OCCASIONAL PAPERS
Number 1

# THE LONG VIEW IN ECONOMIC POLICY:

## THE CASE OF AGRICULTURE AND FOOD

Theodore W. Schultz

INTERNATIONAL CENTER FOR ECONOMIC GROWTH

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# The Long View in Economic Policy: The Case of Agriculture and Food

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for Economic Growth

Affiliated with the
Institute for Contemporary Studies
San Francisco, California

ISBN 0-55815-006-4

# PREFACE

This paper, by Nobel Laureate T. W. Schultz, is the first of a new series of Occasional Papers, which we are also calling our "guru series." These papers will feature broad reflections by senior scholars and policymakers on major development issues, recent advances in professional knowledge, and policy application experiences.

We are particularly pleased to publish this paper by T. W. Schultz as the first in this important new series. In a career spanning half a century, Professor Schultz has made outstanding contributions to the discipline of economics through his work on agriculture and rural development, human capital, development, and the production and application of technology. His many books and essays have clarified issues of economic theory and policy and have opened fertile new grounds for subsequent research that has improved our understanding of economic development. For his accomplishments and outstanding intellectual leadership, the profession has bestowed on Professor Schultz its highest honors.

Nicolás Ardito-Barletta
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Panama City, Panama
October 1987

# ABOUT THE AUTHOR

THEODORE W. SCHULTZ is Professor Emeritus, University of Chicago. In his career of more than half a century, he has made many contributions to the discipline of economics, especially in the fields of development, agriculture, and human capital. Professor Schultz is a former president of the American Economic Association (1960) and a member of the National Academy of Sciences. Among his many honors, he was awarded the Nobel Prize for Economic Science in 1979. He has served as advisor and consultant to numerous U.S. government and international agencies, as well as to private and nonprofit organizations worldwide. Among his more than twenty authored or edited books are *Redirecting Farm Policy* (1943), *Agriculture in an Unstable Economy* (1945), the *Economic Organization of Agriculture* (1953), *The Value of Education* (1963), *Transforming Traditional Agriculture* (1964), and *Investing in People* (1981).

THEODORE W. SCHULTZ

# The Long View in Economic Policy: The Case of Agriculture and Food

Much of the economics that I learned as a graduate student was shattered by the events of the early 1930s: the Great Depression, the massive dust storms in the American Midwest, and the New Deal. My Ph.D. had not prepared me for these shocks. In retrospect, I was lucky; these events made me do some economic thinking on my own. At that time, many economists were adopting the short view, and giving it a theoretical elaboration that, for subtlety, refinement, and elegance, was winning high marks. But as Jacob Viner noted in his American Economic Association presidential address, "The Short View and the Long in Economic Policy," presented in December 1939, "It is the quality of the judgment displayed, and not the quality of the analytical skill, which I venture to question. No matter

how refined and how elaborate the analysis, if it rests solely on the short view, it will still be a structure built on shifting sand." Viner's address is required reading to savor the subtle role of being "on tap" but not on top in making economic policy.

For the economic policy of a sovereign state entails both politics and economics. The idea that there are pure economic policies ready-made for governments to adopt is a myth. The tensions that beset government economic policies are predominantly the result of the differences between perceived political and economic objectives. While it is obvious that political and economic activities are both human actions, it is not obvious that there is a division of labor between them. We accept Allyn Young's assessment that the most illuminating generalization in economics is that the division of labor depends on the extent of the market. The analytical idea that there is a "political market" is in its infancy. But what are the properties of this market? Are they comparable to those of the economic market in terms of the division of labor, specialization, and gains to be had from extensions of political activities?

Some economists are enamored of the notion that each sovereign state establishes a viable integration of politics and economics, and proceed to label this integration the *political economy* of the particular state. But they are vague when it comes to formulating the optimal combination of the two parts, as we do not yet know their optimal combination. At issue is the extent to which people belonging to a particular sovereign state would be better served by substituting some of the activities of one of these two markets for those of the other. Meanwhile, there is no lack of tension.

