucial issue of workplace training in the United States (Peter B. Doeringer and Ann P. Bartel).

In the first essay, Easterlin begins by challenging Benjamin Wattenberg's book, *The Birth Dearth*, which predicts a decline of the United States economy due to an aging population and low fertility over the next century. Easterlin presents the rationale offered by Wattenberg and others for their pessimistic views about the economic effects of future demographic trends of the United States. He makes the argument that these popular views about the adverse effects of declining population growth on future economic development do not stand up to long-term historical facts. In supporting his thesis, he examines the historical record of selected Western industrial countries over the last century. These data include demographic variables such as the historical

relationships between population growth and economic growth, the size of the total dependency burden (youth and old age) in relation to the rate of economic growth, the size and age of the labor force, and the implication for overall educational/human capital level of the labor supply. Based on these demographic data over the last century for eleven Western industrial nations including the United States, Easterlin concludes that the historical experience and evidence raise serious doubt about the “secular stagnation thesis.” He notes that projected demographic trends are quite small by historical standards, and the projected aging of the labor force is within the range of historical experience. He further contends that any rise in old-age dependency will be offset by declining youth dependency for the United States and Western industrial nations, and that the projected total dependency rates are, on average, similar to the late nineteenth century for these countries, thereby casting some doubt on the whole stagnation thesis. The leveling of fertility below replacement level is not out of line with the data on completed fertility in this century, according to Easterlin. These data show long-term fluctuations of about half a century duration, and that the emerging labor market conditions seem to favor a new upswing; the data show a total fertility rate above the 1980 trough for all the countries examined. Easterlin points out that even the possibility of a new baby boom, dismissed by existing demographic projections, cannot totally be ruled out.

In the next essay, Johnson takes up another aspect of human capital—focusing on the value of a human being with little or no formal investment. His essay is relevant to low-income countries of the world with relatively low human capital investments of their populations. In examining the evidence on the effect of population growth on per capita income growth of developing countries, Johnson challenges the popular view of the negative relationship between population growth and per capita income in developing countries, as advanced by the proponents of “the Population Bomb Thesis.” His essay summarizes some of the major findings of a working group organized by the National Research Council of the National Academy of Sciences, which is also critical of the pessimistic view about the effects of population growth on economic growth of developing countries. Johnson presents three empirical propositions that cast serious doubt on the commonly held view about the negative relationship between per capita income and

population growth. First, significant increases in per capita income in Western industrial nations occurred between the eighteenth and twentieth century when their populations were also rising rapidly and life expectancy was increasing. Second, developing countries achieved higher per capita income, a rise in life expectancy, and reduced infant mortality since about 1950, when population growth began to rise rapidly. Specifically, Johnson points out the fact that between 1950 and 1980 developing countries experienced a rapid population growth of over 2 percent, paralleled with per capita income growth of 2.6 percent. Third, he presents evidence from regression results based on cross-country data that show no significant relationship between population growth and economic growth. According to Johnson, other variables such as economic policy, may be more important than population and human capital variables included in these results. He supplements this view by referring to recent empirical evidence by Levine and Renelt (1992) which presents results on the effect of various policy factors and population growth on the economic growth of 119 countries. None of the regressions showed a significant relationship between population and economic growth. Thus, Johnson makes the point that much of the human suffering in developing countries over the years has been caused by nonpopulation growth factors such as civil wars, state policy failure, and economic mismanagement. Johnson also summarizes some findings related to nine questions that came out of the NRC report on population growth and economic development that deal with the effect of population growth on the supply of exhaustible and renewable resources, environment, worker productivity, levels of schooling and health, income inequality, rural-urban migration, and social costs of fertility. He concludes that there is little evidence from this report "to support the position that a family imposes negative externalities on society when it chooses to have another child." He qualifies his argument, however, by pointing out that a very high population growth in excess of 3 percent in the short run, "may reduce rates of per capita income growth primarily due to the stress placed on institutions such as education, health, and city public services," and so NRC's evidence is more relevant to a moderate population growth rate of 1.25 to 2.5 percent. Governments of developing countries should, according to Johnson, pursue social and economic programs such as primary education, maternal and child health care, and social security

programs that have the external effect of reducing population growth. He concludes his essay by presenting a rationale for what he calls “positive population policy,” whose aim is to assist “every family in a country to have the number of children each family desires” without coercion. For such a policy to materialize, governments must provide relevant information, including contraceptive materials and services, to every household on a voluntary basis.

