

# Transforming Traditional Agriculture

Theodore W. Schultz

Winner of the  
Nobel Prize  
in Economics  
in 1979



# **TRANSFORMING TRADITIONAL AGRICULTURE**

**Theodore W. Schultz**

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## FOREWORD

Modern economics has been bred chiefly in Western Europe and the United States, and despite its aspiration toward generality it bears the stamp of institutions and issues characteristic of these areas.

But the economic world no longer revolves about London and New York. Dozens of new nations are struggling toward economic independence and industrial growth under institutional arrangements quite unlike those of the West. Economies of a novel type also extend eastward from central Europe to the Bering Strait and have been busily developing their own principles as a by-product of administrative experience. It is asserted that "Western economics" has only limited analytical value in these other countries.

The problem of the content and relevance of economics thus arises inescapably. Are the economic principles taught in the West really susceptible of general application? Or are they culture-bound and relevant mainly to industrial capitalist countries? Is it possible to create a general economics which would be as useful in Poland or India as in Canada or France? Or must we be content with several species of economics which will remain distinct in intellectual content and applicability?

"Comparative economics" has been regarded as a separate area of the economics curriculum, consisting of a botanical classification of national economies into a few loosely labeled

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boxes. But surely any course in economics is potentially comparative. A concern with comparative experience can profitably be infused into any of the standard branches of economic study. This series is inspired by the hope that a rethinking of particular branches of economics in world perspective, combined with a bibliography of available material from many countries, may help teachers to give their courses a broader and more comparative orientation.

In pursuing this objective, we deliberately chose autonomy over standardization. Each author was left free to determine his own approach and method of treatment. The essays thus differ considerably in length, analytical as against descriptive emphasis, geographical coverage, and other respects. How far the original intent of the series has been accomplished is for the profession to judge.

We are grateful to the authors who have struggled with possibly insoluble problems, to the Ford Foundation for its support of the enterprise, and to the staff of the Yale University Press for their helpful cooperation.

*The Inter-University Committee on Comparative Economics:* Abram Bergson, Arthur R. Burns, Kermit Gordon, Richard Musgrave, William Nicholls, Lloyd Reynolds (Chairman)

## PREFACE

When I see how little success most countries are having in increasing agricultural production, I can see why one might well believe that it is a rare and difficult art to master. If it is an art, a few countries are very adept at it though they seem unable to transmit this art to others. Those that are adept are increasing production while decreasing both labor and land devoted to farming. But as long as the economic basis of increasing production is thought to be an art, I do not wonder that economic policy to achieve it should be so largely in the realm of myth. Presently, in country after country, policy makers are about as sophisticated in this matter as farmers who once upon a time planted crops according to the face of the moon.

While agriculture is the oldest production activity of a settled community, surprisingly little is known about the incentives to save and invest where farmers are bound by traditional agriculture. Oddly enough, economics has retrogressed in analyzing the savings, investment, and production behavior of farmers in poor countries. The older economist had a better conception than economists now have of the particular type of economic equilibrium relevant under these circumstances.

Although it is obvious that traditional agriculture is niggardly, it is not obvious that this niggardliness is *not a function* of a unique set of preferences related to work and thrift.

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Nor is it obvious that it is predominantly a consequence of farmers having exhausted the profitability of the "techniques of production" which are an integral part of the inputs and knowledge at their disposal, and that there is little or no incentive to save and invest in order to increase the stock of the forms of reproducible capital farmers are employing. The purpose of this study is to show that the crucial feature of traditional agriculture is the low rate of return to investment in agricultural factors of the type that farmers have been using for generations, and to go on to show that in order to transform this type of agriculture a more profitable set of factors will have to be developed and supplied. To develop and to supply such factors and to learn how to use them efficiently is a matter of investment—investment in both human and material capital.

Food and agriculture have served economists time and again as a testing ground for new concepts and analytical tools. Diminishing returns to labor and material capital against land and Ricardian rent are examples. So is the income elasticity of the demand beginning with Engel's statistics, followed by the monumental study of Henry Schultz and then studies by Girshick and Haavelmo, Stone, Tobin, Burk, Houthakker, Goreux, and others. Recently there has been the testing of the explanatory value of distributed lags by Nerlove, specification bias in production functions by Griliches, and research costs and social returns from a new input, hybrid corn, also by Griliches. In this study I attempt to test the usefulness of a supply and demand approach in determining the price of income streams from agricultural sources.

I intended when I started this study to include an extensive bibliography of the relevant literature. But it soon became clear to me that the available literature, although large with

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respect to many features of agriculture in poor countries, is in general not germane to the basic economic issues which are the core of this study. I therefore decided against a separate listing and in favor of additional footnotes for this purpose. It turns out that many of the published items to which I refer represent views and treatments that support doctrines and policy approaches which are inconsistent with my analysis.