It is obvious, nonetheless, that most low-income countries have overburdened their political processes with economic functions that governments are not capable of performing efficiently. Keep in mind that the mainstream of development economics, which flourished during the 1950s and into the 1960s, called for structural reforms—less dependence on trade and increased emphasis on planned investment in physical capital drawing on labor reserves that were deemed to be in surplus, using import substitution to promote industrialization, embracing central planning to pick the right path to progress, and relying on foreign aid to cover the resulting budget and trade deficits.

## Productivity of Agriculture

The policy woes concerning the productivity of agriculture in most low-income countries following World War II have been caused, in large measure, by these heavy-handed policies favoring industrialization at the expense of agriculture, or by neglect of the agricultural sector of the economy. In my endeavor to account for the poor performance of agriculture in this class of countries during the 1950s and 1960s, I turned for guidance to development economics, that new branch of economics designed to chart the optimal economic growth strategy for low-income economies. In my innocence I overlooked the fact that this branch was created by economists living in high-income countries, whose thinking was influenced by various misleading ideas, false concepts, and invalid theoretical fragments that distort our understanding of the sources of agricultural productivity.

For example, the U.S. parity price for farm products, which is based on 1910–14 relative prices, is a vulgar economic concept. Agricultural supply management, production control by means of acreage allotments, target prices covered by deficiency payments, and the dumping of farm products abroad to the tune of Food for Peace are all bad economics as well. These are a few of the fragments of pseudo-economics on which some U.S. policies have been and continue to be based. Nor are other high-income countries immune to this type of bad economics. Only now, as the inordinate waste of resources has grown too great for the politics of these countries to bear, has there been any movement toward learning from these costly policy mistakes. Yet the work of these economists was supposed to be applied to poor countries in which most of the labor is engaged in agriculture.

Given my agricultural concerns, I was appalled by the treatment of the role of agriculture in achieving economic growth in poor countries. The prevailing arguments ran as follows: the opportunities in agricultural production are the least attractive source of economic growth; therefore, investment in agriculture is not warranted, and industrialization comes first and foremost; agriculture can provide an unlimited supply of labor for industry, and most of it even at zero opportunity cost, because a considerable part of the labor force in

agriculture is redundant in the sense that its marginal productivity is zero; and policies and administrative means are required to keep farm food prices down in favor of urban consumers, thereby promoting industrialization. Economists believed that farmers in low-income countries were not responsive to normal economic incentives; indeed, it was argued that they often responded perversely, with the implication that the supply curve of farm products was backward sloping. With respect to the indivisibilities of modern agricultural inputs, it was believed that very large farms are required to produce farm products at minimum cost.

These views of development spawned bad economic policies. The harsh and costly experience of not producing enough food has become an incentive to correct some of them. Here, too, there has been some learning from costly policy mistakes.

## The Burden of Classical Economics

Our understanding of the economics of agricultural productivity continues to be burdened, in part, by its classical origins. It is indelibly marked by Ricardo's principle of diminishing returns. Lest we forget, not only Ricardo but also Smith and Hume viewed agriculture as unprogressive. Hume accused farmers of having a predisposition to indolence. "The greater part of the land lies uncultivated," he wrote. "What is cultivated, yields not its utmost for want of skill and assiduity in the farmers." Smith and Ricardo saw manufacturing and commerce as progressive, whereas agriculture was the sinecure of an unprogressive landed aristocracy.

The belief that there is a historical law of diminishing returns, which in the case of agriculture is etched in stone, is still widely held not only by the Club of Rome but by some distinguished economists as well. Even Marshall, when he took the long view, did not altogether free himself from the static dictates of Ricardo's idea of diminishing returns to agricultural land.