Rosenzweig’s essay explores the relationship among human capital, the family, and economic development. He examines two related aspects of this complex relationship. First, whether family relationships and stability are related to the rate of economic growth. Second, how economic development affects the level and returns to investment on human capital. Realizing that the study of these relationships is a complex task in the context of a modern industrial economy such as the United States, he bases his analysis on data from the simpler (developing) economy of rural India. He uses time-series data that describe farm household behavior under traditional technology and cross-section data on farmers across India before and after the green revolution technical change. He organizes his essay by first discussing some key features of a traditional agrarian economy before technical change, including the relationship between family stability and human capital under this setting. After examining his data on the features of a traditional economy, he includes some evidence on specific hypotheses about the relationship between human capital and family structure with emphasis on risk-mitigation and experience as important elements of human capital. Rosenzweig then examines how technical change affects human capital investments and family structure, and draws some possible policy implications. According to Rosenzweig, experience (learning by doing) is the most valuable form of human capital under traditional static technology. Consequently, education which enables farmers to acquire knowledge outside such environment, provides little or no return. It follows that the elders have the largest amount of human capital and respect, resulting in family stability and intergenerational interdependence. The introduction of technical change, however, reduces the value of past experience and erodes family ties, which leads to family breakups and instability even though the rate of return from formal schooling may increase. Thus, according to Rosenzweig, technical change can have a destabilizing effect on the

family by reducing returns from experience, by decreasing the role of risk-spreading arrangements among family members, and by weakening coping mechanisms in an uncertain traditional economic environment. Another important policy implication that he draws from these findings is that a significant decline in fertility in growth areas relative to other areas of India was achieved without any direct intervention by the government, indicating that such efforts are unnecessary in an environment of continuous technical change and economic growth.

In the following two essays, Doeringer and Bartel both deal with the issue of workplace training in the United States. Doeringer's essay is concerned with whether the workplace training system of the United States will survive international competition. He points out that the crux of the nation's human capital deficiency problem may not be due to its schools, and that educational reform may not be central to solving the problem, especially in the short run. Instead, he notes, the problem may be rooted in the weakening of the nation's workplace system for raising labor productivity, which he defines broadly to include effort, commitment, problem-solving capacity, and job skills. Doeringer's view is that while educational improvement may be an important part of a long-term solution, it is unlikely to rebuild the productive capacities of the present workers who are already out of school and who will constitute two-thirds of the labor force during the next decade.

Doeringer further examines some features and experiences with such alternative systems of workplace training in the United States as the Fordist system, the high-commitment system, and the low-wage, Employment-at-Will System. The traditional Fordist system involves raising productivity through "soft bargains" reached collectively between labor and management. The high-commitment system emphasizes individual rather than collective effort bargains to encourage the individual worker to internalize the goals and objectives of the company and to take action to achieve these goals. The employer in return provides intensive career training and development, fair compensation, and an implicit guarantee of permanent employment, with a result of continuous improvement in productivity and career earnings. The relatively new employment-at-will system allows firms to keep wages as low as market competition will allow, with an indefinite period of employment that quickly adjusts to changing labor market conditions,

with no commitment from employers and no expectations of job security by workers. He observes that such firms do not invest on human capital development and do not depend on effort bargains, but rely on market incentives to motivate training investments and effort. Doeringer's essay is also concerned with the evolution of workplace training systems and their effects on productivity. His view is that it is an open question whether the traditional Fordist and high-performance workplace systems will survive in some form in the future labor market or if the low-wage, employment-at-will model will prevail.

Bartel analyzes another dimension of the issue of workplace training in the United States. Her essay is concerned with whether American workers are getting sufficient on-the-job training or if workplace training is underproduced. She explores this question by reviewing data available on the amount of training received by U.S. workers relative to other industrial countries, by examining data on the rate of return to investments in on-the-job training, by evaluating alternative suggestions to alleviate the underinvestment problem, and finally by discussing her own research findings about the relationship between technological change and training.

Bartel identifies two general sources of data, based on surveys of individual workers and employers, to study workplace training. She notes that both types of data report underinvestment. Even though the National Longitudinal Surveys of Mature Men, Young Men, Young Women, and Youth (NLSY) are the best employee-based sources of data, according to Bartel, these data have some measurement problems, as they do not measure informal training. Informal training appears to be quite important for U.S. workers, since it is found to occur at the same rate as formal training programs.