Since I began this study late in 1959 I have incurred many obligations. I have learned much from the dialogue I had with my students when I presented the central ideas of this study to them. My colleagues, Zvi Griliches, D. Gale Johnson, and Dale W. Jorgenson, read key chapters and I benefited much from their criticism. Vernon W. Ruttan read all of an early draft, and I accepted nearly all of his suggestions. Abram Bergson, Richard A. Musgrave, and Lloyd Reynolds raised useful questions. My wife, Esther Werth Schultz, corrected manuscript, checked references, and convinced me time and again that what I had thought was clear still lacked clarity. Mrs. Marian Neal Ash of Yale University Press gave unstintingly of her editorial talents. Mrs. Virginia K. Thurner, my secretary, corrected proof with painstaking care. I also am indebted to the librarians at the University of Chicago for their help. A Ford Foundation fellowship freed me from my university duties during 1961-62. But more than any other obligation is what I owe to the oral tradition that is a part of the workshops in economics at the University of Chicago.

Theodore W. Schultz

*The University of Chicago*  
*May 1963*



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# **TRANSFORMING TRADITIONAL AGRICULTURE**



# I THE PROBLEM AND ITS SETTING

The man who farms as his forefathers did cannot produce much food no matter how rich the land or how hard he works. The farmer who has access to and knows how to use what science knows about soils, plants, animals, and machines can produce an abundance of food though the land be poor. Nor need he work nearly so hard and long. He can produce so much that his brothers and some of his neighbors will move to town to earn their living. Enough farm products can be produced without them. The knowledge that makes this transformation possible is a form of capital whenever it is an integral part of the material inputs farmers use and whenever it is a part of their skills and what they know.

Farming based wholly upon the kinds of factors of production that have been used by farmers for generations can be

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called traditional agriculture. A country dependent upon traditional agriculture is inevitably poor, and because it is poor it spends much of its income for food. But when a country develops an agricultural sector such as Denmark has in Europe, Israel in the Near East, Mexico in Latin America, and Japan in the Far East, food becomes more abundant, income rises, and less of the income of the country is spent for food. How to transform traditional agriculture, which is niggardly, into a highly productive sector of the economy is the central problem of this study.

Basically this transformation is dependent upon investing in agriculture. Thus it is an investment problem. But it is not primarily a problem of the supply of capital. It is rather a problem of determining the forms this investment must take, forms that will make it profitable to invest in agriculture. This approach treats agriculture as a source of economic growth, and the analytical task is to determine how cheaply and how much growth can be realized from transforming traditional agriculture by means of investment into a more productive sector. This problem has received only scant attention even though the study of economic growth has flourished. Economists who have been studying growth have with few exceptions put agriculture aside in order to concentrate on industry, despite the fact that every country has an agricultural sector and in low income countries it is generally the largest sector. Meanwhile, many countries are in some measure industrializing. Most of them are doing so without taking comparable measures to increase agricultural production. Some are industrializing at the expense of agriculture. Only a few countries are obtaining substantial economic growth from both industry and agriculture. It is the exceptional country that is successful in developing its agricultural sector so that it is a real source of economic growth.



## The Problem

But there are no basic reasons why the agricultural sector of any country cannot contribute substantially to economic growth. True, agriculture using only traditional factors cannot do it, but modernized agriculture is capable of making a large contribution. There is no longer any room for doubt whether agriculture can be a powerful engine of growth. But in acquiring such an engine it is necessary to invest in agriculture, and this is not simple because so much depends on the form the investment takes. Incentives to guide and reward farmers are a critical component. Once there are investment opportunities and efficient incentives, farmers will turn sand into gold.

The purpose of this study is to show that there is a logical economic basis why traditional agriculture employing only the factors of production at its disposal is incapable of growth except at high cost, and why the rate of return to investment in modern agricultural factors can be high by past growth standards. Thus it really does matter what is done in developing agriculture in countries that want to achieve economic growth as cheaply as possible.

At the risk of elaborating the obvious, it may still be prudent to state what is meant by the "agricultural sector." It is the sector of an economy that produces a particular class of products, products that come mainly from plants and animals, including poultry. Some of these products consist of fibers and other raw materials used by industry. But most are used ultimately for food. It will be convenient to classify the production activities of the agricultural sector as follows: (1) production by farmers (peasants and cultivators in the terminology of this study are farmers; they may produce mainly for home consumption or wholly for markets); (2) production of agricultural factors not by farmers but by suppliers from whom farmers acquire them; and (3) produc-