The early idea of the substance and scope of diminishing returns was attributed primarily to land, whereas it is applicable to all factors of production. The rational producer cannot and does not try to avoid diminishing returns; he does not try to grow "the world's food in a flower pot" (Abba Lerner's phrase). But Ricardo's concept based on "the original and indestructible powers of the soil" is a

burden in comprehending the increases in the productivity of agricultural land over time. The supply of agricultural land is augmented by investment of various types. Substitutes for land are well illustrated in the case of corn. Biological advances, in the form of fertilizer-responsive and disease-resistant varieties of hybrid corn, increase the effective supply of corn land. The harvested corn acreage in the United States in 1982 was 24 million acres less than it had been in 1932, whereas corn production was more than three times as large: 8.2 billion bushels in 1982 compared to 2.6 billion in 1932. As such changes in economic conditions occur, they spawn disequilibria. The pioneer work on the economics of hybrid corn was done by Zvi Griliches, who noted that, had he assumed equilibrium, he would have begged some of the most important questions pertaining to hybrid corn as an innovation.

To the credit of the early economists, they observed not only that agriculture in their day was land specific but that land is location specific, and that nature is niggardly. Their assessment of the current state of knowledge about agricultural production was, at the time, in large measure correct. They could not have anticipated the development of the various substitutes for farm land that have become available since then. Agriculture is not immune to changes in economic conditions that give rise to increasing returns. Consider the "Green Revolution" in wheat in India: it began in 1966 with production at 11 million tons; by 1984, India's wheat production had increased to 46 million tons. While we await a theory of economic growth to rationalize this extraordinary event in the case of the Punjab, where the returns to land, fertilizer, equipment, labor, and to the entrepreneurship of farmers all increased—common sense suffices to alert one to the several lessons:

(1) Contrary to classical expectations, agricultural land rent declines as a fraction of national income, as modern economic growth occurs even though population increases.

(2) The influence of landlords in national politics declines.

(3) The fraction of the labor force engaged in agriculture becomes ever smaller—indeed, so small where there are well-integrated national labor markets and high levels of education that it seems unbelievable. In the United States it is down to less than 3 percent, and declining.

(4) The value of the time that farm people devote to agricultural

activities in any open and well-integrated national labor market is determined predominantly by the value of workers' time throughout the economy.

(5) The costs of producing food and feed grain per ton have declined markedly since 1910–1914 in countries where less and less labor is required to produce them. The real price of these commodities has declined by one-third to one-half. Declines in food grain prices contributed to reducing the inequality in the distribution of personal income.

(6) In countries where the economic functions of markets and farm entrepreneurs are performed by governments, the gains in agricultural productivity to be had from modernization are in large measure lost as a consequence of allocative inefficiencies.

(7) In retrospect, gains in agricultural productivity have contributed importantly to economic growth and to the decline in the economic importance of agricultural land. Confined to the short view, one becomes beholden to a highly inelastic supply of agricultural products and of food, whereas the long view reveals the possibility that the supply of agricultural products can be made elastic over time. To realize such a favorable outcome, research is required; from research, substitutes for agricultural land are to be had. Thus the supply of land will not remain fixed in quantity, quality, or by location. It becomes increasingly the case that the productivity of land is man-made. One also sees that trade and specialization matter, and that specialized physical and human capital are crucial sources of increase in agricultural productivity over time.

## A Search for Increasing Returns

What can we learn from our past economic experiences? From the benefits of extensions of markets and trade? From the interactions among division of labor, trade, and specialized physical and human capital? Is it possible to realize increasing returns as an integral part of the economic growth process?

The idea of increasing returns seems to have become as outmoded among economists as the knightly quest for the Holy Grail. The idea that increasing returns occur during the process of economic growth no longer seems to be a part of mainstream economics. There appears to be little room in today's theory of economic growth for Adam

Smith's magnificent insight into the division of labor, its origin, and its income-producing capacity. Marshall's law of increasing returns no longer seems to be kosher. In the same vein, it is hard to explain the silent treatment by economists of the classic paper by Allyn Young, "Increasing Returns and Economic Progress."