Bartel's essay also examines comparative training systems in three industrial countries: Germany, France, and Japan. The German system, which is based on an apprenticeship contract signed between a company and the government, is too rigid and narrow. Thus, it cannot be shown that German workers are better or more trained than American workers if the various dimensions of training are considered. The French system relies on a mandated training tax where employers of ten or more workers must spend a certain proportion of their labor cost on continuous education and training of employees or pay tax equal to the required amount minus the actual training expenditures. It cannot

be concluded that American workers receive less training than French workers because, while the training incidence is higher in France, its length is much shorter. Finally, the Japanese training system applies only to large firms that employ only one-third of the workforce. The majority of the workforce is employed in small firms where employment is not guaranteed and very little training is done.

While the comparative data do not provide any conclusive evidence to confirm relative underinvestment, Bartel uses the rate of return data to reach “a conclusion that there is underinvestment in job training” in the United States. She then explores some possible causes of underinvestment, such as higher relative turnover rate, inability of the employer to evaluate the quality of applicants’ general skills, minimum wage constraint, and inability of young workers to pay for their own training.

Bartel addresses the merit of alternative policy options to increase investment in training, including government-provided training, payroll-based national training tax imposed on employers, and subsidies and incentives for employees from the government. She notes that these options, especially the first two, are generally inadequate.

Finally, Bartel examines the issue of training in relation to technological change and concludes, based on her own research, that employee training will increase as a simple by-product of technological change during the next decade. In sum, her essay shows that while the high rates of return to training may be consistent with a possible underproduction of training in the United States, technological change will increase the incentives for investment in training, thereby requiring no external government interference with the market for labor training.

The final essay by Simon addresses the issue of the very-long-run effect of human capital on economic progress. Simon’s essay is in the tradition of his provocative and often controversial views on the effect of population on economic development. The basic question addressed in his present essay deals with “the cause of so many of the world’s population now being long-lived and endowed with much wealth and a high standard of living, with an even larger proportion likely to enjoy these benefits in the coming decades,” compared to several centuries ago. In other words, he queries “why the rapid progress of the past two centuries did not begin centuries or millennia earlier. ... Was there



something extraordinary about the human numbers or the level of technology in 1700 or so?” His answer is simply that today’s technology is the sum of increments of knowledge in the past, and the additional knowledge was produced by people and therefore must have been influenced by human numbers. He adds that other possible factors such as culture, politics, and economic and social systems are also influenced by numbers. Thus, Simon’s basic hypothesis is that the size of human population as measured by population density and number of people combined with the technology produced by them is the root cause of the speed of economic progress. It is his view that had population been frozen at the level of some 10,000 years ago, economic progress would not have reached the present state. His basic rationale is the obvious notion that if there were more people there would be more human capital to create knowledge that leads to economic growth. Simon’s essay provides some evidence in support of what he terms “population-induced social change” by reviewing some sketchy time-series and cross-sectional data on the relationship between population and rate of economic growth and between population and natural resource availability, including some evidence on the relationship between population and structural factors that affect the rate of economic growth. Simon’s basic premise is that higher density and larger population were, historically, *necessary* conditions for economic progress. Whether they were *sufficient* depends on the nature of particular societies, which have also been capable of retrogressing with population growth. While he supports the basic Malthusian proposition as relevant in the short-run subsistence economy under static technology, Simon’s model refers to the very-long-run effects of population growth as the only exogenous variable, while other variables, such as institutions and technology, are all endogenously determined. This leads to one of his major points, that “no other element was as essential as the combination of knowledge and population numbers” in the very long run. Thus, Simon’s proposition is that human economic progress is a function of population numbers, and all related social and economic dimensions are a function of population size and density in the very long run. He reinforces this view by reviewing some historical evidence about how more people bring about more ideas, more knowledge, expanded markets and cities, and higher productivity and income over the long run. He notes that even the spread of diseases has been

positively influenced historically by population, as for example a more dense population reduced the “virulence of mass killers” such as malaria by practicing intensive cropping.

Finally, we are impressed with the quality and insights of the essays resulting from this lecture series. The individual authors present a complementary and well-integrated approach that challenges conventional wisdom and views about the various dimensions of human capital and economic development from the domestic and international perspectives. Our aim in this introduction was to highlight some of the critical issues discussed. We invite the reader to explore the details and the fuller context of the various aspects of the subject in the chapters that follow.

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