Part of the explanation for this neglect of so fruitful a concept surely stems from the growing technical refinement of economics, which brings with it a desire for ever greater precision in the use of terms. As economics has become increasingly mathematized, the richness of the idea of increasing returns has eroded. What was once a concept that evoked many different sources of additional income streams, the vaguely sensed secrets of the process of growth, has ended up as a simple bit of arithmetic that virtually defines increasing returns by circumstances in which doubling all factors of production—all inputs—would result in more than twice the output. In the grand tradition of the older economists, however, increasing returns were not simply a matter of output mechanically growing by more than input increased in the same proportion. Instead it was an idea that reached deep into the complex fabric of the economy and captured many nuances.

When a large national economy grows, or when a country with a small national economy learns to take full advantage of its trading opportunities in the large world economy, it is of course true that larger steel mills and petrochemical plants and automotive assembly lines become economically viable. But this is only a small part of the story. More important is the greater payoff to human effort in countless different directions. When there are thousands of textile plants in the world, there is much greater payoff to an effort to improve mechanical looms than there would have been when the plants numbered in the hundreds? When the sciences of biology and plant genetics reached a certain level, the generation of new varieties could be considered a production process in itself—varieties that could be tailored to the sunlight, temperature, and rainfall of a region, or to the texture and acidity of its soil. When plants could be tailored to suit the weather and soil, so too could they be made to produce higher yields, be easier to harvest, and—very important—be altered so that their planting, cultivation, and harvesting could be more readily mechanized. In this way, a symbiotic relationship formed among many groups, producing plant breeders,

university research laboratories, experimental agricultural stations, and engineers in factories that produce farm machinery.

When Adam Smith first pronounced the profound truth that the degree of specialization depends on the extent of the market, he could not have foreseen its fullest ramifications. Today we can see that it is the extent of the world market that more than anything else accounts for whole scientific disciplines and permits vast cadres of technicians to devote themselves simply to improving varieties of corn or wheat; reducing the cost of transporting, refining, or even using petroleum and its products; and performing thousands of other cost-saving tasks. Indeed, there is only one element that unites these countless growth-producing activities: in the end, they are all *cost-saving*.

Thus we see two serious flaws of growth economics; first, it overlooks the fact that the continual generation of new disequilibria is an essential part of the growth process; and second, it ignores the economic value of the contributions that entrepreneurs make as they deal with these disequilibria. Notwithstanding advances in theory and empirical studies in economics, it should be recognized that activities of increasing return, including some of the most important wellsprings of growth, do not exist in the axiomatic core of general equilibrium theory. Yet most economic growth stems from finding new, different, cheaper, and better ways of doing things. The very process of opening up such possibilities creates disequilibrium; where such disequilibrium occurs, there is an opportunity to gain from a reallocation of resources. The human agent who sees such an opportunity and acts to take advantage of it is an entrepreneur.

The occurrence of observable economic disequilibria during the growth process is a much-neglected area of economics. Schumpeter's approach is a notable exception. His theory is based on changes in economic conditions that originate from within the economic system. These changes occur as a consequence of what a special set of entrepreneurs do within that system. Schumpeter's entrepreneurs are innovators who create particular economic changes. They are, however, only a small part of the story.

When early English economists observed increases in production by various manufacturing industries in England, they attributed a part of the additional production to increasing returns. The

favorable changes in economic conditions in their day came to be known as the Industrial Revolution. As an economic process it had much in common with what is now referred to as the Green Revolution in agriculture.

Critics of the early versions of increasing returns argued that the simplistic notion of "improvements" did not suffice to explain such returns. Later critics used theory to show that there would be monopoly effects from increasing returns to scale, implying that they are incompatible with competition because monopoly would ultimately prevail. Since monopoly was not pervasive, it was thought that increasing returns were not pervasive.

More recently, Marshall argued that (1) the effects of increasing returns from scale may be *external* as well as *internal*; (2) "the part nature plays in production shows a tendency to diminishing returns, [while] the part which man plays shows a tendency to increasing returns," i.e., man's part in agriculture conforms to the law of increasing returns; and (3) "the *law of increasing return* may be worded thus: an increase of labor and capital leads generally to improved organization which increases the efficiency of the work of labor and capital." In essence, "increasing return is a relation between a quantity of effort and sacrifice on the one hand, and a quantity of product on the other."

Marshall's emphasis on the economic importance of health, vigor, and acquired abilities of people foreshadowed what we now call human capital. His assessment of knowledge is an economic gem: "Knowledge is our most powerful engine of production. . . . The distinction between public and private property in knowledge . . . is of great and growing importance: in some respects of more importance than that between public and private property in material things."

A series of modern studies sponsored by the National Bureau of Economic Research showed that increases in output exceeded increases in input by a wide margin. Accordingly, large productivity gains had occurred that become known as the unexplained Residual and also as a Measure of Our Ignorance. It is instructive to recall the ideas that were advanced and the search for explanations for the increases in measured output that exceeded the increases in measured inputs. Among the many proposed solutions to this puzzle, one looks in vain for references to increasing returns. There are no appeals to Smith or to Marshall, or to Allyn Young.

Studies by Denison and those by Jorgenson-Griliches loomed large in this search. They clarified and improved the basic data. Denison's approach is quite different from that of Jorgenson-Griliches. They disagreed head-on in a series of publications that dealt with their differences with respect to measurements and explanations. As economic literature, these papers are major contributions. According to Denison, a substantial part of the postwar growth in national output was due to an increase in productivity; according to Jorgenson-Griliches, almost all of the increase was due to increases in factor inputs.

In my early efforts to make room for human capital in economics I took advantage of Fisher's all inclusive concept of capital. But it took a lot of on-the-job experience to learn that the simplistic assumption that capital is homogeneous is disastrous when it comes to measurement, and that the assumption that the heterogeneity of various forms of measured inputs that results from changing economic conditions can be transformed into a homogeneous stock of capital for any given date is subject to serious doubts.

What is forgotten is that capital is two faced, and that what these two faces tell us about economic growth are as a rule inconsistent: the cost story is a tale about sunk investments, while the other story concerns the discounted value of the stream of services that such capital renders, which changes with growth. The dynamics of economic growth are afloat on capital inequalities because of the differences in the rates of return when disequilibria prevail, whether the capital aggregation is given in terms of factor costs or in terms of the discounted value of the lifetime services of its many parts. Nor would a catalogue of all existing growth models prove that these inequalities are equal. But why try to square the circle? If we were unable to observe these inequalities, we would have to invent them, because they are the mainspring of economic growth — they are the incentives to invest in growth. Thus, one of the essential parts of economic growth is concealed by such aggregation.

## Increasing Returns

Each innovation, each entrepreneurial discovery, each increasing return is an economic event. Most of these are small, micro events, as in the case of a farmer's increase in corn yields made possible by

hybrid seed. Such events can, as a rule, be identified and measured, and their economic effects are in general ascertainable. But when increasing returns are attributed to large, macro events—the Industrial Revolution, for example—their influence on inputs and outputs and their precise effects on productivity become exceedingly difficult to ascertain.

Increasing returns are *transitory events*. While the improvements in productivity brought about by innovations are potentially lasting, the disequilibria they create are transitory. The short life span of these disequilibria is clearly observable where these events are small and occur in open-market competition. When a new discovery or technique appears, people learn that it is worthwhile to reallocate resources. Entrepreneurs respond to the expected profits to be had, and their actions account for the transitory nature of these events. Nature is but a minor source of increasing returns, which are for all practical and analytical purposes consequences of the activities of humans. They may have their origin either within or outside of the economic system. Those that originate from within would be included in Schumpeter's theory of economic development.

Increasing returns have become important sources of economic growth in many countries. It appears that these events tend to spawn related events. The economy of various countries has a built-in capacity to create them, notably by means of organized agricultural research, R&D in general, university-based science research, and investment in education and the distribution of knowledge.

## Specialization

We do not reckon the vast extent of specialization. In terms of industry we know about Adam Smith's pin factory; for agriculture we blithely assume that there is nothing comparable. In international trade, however, specialization has long been a part of trade theory and its applications.

Agriculture is not immune to specialization and to returns from specialized human capital. Most U.S. corn belt farm families no longer produce eggs, milk, vegetables, and fruit for home consumption. Such items are purchased. So is electricity, gas for fuel, telephone service, and even water. The typical corn farmer no longer

produces his own seed corn; he buys hybrid seed appropriate to his area. Production expenses consist mainly of inputs produced by industry. The production of pigs has become specialized into (1) producing breeding stock, (2) farrowing and thorough weaning, (3) producing feeder pigs, and (4) growing them into hogs to suit the market. Yet the myth persists that there is virtually no specialized human capital within agriculture.

It behooves us to bear in mind Marshall's dictum that "knowledge is the most powerful engine of production." The costs and returns from agricultural research tell us that this is so. Studies of the economic value of agricultural research began to flourish following Zvi Griliches' classic Ph.D. dissertation on hybrid corn. Increasing returns still played a major role in bringing about large productivity gains in agriculture. In the process, the efficient scale of farm operations has increased. More significant, however, are the contributions of human capital to gains in farm and farm-household productivity; these are now receiving greater attention. An important factor in the success of agricultural research is the *specialized human capital* of agricultural scientists.

Finis Welch has shown that the value of farmers' education in production is high as agricultural modernization occurs. Welch succeeded in separating the *work effect* from the allocative effect of education. This acquired allocative ability functions as a specialized form of human capital. Specialization abounds in our cities and factories in commerce, manufacturing, and in light and heavy industries. But what about the professions? Since economists are not adverse to being thought of as members of one of the knowledge-producing professions, I turn to the production and distribution of knowledge in the United States, based on the authority of Machlup. His 1962 book is a rich vein of information on the vast extent of specialization that prevails. His last book is on the economics of information and human capital. The extent and complexity of the knowledge-producing professions bespeak human capital specialization which accounts in good measure for much of their productivity.

Specialization has its limits, however. When it is carried too far there are losses from overspecialization. Not to be concealed is the fact that economists are also vulnerable to overspecialization. Hayek could say with good grace, "Nobody can be a great economist

who is only an economist," and, "An economist who is only an economist is likely to be a nuisance if not a positive danger."

## Trade and Human Capital

Is it possible for small nations to attain a high level of per capita income via trade and specialization, with the gains to be had from increasing returns made possible by specialized human capital? Consider a tale of two nations, Singapore and Jamaica:

| | Singapore | Jamaica | |
|---|---|---|---|
| They have in common: | | | |
| Population mid-1982 | 2.5 | 2.2 | million |
| Life expectancy, females 1982 | 75 | 75 | years |
| External debt in dollars 1982 | 1.4 | 1.5 | billions |
| Their differences: | | | |
| Area | 224 | 4,232 | square miles |
| Population density | 11,160 | 520 | per square miles |
| Economic growth rate, 1970–1982 | 8.5 | 1.1 | percent GNP |
| Exports (1982) | U.S.$20,800 | 730 | million |
| Imports (1982) | U.S.$28,200 | 1,370 | million |
| Per capita GNP | U.S.$ 5,910 | 1,330 | in 1982 |

This tale holds the secret of the relationship between *specialization* and *income*. The key is in the division of labor, which depends on the extent of the market. The market is large for Singapore, small for Jamaica. Young's "Increasing Returns and Economic Progress" reveals that securing increasing returns depends upon progressive division of labor that will give rise to increases in outputs without proportionate increases in costs. As Young noted, "economic changes become progressive and propagate themselves."

The effects of human capital on the composition of goods that are traded could account for the so-called Leontief paradox, which asserts that, contrary to trade theory, capital-rich countries export labor-intensive goods. We now know that the labor services entering into such goods are human capital-intensive. A capital-rich country exports the services of specialized human capital.

Viner and other trade economists have understood the reasons why countries with apparently similar economic structures still gain from trading with each other. Such gains are a consequence of investments that specialize in particular types of human and physical

capital, and of utilizing such capital intensively. The economics of two-way trade in similar products between similar countries has been further explored by Daniel Gros. He argues that increasing returns to scale made possible by specific human capital specialization explains this class of trade. The evidence in support of his argument is as yet sparse. Becker shows that the greater productivity of specialized human capital is a strong force in creating a division of labor between married men and women.

Rosen came to the issues at hand in his "Substitutions and Division of Labor" and "Specialization and Human Capital" with the following argument. Incentives for specialization and trade based on comparative advantage through investment arise from increasing returns to the utilization of human capital. Indivisibilities imply fixed-cost elements of investment that are independent of subsequent utilization. Hence, the rate of return is increased in utilization. For this reason, identically endowed individuals have incentives to specialize their investments in skills and trade even if production technology exhibits constant returns to scale. The enormous productivity and complexity of modern economies are in good measure attributable to specialization.

Lucas focused on the interaction of physical and human capital accumulation and on systems that admit specialized human capital. He saw human knowledge as simply human, and not as Japanese, Chinese, or Korean. Differences in technology among countries are not about knowledge in general but about the particular knowledge of particular people. Knowledge is a form of human capital, and human capital is an engine of growth.

## Conclusion

I hope I have clarified neglected sources of productivity and increased our understanding of relevant policy choices. I offer the following points in conclusion: (1) The modernization of agriculture has become a strong, dynamic process. Supply is now crowding against demand. Many low-income nations have become exporters. What are the long-term international trade implications of the Green Revolution?
(2) The sources of the remarkable agricultural productivity gains are no longer a mystery, and yet many policymakers act as though this productivity were dependent on the phases of the moon.

(3) The economic value of the specialized human capital of agricultural scientists has not been fully recognized. Nor has the value of the education of farmers, which enhances their entrepreneurial ability.
(4) The importance of the search for markets is repeatedly told by economic historians. Here and now, however, nation-states pursue policies that distort world trade and impair the gains to be had from it, thereby reducing specialization, productivity, and economic growth.
(5) There is much evidence now at hand that shows that nations pursuing inward-oriented economic policies with regulations and controls—even though they are large nations—are doing poorly, whereas an array of small nations that have pursued outward-oriented economic policies have done exceedingly well in achieving economic growth.
(6) Increasingly specialized human capital is an important source of increasing returns. Growth theory that excludes the formulation of such human capital is far from adequate. So is growth theory that excludes the contributions of entrepreneurs. Appreciating the interdependence of these factors is crucial both for the advance of, and explanation of, economic growth.

On various important issues pertaining to economic progress, early economists had comprehensive insights that economists now overlook. Smith's observation of the division of labor made possible by specialization, which is in turn constrained by the extent of the market, is a fundamental insight. So are Marshall's versions of increasing returns as a function of both the scale of the enterprise and size of the human capital pool. What is hard to explain is the long silence on the part of economists following Young's classic paper. During the era of the puzzle of the residual, economic measurement research was unencumbered by Smith, Marshall, Young, or the search for evidence on increasing returns. Taking the long view, human capital is a crucial component in economic modernization and growth. It consists of the abilities and knowledge embodied in people. It calls for investments in them. Specialization, markets, and trade offers incentives to undertake such investments privately and publicly.

Anxieties about food, space, energy, and other physical resources are not new. They were expressed cogently at the beginning of the

nineteenth century by David Ricardo and R. R. Malthus. But I reject present forebodings based predominantly on assessments of the declining physical capacity of the Earth. A valid assessment must reckon the abilities of humans to deal with the Earth's changes. These abilities are ignored in earthview assessments. Increases in the acquired abilities of people throughout the world and advances in knowledge hold the key to future economic productivity and its contributions to human well-being.

The adverse consequences of the short view in economic policy carry a high price. Though theoretical elaboration of the short view is being made by economists with increasing subtlety, refinement, and elegance, it is nevertheless a structure built on shifting sand. Viner's stand made him a special custodian of the long view in economic matters. The deep insight of his view, the richness of his perceptions, and the messages he conveys have the timeless quality that marks great ideas. They had validity and meaning for Viner's generation, just as they do for today's generation and for those who will follow.

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Affiliated with the Institute for Contemporary Studies

$5.00

ISBN 1-55815-006-4